

INNOVATION CLASSICS 

Medical Essays



Oliver Wendell Holmes.



*Homeopathy
Currents in Medical Science
Border Lines of Knowledge
of Medical Science*

Oliver Wendell Holmes, Sr.

Originally Published by the Boston Society
for the Diffusion of Useful Knowledge
1842-1882

Introduction & Commentary by

Mark Stinson

President and Principal Innovator of
Stinson Brand Innovation, Inc.

Medical Essays

*Homeopathy
Currents in Medical Science
Border Lines of Knowledge*

Also by Mark Stinson

BOOKS

Forward.Fast.
The 6-Step Model to Accelerate Your
Health, Science, & Technology Brand

E-BOOKS

Grappling With the Monster: Or, The Curse and Cure of Strong Drink
Chocolate: Or, An Indian Drink
Notes on Nursing: What It Is and What It Is Not
No Animal Food

Coming Soon:

Wake Up and Live the Life You Love: Living in the Now
(coauthor)

AUDIO/CD PROGRAMS

Forward.Fast.
The 6-Step Model to Accelerate Your
Health, Science, & Technology Brand

Creating Brand Experiences
Sky Radio Network

Applying Branding Concepts
Sky Radio Network

Medical Essays

*Homeopathy
Currents in Medical Science
Border Lines of Knowledge*

Oliver Wendell Holmes, Sr.
Originally Published by the Boston Society
for the Diffusion of Useful Knowledge
1842-1882

Introduction & Commentary by

Mark Stinson

President and Principal Innovator
Stinson Brand Innovation, Inc.

SBI, Inc.

Chicago, Illinois • Boise, Idaho

Copyright © 2009 by Mark D. Stinson

These *Medical Essays* were first published between 1842-1882 and the contents are now in the public domain.

This edition (including cover and page design, editor's introduction, and notes)
© 2009 Stinson Brand Innovation, Inc.

This book is protected under United States and international copyright law. No part of this document may be reproduced, distributed, stored in a retrieval system or transmitted in any form or by any means—be it electronic mechanical, photographic, magnetic or otherwise—without the prior written permission of Mark D. Stinson.

To “Innovators” worldwide —
who find insights for the future
in the writings of the past



CONTENTS

Editor's Introduction	8
Author's Preface	16
Author's Second Preface	22
I Homeopathy and Its Kindred Delusions	23
II Currents and Counter-Currents in Medical Science	120
III Border Lines of Knowledge in Some Provinces of Medical Science.	153
About the Editor	211

Medical Essays

*Homeopathy
Currents in Medical Science
Border Lines of Knowledge*

EDITOR'S INTRODUCTION

This is one of the first editions of a new series dedicated to collecting and publishing the best – or perhaps the underappreciated – innovation writing of the past.

Designed to engage your imagination, this collection brings together some of the premiere publications across generations. Along the way, we'll feature subjects ranging from vegetarian diets to alcohol addiction. And we'll share seminal books like this volume, Oliver Wendell Holmes, Sr.'s *Medical Essays*.

Commentary on *Medical Essays*

This is a collection of essays by a man who defines the persona of a “poet-doctor.”

Whether Oliver Wendell Holmes, Sr. was more poet than doctor remains debatable. He wrote poetry, prose, criticism, history, and memoir from 1830 until his death. His medical “practice” was largely confined to the training of doctors, although several of his medical research projects were path-breaking contributions to modern epidemiology.

A Harvard graduate – where he was class poet of 1829 – he first trained to be a medical doctor in Boston. He then went to Paris for advanced medical training and came home an ardent disciple of Pierre Charles Alexandre Louis, leader of the French school that derived its eminence from expert auscultation* and careful correlation of bedside findings.

Holmes soon became distinguished for his articles written on such medical issues as treatment for malaria, though his passion for writing verse was expressed in his *Poems of 1836*. Two years later, Dartmouth College appointed him professor of anatomy, but he moved to Harvard to teach and rose to the position of Dean at the Harvard Medical School.

Holmes was a vocal critic of homeopathy, his major argument centering on its failure to use the scientific method. In his 1842 essay featured in this collection, *Homeopathy and Its Kindred Delusions*, Holmes demonstrated the futility and danger of some existing medical treatments. Recently in a review of the role of complementary and alternative medicine¹, Dr. Arthur Grollman wrote:

In the 19th century, Oliver Wendell Holmes and Sir William Osler were leading voices for academic medicine. Holmes, dean of Harvard Medical School and an outspoken critic of homeopathic medicine, argued eloquently against the use of ineffective treatments.²

“It always does very great harm to the community to encourage ignorance, error, and deception in a profession which deals with the life and health of our fellow creatures.³”

Holmes also expressed skepticism about the effectiveness of most drugs of his day, declaring: “If the whole *materia medica*, as now used, could be sunk to the bottom of the sea, it would be all the better for mankind—and the worse for the fishes.³”

He recommended quinine for malaria, mercury for syphilis, *digitalis* for heart disease, *colchicine* for gout, iodine for goiter, and *ippecac* for dysentery.

Osler added opium and iron to this short list of effective therapeutic agents and publicly criticized the irrational practice of polypharmacy, which he described as the use of “a large number of drugs, of the action of which we know little, yet we put them into bodies, the action of which we know less.”⁴

This conflict between the scientific method and the physician’s personal judgment persists even in modern medicine today. In a recent article published in the *Journal of Health, Politics, and Law*, Cynthia Mulrow of the University of Texas Health Science Center and Kathleen Lohr of the University of North Carolina School of Public Health wrote⁴:

When judging the benefits and harms of health care and predicting patient prognosis, clinicians, researchers, and others must consider many types of evidence.

Medical research evidence is part of the required knowledge base, and practitioners of evidence-based medicine must attempt to integrate the best available clinical evidence from systematic research with health professionals’ expertise and patients’ rights to be informed about diagnostic and therapeutic options available to them. Judging what constitutes sound evidence can be difficult because of, among other things, the sheer quantity, diversity, and complexity of medical evidence available today; the various scientific methods that have been advanced for assembling, evaluating, and interpreting such information; and the guides for applying medical research evidence to individual patients’ situations.

Interpreting and judging medical research involves subjective, not solely explicit, processes. Thus, developments in evidence-based medicine are an aid, but not a panacea, for definitively establishing benefits and harms of medical care, and the contributions that medical research evidence can make in any clinical or legal situation must be understood in a context in which judgment and values, understanding of probability, and tolerance for uncertainty all play a role.

Another of Holmes' writings elicited an uproar of criticism. In 1843, *The Contagiousness of Puerperal Fever* suggested that physicians themselves could be the carriers of disease.

Though it largely escaped notice when published as an article in a Boston medical journal, it commanded a great deal of attention it reappeared as a book several years later, on the occasion of an attack on Holmes by two famous professors of obstetrics who denied his theory of contagion. Republished with a new and powerfully written introduction, it became a center of controversy on both sides of the Atlantic.

Holmes stood his ground against his critics and the essay had a major impact. By the 1860s, Holmes would remark in *The Professor at the Breakfast Table*, both American and British physicians had come to understand that a physician or midwife who assisted at puerperal fever case must cease obstetric practice until the threat of contagion was past. In New England, where Holmes' arguments had their earliest and most pronounced influence, the death rate from puerperal fever dropped dramatically.

A man of contrasts and contradictions, Holmes lived his life between the poetic and the realistic.

He is a bundle of contradictions: an old-fashioned modern; a primitivist scientist; a Protestant sympathetic to Roman Catholicism; a gossipy man. In short, he was the poet-doctor of 19th-century America. He is largely, and somewhat inaccurately, remembered today as a consummate aristocrat who opposed women's rights and believed blacks to be physiologically inferior; he also supported the admission of women to Harvard medical school and believed African-Americans to be victims of history.

This celebrated poet-doctor published many essays and journal articles on travel, epidemiology, psychology, and literature, and hundreds of short stories both humorous and critical. Along with his good friend James Russell Lowell, he was one of the founding editors of the journal *Atlantic Monthly* in 1857.

Holmes married Amelia Lee Jackson, the daughter of supreme court justice Charles Jackson, and together they would have three children. His son and namesake Oliver Wendell Holmes Jr. fought in the Civil War, after which his father wrote "My Hunt after the Captain", published in the *Atlantic Monthly* in 1862. It was a retelling of his search for his son who had been wounded in the battle of Antietam. Accusing his father of being a dilettante and using his ordeal for literary gain, their relationship suffered much animosity. Oliver Wendell Holmes Jr. would go on to become known as the "Great Dissenter" after being appointed Justice of the US Supreme Court in 1902 by President Theodore Roosevelt.

*The term "auscultation" refers to the listening to sounds made by a patient's internal organs, especially the heart, lungs, and abdominal organs, usually with a stethoscope, in order to make a diagnosis.

The aim of the *Innovation Classics*

According to Peter Drucker, innovation is “...whatever changes the wealth-producing potential of already existing resources.” So, it's possible that the best new innovations may have little to do with new technology or new inventions. Instead, they might evolve from new insights derived from historical experience. Were it not for the humble textbook, which emerged in the mid-seventeenth century, universal schooling would not have been possible.

That's why Drucker says the creative innovators among us are well-read, so they can apply their learnings as they see:

- the unexpected: an unexpected success, failure, or event;
- incongruities: between things as they ought or are said to be – and how they actually are;
- problems with an existing process for which no one has provided a solution;
- changes in how an industry or market operates that takes everyone by surprise;
- demographic (population) changes; or
- changes in perception, mood or meaning.

My hope as the editor of this series is that you will not just read *Innovation Classics*, but also apply their lessons to your challenges of creativity and innovation. Study the language used and points being made (a great deal of effort has been made to maintain the original manuscript, with minimal editing). Develop your ideas and write about them in

your own ways, like journals, blogs, articles, or books. Compare your assessments with friends and colleagues. Critically examine the historical context so you can compare and contrast with today's situations.

Most of all, I hope that this and other volumes of *Innovation Classics* help you observe the changes from the past, but also imagine the applications for the future.

1. Grollman AP. Alternative Medicine: The Importance of Evidence in Medicine and in Medical Education. Is there Wheat among the Chaff? *Acad Med.* 2001 Mar; 76(3): 221-3.
2. Holmes OW. Homeopathy and its kindred delusions, 1842 [reprinted in Holmes OW. *Currents and Counter-currents in Medical Science.* With other addresses and essays. Boston: Ticknor and Fields, 1861].
3. Holmes OW. *Medical Essays, 1842–1882.* Cambridge, MA: Riverside Press, 1891.
4. Osler W. Medicine in the nineteenth century. *Aequanimitas and Other Addresses.* 3rd ed. Philadelphia, PA: Blakiston Company, 1932:255.
5. Mulrown CD, Lohr KN. Proof and Policy from Medical Research Evidence. *J Health Polit Policy Law.* 2001 Apr;26(2):249-66.

AUTHOR'S PREFACE

The character of the opposition which some of these papers have met with suggests the inference that they contain really important, but unwelcome truths. Negatives multiplied into each other change their sign and become positives. Hostile criticisms meeting together are often equivalent to praise, and the square of fault-finding turns out to be the same thing as eulogy.

But a writer has rarely so many enemies as it pleases him to believe.

Self-love leads us to overrate the numbers of our negative constituency. The larger portion of my limited circle of readers must be quite indifferent to, if not ignorant of, the adverse opinions which have been expressed or recorded concerning any of these Addresses or Essays now submitted to their own judgment. It is proper, however, to inform them, that some of the positions maintained in these pages have been unsparingly attacked, with various degrees of ability, scholarship, and good-breeding. The tone of criticism naturally changes with local conditions in different parts of a country extended like our own, so that it is one of the most convenient gauges of the partial movements in the direction of civilization. It is satisfactory to add, that the views assailed have also been unflinchingly defended by unsought champions, among the ablest of whom it is pleasant to mention, at this moment of political alienation, the Editor of the Charleston Medical Journal.

“Currents and Counter-Currents” was written and delivered as an Oration, a florid rhetorical composition, expressly intended to secure the attention of an audience not easy to hold as listeners. It succeeded in doing this, and also in being as curiously misunderstood and misrepresented as

if it had been a political harangue. This gave it more local notoriety than it might otherwise have attained, so that, as I learn, one ingenious person made use of its title as an advertisement to a production of his own.

The commonest mode of misrepresentation was this: qualified propositions, the whole meaning of which depended on the qualifications, were stripped of these and taken as absolute. Thus, the attempt to establish a presumption against giving poisons to sick persons was considered as equivalent to condemning the use of these substances. The only important inference the writer has been able to draw from the greater number of the refutations of his opinions which have been kindly sent him, is that the preliminary education of the Medical Profession is not always what it ought to be.

One concession he is willing to make, whatever sacrifice of pride it may involve. The story of Massasoit, which has furnished a coral, as it were, for some teething critics, when subjected to a powerful logical analysis, though correct in its essentials, proves to have been told with exceptionable breadth of statement, and therefore (to resume the metaphor) has been slightly rounded off at its edges, so as to be smoother for any who may wish to bite upon it hereafter. In other respects the Discourse has hardly been touched. It is only an individual's expression, in his own way, of opinions entertained by hundreds of the Medical Profession in every civilized country, and has nothing in it which on revision the writer sees cause to retract or modify. The superstitions it attacks lie at the very foundation of Homoeopathy, and of almost every form of medical charlatanism. Still the mere routinists and unthinking artisans in most callings dislike whatever shakes the dust out of their traditions, and it may be unreasonable to expect that Medicine will always prove an exception to the rule. One half the opposition which the numerical system of Louis

has met with, as applied to the results of treatment, has been owing to the fact that it showed the movements of disease to be far more independent of the kind of practice pursued than was agreeable to the pride of those whose self-confidence it abated.

The statement, that medicines are more sparingly used in physicians' families than in most others, admits of a very natural explanation, without putting a harsh construction upon it, which it was not intended to admit. Outside pressure is less felt in the physician's own household; that is all. If this does not sometimes influence him to give medicine, or what seems to be medicine, when among those who have more confidence in drugging than his own family commonly has, the learned Professor Dunglison is hereby requested to apologize for his definition of the word Placebo, or to expunge it from his Medical Dictionary.

One thing is certain. A loud outcry on a slight touch reveals the weak spot in a profession, as well as in a patient. It is a doubtful policy to oppose the freest speech in those of our own number who are trying to show us where they honestly believe our weakness lies. Vast as are the advances of our Science and Art, may it not possibly prove on examination that we retain other old barbarisms beside the use of the astrological sign of Jupiter, with which we endeavor to insure good luck to our prescriptions? Is it the act of a friend or a foe to try to point them out to our brethren when asked to address them, and is the speaker to subdue the constitutional habit of his style to a given standard, under penalty of giving offence to a grave assembly?

"Homoeopathy and its Kindred Delusions" was published nearly twenty years ago, and has been long out of print, so that the author tried in vain to procure a copy until the kindness of a friend supplied him with the

only one he has had for years. A foolish story reached his ears that he was attempting to buy up stray copies for the sake of suppressing it. This edition was in the press at that very time.

Many of the arguments contained in the Lectures have lost whatever novelty they may have possessed. All its predictions have been submitted to the formidable test of time. They appear to have stood it, so far, about as well as most uninspired prophecies; indeed, some of them require much less accommodation than certain grave commentators employ in their readings of the ancient Prophets.

If some statistics recently published are correct, Homoeopathy has made very slow progress in Europe.

In all England, as it appears, there are hardly a fifth more Homoeopathic practitioners than there are students attending Lectures at the Massachusetts Medical College at the present time. In America it has undoubtedly proved more popular and lucrative, yet how loose a hold it has on the public confidence is shown by the fact that, when a specially valued life, which has been played with by one of its agents, is seriously threatened, the first thing we expect to hear is that a regular practitioner is by the patient's bed, and the Homoeopathic counsellor overruled or discarded. Again, how many of the ardent and capricious persons who embraced Homoeopathy have run the whole round of pretentious novelties;--have been boarded at water-cure establishments, closeted with uterine and other specialists, and finally wandered over seas to put themselves in charge of foreign celebrities, who dosed them as lustily as they were ever dosed before they took to globules! It will surprise many to learn to what a shadow of a shade Homoeopathy has dwindled in the hands of many of its noted practitioners. The itch-doctrine is treated with contempt. In-

infinitesimal doses are replaced by full ones whenever the fancy-practitioner chooses. Good Homoeopathic reasons can be found for employing anything that anybody wants to employ. Homoeopathy is now merely a name, an unproved theory, and a box of pellets pretending to be specifics, which, as all of us know, fail ignominiously in those cases where we would thankfully sacrifice all our prejudices and give the world to have them true to their promises.

Homoeopathy has not died out so rapidly as Tractoration. Perhaps it was well that it should not, for it has taught us a lesson of the healing faculty of Nature which was needed, and for which many of us have made proper acknowledgments. But it probably does more harm than good to medical science at the present time, by keeping up the delusion of treating everything by specifics,—the old barbarous notion that sick people should feed on poisons [Lachesis, arrow-poison, obtained from a serpent (Pulte). *Crotalus horridus*, rattlesnake's venom (Neidhard). The less dangerous *Pediculus capitis* is the favorite remedy of Dr. Mure, the English "Apostle of Homoeopathy." These are examples of the retrograde current setting towards barbarism] against which a part of the Discourse at the beginning of this volume is directed.

The infinitesimal globules have not become a curiosity as yet, like Perkins's Tractors. But time is a very elastic element in Geology and Prophecy. If Daniel's seventy weeks mean four hundred and ninety years, as the learned Prideaux and others have settled it that they do, the "not many years" of my prediction may be stretched out a generation or two beyond our time, if necessary, when the prophecy will no doubt prove true.

It might be fitting to add a few words with regard to the Essay on the Contagiousness of Puerperal Fever. But the whole question I consider to

be now transferred from the domain of medical inquiry to the consideration of Life Insurance agencies and Grand Juries. For the justification of this somewhat sharply accented language I must refer the reader to the paper itself for details which I regret to have been forced to place on permanent record.

BOSTON, January, 1861.

A SECOND PREFACE

These Lectures and Essays are arranged in the order corresponding to the date of their delivery or publication. They must, of course, be read with a constant reference to these dates, by such as care to read them. I have not attempted to modernize their aspect or character in presenting them, in this somewhat altered connection, to the public. Several of them were contained in a former volume which received its name from the Address called "Currents and Counter-Currents." Some of those contained in the former volume have been replaced by others. The Essay called "Mechanism of Vital Actions" has been transferred to a distinct collection of Miscellaneous essays, forming a separate volume.

I had some intention of including with these papers an Essay on Intermittent Fever in New England, which received one of the Boylston prizes in 1837, and was published in the following year. But as this was upon a subject of local interest, chiefly, and would have taken up a good deal of room, I thought it best to leave it out, trusting that the stray copies to be met with in musty book-shops would sufficiently supply the not very extensive or urgent demand for a paper almost half a century old.

Some of these papers created a little stir when they first fell from the press into the pool of public consciousness. They will slide in very quietly now in this new edition, and find out for themselves whether the waters are those of Lethe, or whether they are to live for a time as not wholly unvalued reminiscences.

March 21, 1883.

Chapter I: Homeopathy and Its Kindred Delusions

[Two lectures delivered before the Boston Society for the Diffusion of Useful Knowledge. 1842.]

[When a physician attempts to convince a person, who has fallen into the Homoeopathic delusion, of the emptiness of its pretensions, he is often answered by a statement of cases in which its practitioners are thought to have effected wonderful cures. The main object of the first of these Lectures is to show, by abundant facts, that such statements, made by persons unacquainted with the fluctuations of disease and the fallacies of observation, are to be considered in general as of little or no value in establishing the truth of a medical doctrine or the utility of a method of practice.

Those kind friends who suggest to a person suffering from a tedious complaint, that he “Had better try Homoeopathy,” are apt to enforce their suggestion by adding, that “at any rate it can do no harm.” This may or may not be true as regards the individual. But it always does very great harm to the community to encourage ignorance, error, or deception in a profession which deals with the life and health of our fellow-creatures. Whether or not those who countenance Homoeopathy are guilty of this injustice towards others, the second of these Lectures may afford them some means of determining.

To deny that good effects may happen from the observance of diet and regimen when prescribed by Homoeopaths as well as by others, would be very unfair to them. But to suppose that men with minds so constituted as to accept such statements and embrace such doctrines as make up the so-called science of Homoeopathy are more competent than others to regulate the circumstances which influence the human body in

health and disease, would be judging very harshly the average capacity of ordinary practitioners.

To deny that some patients may have been actually benefited through the influence exerted upon their imaginations, would be to refuse to Homoeopathy what all are willing to concede to every one of those numerous modes of practice known to all intelligent persons by an opprobrious title.

So long as the body is affected through the mind, no audacious device, even of the most manifestly dishonest character, can fail of producing occasional good to those who yield it an implicit or even a partial faith. The argument founded on this occasional good would be as applicable in justifying the counterfeiter and giving circulation to his base coin, on the ground that a spurious dollar had often relieved a poor man's necessities.

Homoeopathy has come before our public at a period when the growing spirit of eclecticism has prepared many ingenious and honest minds to listen to all new doctrines with a candor liable to degenerate into weakness. It is not impossible that the pretended evolution of great and mysterious virtues from infinitely attenuated atoms may have enticed a few over-refining philosophers, who have slid into a vague belief that matter subdivided grows less material, and approaches nearer to a spiritual nature as it requires a more powerful microscope for its detection.

However this may be, some persons seem disposed to take the ground of Menzel that the Laity must pass formal judgment between the Physician and the Homoeopathist, as it once did between Luther and the Romanists. The practitioner and the scholar must not, therefore, smile at the amount of time and labor expended in these Lectures upon this shadowy

system; which, in the calm and serious judgment of many of the wisest members of the medical profession, is not entitled by anything it has ever said or done to the notoriety of a public rebuke, still less to the honors of critical martyrdom.]

I

I have selected four topics for this lecture, the first three of which I shall touch but slightly, the last more fully. They are

1. The Royal cure of the King's Evil, or Scrofula.
2. The Weapon Ointment, and its twin absurdity, the Sympathetic Powder.
3. The Tar-water mania of Bishop Berkeley.
4. The History of the Metallic Tractors, or Perkinism.

The first two illustrate the ease with which numerous facts are accumulated to prove the most fanciful and senseless extravagances.

The third exhibits the entire insufficiency of exalted wisdom, immaculate honesty, and vast general acquirements to make a good physician of a great bishop.

The fourth shows us the intimate machinery of an extinct delusion, which flourished only forty years ago; drawn in all its details, as being a rich and comparatively recent illustration of the pretensions, the arguments, the patronage, by means of which windy errors have long been, and will long continue to be, swollen into transient consequence. All display in superfluous abundance the boundless credulity and excitability of mankind upon subjects connected with medicine.

“From the time of Edward the Confessor to Queen Anne, the monarchs of England were in the habit of touching those who were brought to them suffering with the scrofula, for the cure of that distemper. William the Third had good sense enough to discontinue the practice, but Anne resumed it, and, among her other patients, performed the royal operation upon a child, who, in spite of his, disease, grew up at last into Samuel Johnson. After laying his hand upon the sufferers, it was customary for the monarch to hang a gold piece around the neck of each patient. Very strict precautions were adopted to prevent those who thought more of the golden angel hung round the neck by a white ribbon, than of relief of their bodily infirmities, from making too many calls, as they sometimes attempted to do. According to the statement of the advocates and contemporaries of this remedy, none ever failed of receiving benefit unless their little faith and credulity starved their merits. Some are said to have been cured immediately on the very touch, others did not so easily get rid of their swellings, until they were touched a second time. Several cases are related, of persons who had been blind for several weeks, and months, and obliged even to be led to Whitehall, yet recovered their sight immediately upon being touched, so as to walk away without any guide.” So widely, at one period, was the belief diffused, that, in the course of twelve years, nearly a hundred thousand persons were touched by Charles the Second. Catholic divines; in disputes upon the orthodoxy of their church, did not deny that the power had descended to protestant princes;--Dr. Harpsfield, in his “Ecclesiastical History of England,” admitted it, and in Wiseman’s words, “when Bishop Tooker would make use of this Argument to prove the Truth of our Church, Smitheus doth not thereupon go about to deny the Matter of fact; nay, both he and Cope acknowledge it.” “I myself,” says Wiseman, the best English surgical writer of his day,[Edinburgh Medical and Surgical Journal, vol. iii.

p. 103.]--“I my self have been a frequent Eye-witness of many hundred of Cures performed by his Majesties Touch alone, without any assistance of Chirurgery; and those, many of them such as had tired out the endeavours of able Chirurgeons before they came hither. It were endless to recite what I myself have seen, and what I have received acknowledgments of by Letter, not only from the severall parts of this Nation, but also from Ireland, Scotland, Jersey, Garnsey. It is needless also to remember what Miracles of this nature were performed by the very Bloud of his late Majesty of Blessed memory, after whose decollation by the inhuman Barbarity of the Regicides, the reliques of that were gathered on Chips and in Handkerchieffs by the pious Devotes, who could not but think so great a suffering in so honourable and pious a Cause, would be attended by an extraordinary assistance of God, and some more then ordinary a miracle: nor did their Faith deceive them in this there point, being so many hundred that found the benefit of it.” [Severall Chirurgicall Treatises. London.1676. p. 246.]

Obstinate and incredulous men, as he tells us, accounted for these cures in three ways: by the journey and change of air the patients obtained in coming to London; by the influence of imagination; and the wearing of gold.

To these objections he answers, 1st. That many of those cured were inhabitants of the city. 2d. That the subjects of treatment were frequently infants. 3d. That sometimes silver was given, and sometimes nothing, yet the patients were cured.

A superstition resembling this probably exists at the present time in some ignorant districts of England and this country. A writer in a Medical Journal in the year 1807, speaks of a farmer in Devonshire, who, being

a ninth son of a ninth son, is thought endowed with healing powers like those of ancient royalty, and who is accustomed one day in every week to strike for the evil.

I remember that one of my schoolmates told me, when a boy, of a seventh son of a seventh son, somewhere in Essex County, who touched for the scrofula, and who used to hang a silver fourpence halfpenny about the neck of those who came to him, which fourpence halfpenny it was solemnly affirmed became of a remarkably black color after having been some time worn, and that his own brother had been subjected to this extraordinary treatment; but I must add that my schoolmate drew a bow of remarkable length, strength, and toughness for his tender years.

One of the most curious examples of the fallacy of popular belief and the uncertainty of asserted facts in medical experience is to be found in the history of the UNGUENTUM ARMARIUM, or WEAPON OINTMENT.

Fabricius Hildanus, whose name is familiar to every surgical scholar, and Lord Bacon, who frequently dipped a little into medicine, are my principal authorities for the few circumstances I shall mention regarding it. The Weapon Ointment was a preparation used for the healing of wounds, but instead of its being applied to them, the injured part was washed and bandaged, and the weapon with which the wound was inflicted was carefully anointed with the unguent. Empirics, ignorant barbers, and men of that sort, are said to have especially employed it. Still there were not wanting some among the more respectable members of the medical profession who supported its claims. The composition of this ointment was complicated, in the different formulæ given by different authorities; but some substances addressed to the imagination, rather than the wound

or weapon, entered into all. Such were portions of mummy, of human blood, and of moss from the skull of a thief hung in chains.

Hildanus was a wise and learned man, one of the best surgeons of his time. He was fully aware that a part of the real secret of the Unguentum Armarium consisted in the washing and bandaging the wound and then letting it alone. But he could not resist the solemn assertions respecting its efficacy; he gave way before the outcry of facts, and therefore, instead of denying all their pretensions, he admitted and tried to account for them upon supernatural grounds. As the virtue of those applications, he says, which are made to the weapon cannot reach the wound, and as they can produce no effect without contact, it follows, of necessity, that the Devil must have a hand in the business; and as he is by far the most long headed and experienced of practitioners, he cannot find this a matter of any great difficulty. Hildanus himself reports, in detail, the case of a lady who had received a moderate wound, for which the Unguentum Armarium was employed without the slightest use. Yet instead of receiving this flat case of failure as any evidence against the remedy, he accounts for its not succeeding by the devout character of the lady, and her freedom from that superstitious and over-imaginative tendency which the Devil requires in those who are to be benefited by his devices.

Lord Bacon speaks of the Weapon Ointment, in his Natural History, as having in its favor the testimony of men of credit, though, in his own language, he himself “as yet is not fully inclined to believe it.” His remarks upon the asserted facts respecting it show a mixture of wise suspicion and partial belief. He does not like the precise directions given as to the circumstances under which the animals from which some of the materials were obtained were to be killed; for he thought it looked like a provision for an excuse in case of failure, by laying the fault to the

omission of some of these circumstances. But he likes well that “they do not observe the confecting of the Ointment under any certain constellation; which is commonly the excuse of magical medicines, when they fail, that they were not made under a fit figure of heaven.” [This was a mistake, however, since the two recipes given by Hildanus are both very explicit as to the aspect of the heavens required for different stages of the process.] “It was pretended that if the offending weapon could not be had, it would serve the purpose to anoint a wooden one made like it.” “This,” says Bacon, “I should doubt to be a device to keep this strange form of cure in request and use; because many times you cannot come by the weapon itself.” And in closing his remarks on the statements of the advocates of the ointment, he says, “Lastly, it will cure a beast as well as a man, which I like best of all the rest, because it subjecteth the matter to an easy trial.” It is worth remembering, that more than two hundred years ago, when an absurd and fantastic remedy was asserted to possess wonderful power, and when sensible persons ascribed its pretended influence to imagination, it was boldly answered that the cure took place when the wounded party did not know of the application made to the weapon, and even when a brute animal was the subject of the experiment, and that this assertion, as we all know it was, came in such a shape as to shake the incredulity of the keenest thinker of his time. The very same assertion has been since repeated in favor of Perkinism, and, since that, of Homoeopathy.

The same essential idea as that of the Weapon Ointment reproduced itself in the still more famous SYMPATHETIC POWDER. This Powder was said to have the faculty, if applied to the blood-stained garments of a wounded person, to cure his injuries, even though he were at a great distance at the time. A friar, returning from the East, brought the recipe

to Europe somewhat before the middle of the seventeenth century. The Grand Duke of Florence, in which city the friar was residing, heard of his cures, and tried, but without success, to obtain his secret. Sir Kenehn Digby, an Englishman well known to fame, was fortunate enough to do him a favor, which wrought upon his feelings and induced him to impart to his benefactor the composition of his extraordinary Powder. This English knight was at different periods of his life an admiral, a theologian, a critic, a metaphysician, a politician, and a disciple of Alchemy. As is not unfrequent with versatile and inflammable people, he caught fire at the first spark of a new medical discovery, and no sooner got home to England than he began to spread the conflagration.

An opportunity soon offered itself to try the powers of the famous powder. Mr. J. Howell, having been wounded in endeavoring to part two of his friends who were fighting a duel, submitted himself to a trial of the Sympathetic Powder. Four days after he received his wounds, Sir Kenehn dipped one of Mr. Howell's gaiters in a solution of the Powder, and immediately, it is said, the wounds, which were very painful, grew easy, although the patient, who was conversing in a corner of the chamber, had not, the least idea of what was doing with his garter. He then returned home, leaving his garter in the hands of Sir Kenelm, who had hung it up to dry, when Mr. Howell sent his servant in a great hurry to tell him that his wounds were paining him horribly; the garter was therefore replaced in the solution of the Powder, "and the patient got well after five or six days of its continued immersion."

King James First, his son Charles the First, the Duke of Buckingham, then prime minister, and all the principal personages of the time, were cognizant of this fact; and James himself, being curious to know the secret of this remedy, asked it of Sir Kenelm, who revealed it to him,

and his Majesty had the opportunity of making several trials of its efficacy, “which all succeeded in a surprising manner.” [Dict. des Sciences Medicales.]

The king’s physician, Dr. Mayerne, was made master of the secret, which he carried to France and communicated to the Duke of Mayenne, who performed many cures by means of it, and taught it to his surgeon, who, after the Duke’s death, sold it to many distinguished persons, by whose agency it soon ceased to be a secret. What was this wonderful substance which so astonished kings, princes, dukes, knights, and doctors? Nothing but powdered blue vitriol. But it was made to undergo several processes that conferred on it extraordinary virtues. Twice or thrice it was to be dissolved, filtered, and crystallized. The crystals were to be laid in the sun during the months of June, July, and August, taking care to turn them carefully that all should be exposed. Then they were to be powdered, triturated, and again exposed to the sun, again reduced to a very fine powder, and secured in a vessel, while hot, from the sunshine. If there seem anything remarkable in the fact of such astonishing properties being developed by this process, it must be from our short-sightedness, for common salt and charcoal develop powers quite as marvellous after a certain number of thumps, stirs, and shakes, from the hands of modern workers of miracles. In fact the Unguentum Armarium and Sympathetic Powder resemble some more recent prescriptions; the latter consisting in an infinite dilution of the common dose in which remedies are given, and the two former in an infinite dilution of the common distance at which they are applied.

Whether philosophers, and more especially metaphysicians, have any peculiar tendency to dabble in drugs and dose themselves with physic, is a question which might suggest itself to the reader of their biographies.

When Bishop Berkeley visited the illustrious Malebranche at Paris, he found him in his cell, cooking in a small pipkin a medicine for an inflammation of the lungs, from which he was suffering; and the disease, being unfortunately aggravated by the vehemence of their discussion, or the contents of the pipkin, carried him off in the course of a few days.

Berkeley himself afforded a remarkable illustration of a truth which has long been known to the members of one of the learned professions, namely, that no amount of talent, or of acquirements in other departments, can rescue from lamentable folly those who, without something of the requisite preparation, undertake to experiment with nostrums upon themselves and their neighbors. The exalted character of Berkeley is thus drawn by Sir James Mackintosh: Ancient learning, exact science, polished society, modern literature, and the fine arts, contributed to adorn and enrich the mind of this accomplished man. All his contemporaries agreed with the satirist in ascribing “To Berkeley every virtue under heaven.’

“Even the discerning, fastidious, and turbulent Atterbury said, after an interview with him, ‘So much understanding, so much knowledge, so much innocence, and such humility, I did not think had been the portion of any but angels, till I saw this gentleman.’”

But among the writings of this great and good man is an Essay of the most curious character, illustrating his weakness upon the point in question, and entitled, “*Siris, a Chain of Philosophical Reflections and Inquiries concerning the Virtues of TAR WATER, and divers other Subjects,*”—an essay which begins with a recipe for his favorite fluid, and slides by gentle gradations into an examination of the sublimest doctrines of Plato. To show how far a man of honesty and benevolence, and with a mind of

singular acuteness and depth, may be run away with by a favorite notion on a subject which his habits and education do not fit him to investigate, I shall give a short account of this Essay, merely stating that as all the supposed virtues of Tar Water, made public in successive editions of his treatise by so illustrious an author, have not saved it from neglect and disgrace, it may be fairly assumed that they were mainly imaginary.

The bishop, as is usual in such cases, speaks of himself as indispensably obliged, by the duty he owes to mankind, to make his experience public. Now this was by no means evident, nor does it follow in general, that because a man has formed a favorable opinion of a person or a thing he has not the proper means of thoroughly understanding, he shall be bound to print it, and thus give currency to his impressions, which may be erroneous, and therefore injurious. He would have done much better to have laid his impressions before some experienced physicians and surgeons, such as Dr. Mead and Mr. Cheselden, to have asked them to try his experiment over again, and have been guided by their answers. But the good bishop got excited; he pleased himself with the thought that he had discovered a great panacea; and having once tasted the bewitching cup of self-quackery, like many before and since his time, he was so infatuated with the draught that he would insist on pouring it down the throats of his neighbors and all mankind.

The precious fluid was made by stirring a gallon of water with a quart of tar, leaving it forty-eight hours, and pouring off the clear water. Such was the specific which the great metaphysician recommended for averting and curing all manner of diseases. It was, if he might be believed, a preventive of the small-pox, and of great use in the course of the disease. It was a cure for impurities of the blood, coughs, pleurisy, peripneumony, erysipelas, asthma, indigestion, carhexia, hysterics, dropsy, mortifica-

tion, scurvy, and hypochondria. It was of great use in gout and fevers, and was an excellent preservative of the teeth and gums; answered all the purpose of Elixir Proprietatis, Stoughton's drops, diet drinks, and mineral waters; was particularly to be recommended to sea-faring persons, ladies, and men of studious and sedentary lives; could never be taken too long, but, on the contrary, produced advantages which sometimes did not begin to show themselves for two or three months.

“From my representing Tar Water as good for so many things,” says Berkeley, “some perhaps may conclude it is good for nothing. But charity obligeth me to say what I know, and what I think, however it may be taken. Men may censure and object as they please, but I appeal to time and experiment. Effects misimputed, cases wrong told, circumstances overlooked, perhaps, too, prejudices and partialities against truth, may for a time prevail and keep her at the bottom of her well, from whence nevertheless she emergeth sooner or later, and strikes the eyes of all who do not keep them shut.” I cannot resist the temptation of illustrating the bishop's belief in the wonderful powers of his remedy, by a few sentences from different parts of his essay. “The hardness of stubbed vulgar constitutions renders them insensible of a thousand things that fret and gall those delicate people, who, as if their skin was peeled off, feel to the quick everything that touches them. The tender nerves and low spirits of such poor creatures would be much relieved by the use of Tar Water, which might prolong and cheer their lives.” “It [the Tar Water] may be made stronger for brute beasts, as horses, in whose disorders I have found it very useful.” “This same water will also give charitable relief to the ladies, who often want it more than the parish poor; being many of them never able to make a good meal, and sitting pale, puny, and forbidden, like ghosts, at their own table, victims of vapors and indigestion.” It does not appear

among the virtues of Tar Water that “children cried for it,” as for some of our modern remedies, but the bishop says, “I have known children take it for above six months together with great benefit, and without any inconvenience; and after long and repeated experience I do esteem it a most excellent diet drink, fitted to all seasons and ages.” After mentioning its usefulness in febrile complaints, he says: “I have had all this confirmed by my own experience in the late sickly season of the year one thousand seven hundred and forty-one, having had twenty-five fevers in my own family cured by this medicinal water, drunk copiously.” And to finish these extracts with a most important suggestion for the improvement of the British nation: “It is much to be lamented that our Insulars who act and think so much for themselves, should yet, from grossness of air and diet, grow stupid or doat sooner than other people, who, by virtue of elastic air, water-drinking, and light food, preserve their faculties to extreme old age; an advantage which may perhaps be approached, if not equaled, even in these regions, by Tar Water, temperance, and early hours.”

Berkeley died at the age of about seventy; he might have lived longer, but his fatal illness was so sudden that there was not time enough to stir up a quart of the panacea. He was an illustrious man, but he held two very odd opinions; that tar water was everything, and that the whole material universe was nothing.

Most of those present have at some time in their lives heard mention made of the METALLIC TRACTORS, invented by one Dr. Perkins, an American, and formerly enjoying great repute for the cure of various diseases. Many have seen or heard of a satirical poem, written by one of our own countrymen also, about forty years since, and called “Terrible Tractoration.” The Metallic Tractors are now so utterly abandoned that I have only by good fortune fallen upon a single one of a pair, to show for

the sake of illustration. For more than thirty years this great discovery, which was to banish at least half the evils which afflict humanity, has been sleeping undisturbed in the grave of oblivion. Not a voice has, for this long period, been raised in its favor; its noble and learned patrons, its public institutions, its eloquent advocates, its brilliant promises are all covered with the dust of silent neglect; and of the generation which has sprung up since the period when it flourished, very few know anything of its history, and hardly even the title which in its palmy days it bore of PERKINISM. Taking it as settled, then, as no one appears to answer for it, that Perkinism is entirely dead and gone, that both in public and private, officially and individually, its former adherents even allow it to be absolutely defunct, I select it for anatomical examination. If this pretended discovery was made public; if it was long kept before the public; if it was addressed to the people of different countries; if it was formally investigated by scientific men, and systematically adopted by benevolent persons, who did everything in their power to diffuse the knowledge and practice of it; if various collateral motives, such as interest and vanity, were embarked in its cause; if, notwithstanding all these things, it gradually sickened and died, then the conclusion seems a fair one, that it did not deserve to live. Contrasting its failure with its high pretensions, it is fair to call it an imposition; whether an expressly fraudulent contrivance or not, some might be ready to question. Everything historically shown to have happened concerning the mode of promulgation, the wide diffusion, the apparent success of this delusion, the respectability and enthusiasm of its advocates, is of great interest in showing to what extent and by what means a considerable part of the community may be led into the belief of that which is to be eventually considered' as an idle folly. If there is any existing folly, fraudulent or innocent in its origin, which appeals to certain arguments for its support; provided that the very same arguments

can be shown to have been used for Perkinism with as good reason, they will at once fall to the ground. Still more, if it shall appear that the general course of any existing delusion bears a strong resemblance to that of Perkinism, that the former is most frequently advocated by the same class of persons who were conspicuous in behalf of the latter, and treated with contempt or opposed by the same kind of persons who thus treated Perkinism; if the facts in favor of both have a similar aspect; if the motives of their originators and propagators may be presumed to have been similar; then there is every reason to suppose that the existing folly will follow in the footsteps of the past, and after displaying a given amount of cunning and credulity in those deceiving and deceived, will drop from the public view like a fruit which has ripened into spontaneous rottenness, and be succeeded by the fresh bloom of some other delusion required by the same excitable portion of the community.

Dr. Elisha Perkins was born at Norwich, Connecticut, in the year 1740. He had practised his profession with a good local reputation for many years, when he fell upon a course of experiments, as it is related, which led to his great discovery. He conceived the idea that metallic substances might have the effect of removing diseases, if applied in a certain manner; a notion probably suggested by the then recent experiments of Galvani, in which muscular contractions were found to be produced by the contact of two metals with the living fibre. It was in 1796 that his discovery was promulgated in the shape of the Metallic Tractors, two pieces of metal, one apparently iron and the other brass, about three inches long, blunt at one end and pointed at the other. These instruments were applied for the cure of different complaints, such as rheumatism, local pains, inflammations, and even tumors, by drawing them over the affected part very lightly for about twenty minutes. Dr. Perkins took out

a patent for his discovery, and travelled about the country to diffuse the new practice. He soon found numerous advocates of his discovery, many of them of high standing and influence. In the year 1798 the tractors had crossed the Atlantic, and were publicly employed in the Royal Hospital at Copenhagen. About the same time the son of the inventor, Mr. Benjamin Douglass Perkins, carried them to London, where they soon attracted attention. The Danish physicians published an account of their cases, containing numerous instances of alleged success, in a respectable octavo volume. In the year 1804 an establishment, honored with the name of the Perkinian Institution, was founded in London. The transactions of this institution were published in pamphlets, the Perkinian Society had public dinners at the Crown and Anchor, and a poet celebrated their medical triumph in strains like these:

“See, pointed metals, blest with power t’ appease

The ruthless rage of merciless disease,
O’er the frail part a subtle fluid pour,
Drenched with invisible Galvanic shower,
Till the arthritic staff and crutch forego,
And leap exulting like the bounding roe!”

While all these things were going on, Mr. Benjamin Douglass Perkins was calmly pocketing money, so that after some half a dozen years he left the country with more than ten thousand pounds, which had been paid him by the believers in Great Britain. But in spite of all this success, and the number of those interested and committed in its behalf, Perkinism soon began to decline, and in 1811 the Tractors are spoken of by an intel-

ligent writer as being almost forgotten. Such was the origin and duration of this doctrine and practice, into the history of which we will now look a little more narrowly.

Let us see, then, by whose agency this delusion was established and kept up; whether it was principally by those who were accustomed to medical pursuits, or those whose habits and modes of reasoning were different; whether it was with the approbation of those learned bodies usually supposed to take an interest in scientific discoveries, or only of individuals whose claims to distinction were founded upon their position in society, or political station, or literary eminence; whether the judicious or excitable classes entered most deeply into it; whether, in short, the scientific men of that time were deceived, or only intruded upon, and shouted down for the moment by persons who had no particular call to invade their precincts.

Not much, perhaps, was to be expected of the Medical Profession in the way of encouragement. One Dr. Fuller, who wrote in England, himself a Perkinist, thus expressed his opinion: "It must be an extraordinary exertion of virtue and humanity for a medical man, whose livelihood depends either on the sale of drugs, or on receiving a guinea for writing a prescription, which must relate to those drugs, to say to his patient, 'You had better purchase a set of Tractors to keep in your family; they will cure you without the expense of my attendance, or the danger of the common medical practice.' For very obvious reasons medical men must never be expected to recommend the use of Perkinism. The Tractors must trust for their patronage to the enlightened and philanthropic out of the profession, or to medical men retired from practice, and who know of no other interest than the luxury of relieving the distressed. And

I do not despair of seeing the day when but very few of this description as well as private families will be without them.”

Whether the motives assigned by this medical man to his professional brethren existed or not, it is true that Dr. Perkins did not gain a great deal at their hands. The Connecticut Medical Society expelled him in 1797 for violating their law against the use of nostrums, or secret remedies. The leading English physicians appear to have looked on with singular apathy or contempt at the miracles which it was pretended were enacting in the hands of the apostles of the new practice. In looking over the reviews of the time, I have found little beyond brief occasional notices of their pretensions; the columns of these journals being occupied with subjects of more permanent interest. The state of things in London is best learned, however, from the satirical poem to which I have already alluded as having been written at the period referred to. This was entitled, “Terrible Tractoration!! A Poetical Petition against Galvanizing Trumpery and the Perkinistic Institution. Most respectfully addressed to the Royal College of Physicians, by Christopher Caustic, M. D., LL. D., A. S. S., Fellow of the Royal College of Physicians, Aberdeen, and Honorary Member of no less than nineteen very learned Societies.” Two editions of this work were published in London in the years 1803 and 1804, and one or two have been published in this country.

“Terrible Tractoration” is supposed, by those who never read it, to be a satire upon the follies of Perkins and his followers. It is, on the contrary, a most zealous defence of Perkinism, and a fierce attack upon its opponents, most especially upon such of the medical profession as treated the subject with neglect or ridicule. The Royal College of Physicians was the more peculiar object of the attack, but with this body, the editors of some of the leading periodicals, and several physicians distinguished at that

time, and even now remembered for their services to science and humanity, were involved in unsparing denunciations. The work is by no means of the simply humorous character it might be supposed, but is overloaded with notes of the most seriously polemical nature. Much of the history of the subject, indeed, is to be looked for in this volume.

It appears from this work that the principal members of the medical profession, so far from hailing Mr. Benjamin Douglass Perkins as another Harvey or Jenner, looked very coldly upon him and his Tractors; and it is now evident that, though they were much abused for so doing, they knew very well what they had to deal with, and were altogether in the right. The delusion at last attracted such an amount of attention as to induce Dr. Haygarth and some others of respectable standing to institute some experiments which I shall mention in their proper place, the result of which might have seemed sufficient to show the emptiness of the whole contrivance.

The Royal Society, that learned body which for ages has constituted the best tribunal to which Britain can appeal in questions of science, accepted Mr. Perkins's Tractors and the book written about them, passed the customary vote of thanks, and never thought of troubling itself further in the investigation of pretensions of such an aspect. It is not to be denied that a considerable number of physicians did avow themselves advocates of the new practice; but out of the whole catalogue of those who were publicly proclaimed as such, no one has ever been known, so far as I am aware, to the scientific world, except in connection with the short-lived notoriety of Perkinism. Who were the people, then, to whose activity, influence, or standing with the community was owing all the temporary excitement produced by the Metallic Tractors?

First, those persons who had been induced to purchase a pair of Tractors. These little bits of brass and iron, the intrinsic value of which might, perhaps, amount to ninepence, were sold at five guineas a pair! A man who has paid twenty-five dollars for his whistle is apt to blow it louder and longer than other people. So it appeared that when the "Perkinean Society" applied to the possessors of Tractors in the metropolis to concur in the establishment of a public institution for the use of these instruments upon the poor, "it was found that only five out of above a hundred objected to subscribe, on account of their want of confidence in the efficacy of the practice; and these," the committee observes, "there is reason to believe, never gave them a fair trial, probably never used them in more than one case, and that perhaps a case in which the Tractors had never been recommended as serviceable." "Purchasers of the Tractors," said one of their ardent advocates, "would be among the last to approve of them if they had reason to suppose themselves defrauded of five guineas." He forgot poor Moses, with his "gross of green spectacles, with silver rims and shagreen cases." "Dear mother," cried the boy, "why won't you listen to reason? I had them a dead bargain, or I should not have bought them. The silver rims alone will sell for double the money."

But it is an undeniable fact, that many persons of considerable standing, and in some instances holding the most elevated positions in society, openly patronized the new practice. In a translation of a work entitled "Experiments with the Metallic Tractors," originally published in Danish, thence rendered successively into German and English, Mr. Benjamin Perkins, who edited the English edition, has given a copious enumeration of the distinguished individuals, both in America and Europe, whose patronage he enjoyed. He goes so far as to signify that ROYALTY itself was to be included among the number. When the Perkinean Insti-

tution was founded, no less a person than Lord Rivers was elected President, and eleven other individuals of distinction, among them Governor Franklin, son of Dr. Franklin, figured as Vice-Presidents. Lord Henniker, a member of the Royal Society, who is spoken of as a man of judgment and talents, condescended to patronize the astonishing discovery, and at different times bought three pairs of Tractors. When the Tractors were introduced into Europe, a large number of testimonials accompanied them from various distinguished characters in America, the list of whom is given in the translation of the Danish work referred to as follows:

“Those who have individually stated cases, or who have presented their names to the public as men who approved of this remedy, and acknowledged themselves instrumental in circulating the Tractors, are fifty-six in number; thirty-four of whom are physicians and surgeons, and many of them of the first eminence, thirteen clergymen, most of whom are doctors of divinity, and connected with the literary institutions of America; among the remainder are two members of Congress, one professor of natural philosophy in a college, etc., etc.” It seemed to be taken rather hardly by Mr. Perkins that the translators of the work which he edited, in citing the names of the advocates of the Metallic Practice, frequently omitted the honorary titles which should have been annexed. The testimonials were obtained by the Danish writer, from a pamphlet published in America, in which these titles were given in full. Thus one of these testimonials is from “John Tyler, Esq., a magistrate in the county of New London, and late Brigadier-General of the militia in that State.” The “omission of the General’s title” is the subject of complaint, as if this title were sufficient evidence of the commanding powers of one of the patrons of tractoration. A similar complaint is made when “Calvin Goddard, Esq., of Plainfield, Attorney at Law, and a member of the Legislature of

the State of Connecticut,” is mentioned without his titular honors, and even on account of the omission of the proper official titles belonging to “Nathan Pierce, Esq., Governor and Manager of the Almshouse of Newburyport.” These instances show the great importance to be attached to civil and military dignities, in qualifying their holders to judge of scientific subjects, a truth which has not been overlooked by the legitimate successors of the Perkinists. In Great Britain, the Tractors were not less honored than in America, by the learned and the illustrious. The “Perkinistic Committee” made this statement in their report: “Mr. Perkins has annually laid before the public a large collection of new cases communicated to him for that purpose by disinterested and intelligent characters, from almost every quarter of Great Britain. In regard to the competency of these vouchers, it will be sufficient simply to state that, amongst others whose names have been attached to their communications, are eight professors, in four different universities, twenty-one regular Physicians, nineteen Surgeons, thirty Clergymen, twelve of whom are Doctors of Divinity, and numerous other characters of equal respectability.”

It cannot but excite our notice and surprise that the number of clergymen both in America and Great Britain who thrust forward their evidence on this medical topic was singularly large in proportion to that of the members of the medical profession. Whole pages are contributed by such worthies as the Rev. Dr. Trotter of Hans Place, the Rear. Waring Willett, Chaplain to the Earl of Dunmore, the Rev. Dr. Clarke, Chaplain to the Prince of Wales. The style of these theologico-medical communications may be seen in the following from a divine who was also professor in one of the colleges of New England. “I have used the Tractors with success in several other cases in my own family, and although, like Naaman the Syrian, I cannot tell why the waters of Jordan should be better than

Abana and Pharpar, rivers of Damascus; yet since experience has proved them so, no reasoning can change the opinion. Indeed, the causes of all common facts are, we think, perfectly well known to us; and it is very probable, fifty or a hundred years hence, we shall as well know why the Metallic Tractors should in a few minutes remove violent pains, as we now know why cantharides and opium will produce opposite effects, namely, we shall know very little about either excepting facts." Fifty or a hundred years hence! if he could have looked forward forty years, he would have seen the descendants of the "Perkinistic" philosophers swallowing infinitesimal globules, and knowing and caring as much about the Tractors as the people at Saratoga Springs do about the waters of Abana and Pharpar.

I trust it will not be thought in any degree disrespectful to a profession which we all honor, that I have mentioned the great zeal of many clergymen in the cause of Perkinism. I hope, too, that I may without offence suggest the causes which have often led them out of their own province into one to which their education has no special reference. The members of that profession ought to be, and commonly are, persons of benevolent character. Their duties carry them into the midst of families, and particularly at times when the members of them are suffering from bodily illness. It is natural enough that a strong desire should be excited to alleviate sufferings which may have defied the efforts of professional skill; as natural that any remedy which recommends itself to the belief or the fancy of the spiritual physician should be applied with the hope of benefit; and perfectly certain that the weakness of human nature, from which no profession is exempt, will lead him to take the most flattering view of its effects upon the patient; his own sagacity and judgment being staked upon the success of the trial. The inventor of the Tractors was

aware of these truths. He therefore sent the Tractors gratuitously to many clergymen, accompanied with a formal certificate that the holder had become entitled to their possession by the payment of five guineas. This was practised in our own neighborhood, and I remember finding one of these certificates, so presented, which proved that amongst the risks of infancy I had to encounter Perkins's Tractors. Two clergymen of Boston and the vicinity, both well known to local fame, gave in their testimony to the value of the instruments thus presented to them; an unusually moderate proportion, when it is remembered that to the common motives of which I have spoken was added the seduction of a gift for which the profane public was expected to pay so largely.

It was remarkable, also, that Perkinism, which had so little success with the medical and scientific part of the community, found great favor in the eyes of its more lovely and less obstinate portion. "The lady of Major Oxholin,"—I quote from Mr. Perkins's volume,—“having been lately in America, had seen and heard much of the great effects of Perkinism. Influenced by a most benevolent disposition, she brought these Tractors and the pamphlet with her to Europe, with a laudable desire of extending their utility to her suffering countrymen.” Such was the channel by which the Tractors were conveyed to Denmark, where they soon became the ruling passion. The workmen, says a French writer, could not manufacture them fast enough. Women carried them about their persons, and delighted in bringing them into general use. To what extent the Tractors were favored with the patronage of English and American ladies, it is of course not easy to say, except on general principles, as their names were not brought before the public. But one of Dr. Haygarth's stories may lead us to conjecture that there was a class of female practitioners who went about doing good with the Tractors in England as well as in Denmark.

A certain lady had the misfortune to have a spot as big as a silver penny at the corner of her eye, caused by a bruise, or some such injury. Another lady, who was a friend of hers, and a strong believer in Perkinism, was very anxious to try the effects of tractoration upon this unfortunate blemish. The patient consented; the lady “produced the instruments, and, after drawing them four or five times over the spot, declared that it changed to a paler color, and on repeating the use of them a few minutes longer, that it had almost vanished, and was scarcely visible, and departed in high triumph at her success.” The lady who underwent the operation assured the narrator “that she looked in the glass immediately after, and that not the least visible alteration had taken place.”

It would be a very interesting question, what was the intellectual character of those persons most conspicuous in behalf of the Perkinistic delusion? Such an inquiry might bring to light some principles which we could hereafter apply to the study of other popular errors. But the obscurity into which nearly all these enthusiasts have subsided renders the question easier to ask than to answer. I believe it would have been found that most of these persons were of ardent temperament and of considerable imagination, and that their history would show that Perkinism was not the first nor the last hobby-horse they rode furiously. Many of them may very probably have been persons of more than common talent, of active and ingenious minds, of versatile powers and various acquirements. Such, for instance, was the estimable man to whom I have repeatedly referred as a warm defender of tractoration, and a bitter assailant of its enemies. The story tells itself in the biographical preface to his poem. He went to London with the view of introducing a hydraulic machine, which he and his Vermont friends regarded as a very important invention. He found, however, that the machine was already in common use in that

metropolis. A brother Yankee, then in London, had started the project of a mill, which was to be carried by the water of the Thames. He was sanguine enough to purchase one fifth of this concern, which also proved a failure. At about the same period he wrote the work which proved the great excitement of his mind upon the subject of the transient folly then before the public. Originally a lawyer, he was in succession a mechanic, a poet, and an editor, meeting with far less success in each of these departments than usually attends men of less varied gifts, but of more tranquil and phlegmatic composition. But who is ignorant that there is a class of minds characterized by qualities like those I have mentioned; minds with many bright and even beautiful traits; but aimless and fickle as the butterfly; that settle upon every gayly-colored illusion as it opens into flower, and flutter away to another when the first has dropped its leaves, and stands naked in the icy air of truth!

Let us now look at the general tenor of the arguments addressed by believers to sceptics and opponents. Foremost of all, emblazoned at the head of every column, loudest shouted by every triumphant disputant, held up as paramount to all other considerations, stretched like an impenetrable shield to protect the weakest advocate of the great cause against the weapons of the adversary, was that omnipotent monosyllable which has been the patrimony of cheats and the currency of dupes from time immemorial,--Facts! Facts! Facts! First came the published cases of the American clergymen, brigadier-generals, almshouse governors, representatives, attorneys, and esquires. Then came the published cases of the surgeons of Copenhagen. Then followed reports of about one hundred and fifty cases published in England, "demonstrating the efficacy of the metallic practice in a variety of complaints both upon the human body and on horses, etc." But the progress of facts in Great Britain did not stop

here. Let those who rely upon the numbers of their testimonials, as being alone sufficient to prove the soundness and stability of a medical novelty, digest the following from the report of the Perkinistic Committee. "The cases published [in Great Britain] amounted, in March last, the date of Mr. Perkins's last publication, to about five thousand. Supposing that not more than one cure in three hundred which the Tractors have performed has been published, and the proportion is probably much greater, it will be seen that the number, to March last, will have exceeded one million five hundred thousand!"

Next in order after the appeal to what were called facts, came a series of arguments, which have been so long bruised and battered round in the cause of every doctrine or pretension, new, monstrous, or deliriously impossible, that each of them is as odiously familiar to the scientific scholar as the faces of so many old acquaintances, among the less reputable classes, to the officers of police.

No doubt many of my hearers will recognize, in the following passages, arguments they may have heard brought forward with triumphant confidence in behalf of some doctrine not yet extinct. No doubt some may have honestly thought they proved something; may have used them with the purpose of convincing their friends, or of silencing the opponents of their favorite doctrine, whatever that might be. But any train of arguments which was contrived for Perkinism, which was just as applicable to it as to any other new doctrine in the same branch of science, and which was fully employed against its adversaries forty years since, might, in common charity, be suffered to slumber in the grave of Perkinism. Whether or not the following sentences, taken literally from the work of Mr. Perkins, were the originals of some of the idle propositions we hear bandied about from time to time, let those who listen judge.

The following is the test assumed for the new practice: “If diseases are really removed, as those persons who have practised extensively with the Tractors declare, it should seem there would be but little doubt of their being generally adopted; but if the numerous reports of their efficacy which have been published are forgeries, or are unfounded, the practice ought to be crushed.” To this I merely add, it has been crushed.

The following sentence applies to that a priori judging and uncandid class of individuals who buy their dinners without tasting all the food there is in the market. “On all discoveries there are persons who, without descending to any inquiry into the truth, pretend to know, as it were by intuition, that newly asserted facts are founded in the grossest errors. These were those who knew that Harvey’s report of the circulation of the blood was a preposterous and ridiculous suggestion, and in latter later days there were others who knew that Franklin deserved reproach for declaring that points were preferable to balls for protecting buildings from lightning.”

Again: “This unwarrantable mode of offering assertion for proof, so unauthorized and even unprecedented except in the condemnation of a Galileo, the persecution of a Copernicus, and a few other acts of inquisitorial authority, in the times of ignorance and superstition, affords but a lamentable instance of one of his remarks, that this is far from being the Age of Reason.”

“The most valuable medicines in the *Materia Medica* act on principles of which we are totally ignorant. None have ever yet been able to explain how opium produces sleep, or how bark cures intermittent fevers; and yet few, it is hoped, will be so absurd as to desist from the use of these important articles because they know nothing of the principle of their

operations.” Or if the argument is preferred, in the eloquent language of the Perkinistic poet:

“What though the CAUSES may not be explained,

 Since these EFFECTS are duly ascertained,

 Let not self-interest, prejudice, or pride,

 Induce mankind to set the means aside;

 Means which, though simple, are by

 Heaven designed to alleviate the woes of human kind.”

This course of argument is so often employed, that it deserves to be expanded a little, so that its length and breadth may be fairly seen. A series of what are called facts is brought forward to prove some very improbable doctrine. It is objected by judicious people, or such as have devoted themselves to analogous subjects, that these assumed facts are in direct opposition to all that is known of the course of nature, that the universal experience of the past affords a powerful presumption against their truth, and that in proportion to the gravity of these objections, should be the number and competence of the witnesses. The answer is a ready one. What do we know of the mysteries of Nature? Do we understand the intricate machinery of the Universe? When to this is added the never-failing quotation,

 “There are more things in heaven and earth, Horatio,

 Than are dreamt of in your philosophy,”—

the question is thought to be finally disposed of.

Take the case of astrology as an example. It is in itself strange and incredible that the relations of the heavenly bodies to each other at a given moment of time, perhaps half a century ago, should have anything to do with my success or misfortune in any undertaking of to-day. But what right have I to say it cannot be so? Can I bind the sweet influences of Pleiades, or loose the bands of Orion? I do not know by what mighty magic the planets roll in their fluid paths, confined to circles as unchanging as if they were rings of steel, nor why the great wave of ocean follows in a sleepless round upon the skirts of moonlight; nor can I say from any certain knowledge that the phases of the heavenly bodies, or even the falling of the leaves of the forest, or the manner in which the sands lie upon the sea-shore, may not be knit up by invisible threads with the web of human destiny. There is a class of minds much more ready to believe that which is at first sight incredible, and because it is incredible, than what is generally thought reasonable. *Credo quia impossibile est*,—"I believe, because it is impossible,"—is an old paradoxical expression which might be literally applied to this tribe of persons. And they always succeed in finding something marvellous, to call out the exercise of their robust faith. The old Cabalistic teachers maintained that there was not a verse, line, word, or even letter in the Bible which had not a special efficacy either to defend the person who rightly employed it, or to injure his enemies; always provided the original Hebrew was made use of. In the hands of modern Cabalists every substance, no matter how inert, acquires wonderful medicinal virtues, provided it be used in a proper state of purity and subdivision.

I have already mentioned the motives attributed by the Perkinists to the Medical Profession, as preventing its members from receiving the new but unwelcome truths. This accusation is repeated in different forms and places, as, for instance, in the following passage: “Will the medical man who has spent much money and labor in the pursuit of the arcana of Physic, and on the exercise of which depends his support in life, proclaim the inefficacy of his art, and recommend a remedy to his patient which the most unlettered in society can employ as advantageously as himself? and a remedy, too, which, unlike the drops, the pills, the powders, etc., of the *Materia Medica*, is inconsumable, and ever in readiness to be employed in successive diseases?”

As usual with these people, much indignation was expressed at any parallel between their particular doctrine and practice and those of their exploded predecessors. “The motives,” says the disinterested Mr. Perkins, “which must have impelled to this attempt at classing the METALLIC PRACTICE with the most paltry of empyrical projects, are but too thinly veiled to escape detection.”

To all these arguments was added, as a matter of course, an appeal to the feelings of the benevolent in behalf of suffering humanity, in the shape of a notice that the poor would be treated gratis. It is pretty well understood that this gratuitous treatment of the poor does not necessarily imply an excess of benevolence, any more than the gratuitous distribution of a trader’s shop-bills is an evidence of remarkable generosity; in short, that

it is one of those things which honest men often do from the best motives, but which rogues and impostors never fail to announce as one of their special recommendations. It is astonishing to see how these things brighten up at the touch of Mr. Perkins's poet:

“Ye worthy, honored, philanthropic few,
The muse shall weave her brightest wreaths for you,
Who in Humanity's bland cause unite,
Nor heed the shaft by interest aimed or spite;
Like the great Pattern of Benevolence,
Hygeia's blessings to the poor dispense;
And though opposed by folly's servile brood,
ENJOY THE LUXURY OF DOING GOOD.”

Having thus sketched the history of Perkinism in its days of prosperity; having seen how it sprung into being, and by what means it maintained its influence, it only remains to tell the brief story of its discomfiture and final downfall. The vast majority of the sensible part of the medical profession were contented, so far as we can judge, to let it die out of itself. It was in vain that the advocates of this invaluable discovery exclaimed over their perverse and interested obstinacy,--in vain that they called up the injured ghosts of Harvey, Galileo, and Copernicus to shame that unbelieving generation; the Baillies and the Heberdens,--men whose names have come down to us as synonymous with honor and wisdom,--bore their reproaches in meek silence, and left them unanswered to their fate. There were some others, however, who, believing the public to labor under a de-

lusion, thought it worth while to see whether the charm would be broken by an open trial of its virtue, as compared with that of some less hallowed formula. It must be remembered that a peculiar value was attached to the Metallic Tractors, as made and patented by Mr. Perkins. Dr. Haygarth, of Bath, performed various experiments upon patients afflicted with different complaints,--the patients supposing that the real five-guinea Tractors were employed. Strange to relate, he obtained equally wonderful effects with Tractors of lead and of wood; with nails, pieces of bone, slate pencil, and tobacco-pipe. Dr. Alderson employed sham Tractors made of wood, and produced such effects upon five patients that they returned solemn thanks in church for their cures. A single specimen of these cases may stand for all of them. Ann Hill had suffered for some months from pain in the right arm and shoulder. The Tractors (wooden ones) were applied, and in the space of five minutes she expressed herself relieved in the following apostrophe: "Bless me! why, who could have thought it, that them little things could pull the pain from one. Well, to be sure, the longer one lives, the more one sees; ah, dear!"

These experiments did not result in the immediate extinction of Perkinism. Doubtless they were a great comfort to many obstinate unbelievers, and helped to settle some sceptical minds; but for the real Perkinistic enthusiasts, it may be questioned whether they would at that time have changed their opinion though one had risen from the dead to assure them that it was an error. It perished without violence, by an easy and natural process. Like the famous toy of Mongolfier, it rose by means of heated air,--the fevered breath of enthusiastic ignorance,--and when this grew cool, as it always does in a little while, it collapsed and fell.

And now, on reviewing the whole subject, how shall we account for the extraordinary prevalence of the belief in Perkinism among a portion of what is supposed to be the thinking part of the community?

Could the cures have been real ones, produced by the principle of ANIMAL MAGNETISM? To this it may be answered that the Perkinists ridiculed the idea of approximating Mesmer and the founder of their own doctrine, that nothing like the somnambulic condition seems to have followed the use of the Tractors, and that neither the exertion of the will nor the powers of the individual who operated seem to have been considered of any consequence. Besides, the absolute neglect into which the Tractors soon declined is good evidence that they were incapable of affording any considerable and permanent relief in the complaints for the cure of which they were applied.

Of course a large number of apparent cures were due solely to nature; which is true under every form of treatment, orthodox or empirical. Of course many persons experienced at least temporary relief from the strong impression made upon their minds by this novel and marvellous method of treatment.

Many, again, influenced by the sanguine hopes of those about them, like dying people, who often say sincerely, from day to day, that they are getting better, cheated themselves into a false and short-lived belief that they were cured; and as happens in such cases, the public never knew more than the first half of the story.

When it was said to the Perkinists, that whatever effects they produced were merely through the imagination, they declared (like the advocates of the ROYAL TOUCH and the UNGUENTUM ARMARIUM) that this explanation was sufficiently disproved by the fact of numerous and

successful cures which had been witnessed in infants and brute animals. Dr. Haygarth replied to this, that “in these cases it is not the Patient, but the Observer, who is deceived by his own imagination,” and that such may be the fact, we have seen in the case of the good lady who thought she had conjured away the spot from her friend’s countenance, when it remained just as before.

As to the motives of the inventor and vender of the Tractors, the facts must be allowed to speak for themselves. But when two little bits of brass and iron are patented, as an invention, as the result of numerous experiments, when people are led, or even allowed, to infer that they are a peculiar compound, when they are artfully associated with a new and brilliant discovery (which then happened to be Galvanism), when they are sold at many hundred times their value, and the seller prints his opinion that a Hospital will suffer inconvenience, “unless it possesses many sets of the Tractors, and these placed in the hands of the patients to practise on each other,” one cannot but suspect that they were contrived in the neighborhood of a wooden nutmeg factory; that legs of ham in that region are not made of the best mahogany; and that such as buy their cucumber seed in that vicinity have to wait for the fruit as long as the Indians for their crop of gunpowder.

The succeeding lecture will be devoted to an examination of the doctrines of Samuel Hahnemann and his disciples; doctrines which some consider new and others old; the common title of which is variously known as Ho-moeopathy, Homoe-op-athy, Homoeo-paith-y, or Hom’pathy, and the claims of which are considered by some as infinitely important, and by many as immeasurably ridiculous.

I wish to state, for the sake of any who may be interested in the subject, that I shall treat it, not by ridicule, but by argument; perhaps with great freedom, but with good temper and in peaceable language; with very little hope of reclaiming converts, with no desire of making enemies, but with a firm belief that its pretensions and assertions cannot stand before a single hour of calm investigation.

II.

It may be thought that a direct attack upon the pretensions of HOMOEOPATHY is an uncalled-for aggression upon an unoffending doctrine and its peaceful advocates.

But a little inquiry will show that it has long assumed so hostile a position with respect to the Medical Profession, that any trouble I, or any other member of that profession, may choose to bestow upon it may be considered merely as a matter of self-defence. It began with an attempt to show the insignificance of all existing medical knowledge. It not only laid claim to wonderful powers of its own, but it declared the common practice to be attended with the most positively injurious effects, that by it acute diseases are aggravated, and chronic diseases rendered incurable. It has at various times brought forward collections of figures having the air of statistical documents, pretending to show a great proportional mortality among the patients of the Medical Profession, as compared with those treated according to its own rules. Not contented with choosing a name of classical origin for itself, it invented one for the whole community of innocent physicians, assuring them, to their great surprise, that they were all ALLOPATHISTS, whether they knew it or not, and including all the illustrious masters of the past, from Hippocrates down to Hunter, under the same gratuitous title. The line, then, has been

drawn by the champions of the new doctrine; they have lifted the lance, they have sounded the charge, and are responsible for any little skirmishing which may happen.

But, independently of any such grounds of active resistance, the subject involves interests so disproportioned to its intrinsic claims, that it is no more than an act of humanity to give it a public examination. If the new doctrine is not truth, it is a dangerous, a deadly error. If it is a mere illusion, and acquires the same degree of influence that we have often seen obtained by other illusions, there is not one of my audience who may not have occasion to deplore the fatal credulity which listened to its promises.

I shall therefore undertake a sober examination of its principles, its facts, and some points of its history. The limited time at my disposal requires me to condense as much as possible what I have to say, but I shall endeavor to be plain and direct in expressing it. Not one statement shall be made which cannot be supported by unimpeachable reference: not one word shall be uttered which I am not as willing to print as to speak. I have no quibbles to utter, and I shall stoop to answer none; but, with full faith in the sufficiency of a plain statement of facts and reasons, I submit the subject to the discernment of my audience.

The question may be asked in the outset,--Have you submitted the doctrines you are professing to examine to the test of long-repeated and careful experiment; have you tried to see whether they were true or not? To this I answer, that it is abundantly evident, from what has often happened, that it would be of no manner of use for me to allege the results of any experiments I might have instituted. Again and again have the most explicit statements been made by the most competent persons of

the utter failure of all their trials, and there were the same abundant explanations offered as used to be for the Unguentum Armarium and the Metallic Tractors. I could by no possibility perform any experiments the result of which could not be easily explained away so as to be of no conclusive significance. Besides, as arguments in favor of Homoeopathy are constantly addressed to the public in journals, pamphlets, and even lectures, by inexperienced dilettanti, the same channel must be open to all its opponents.

It is necessary, for the sake of those to whom the whole subject may be new, to give in the smallest possible compass the substance of the Homoeopathic Doctrine. Samuel Hahnemann, its founder, is a German physician, now living in Paris, [Hahnemann died in 1843.] at the age of eighty-seven years. In 1796 he published the first paper containing his peculiar notions; in 1805 his first work on the subject; in 1810 his somewhat famous "Organon of the Healing Art;" the next year what he called the "Pure Materia Medica;" and in 1828 his last work, the "Treatise on Chronic Diseases." He has therefore been writing at intervals on his favorite subject for nearly half a century.

The one great doctrine which constitutes the basis of Homoeopathy as a system is expressed by the Latin aphorism,

"SIMILIA SIBILIBUS CURANTUR,"

or like cures like, that is, diseases are cured by agents capable of producing symptoms resembling those found in the disease under treatment.

A disease for Hahnemann consists essentially in a group of symptoms. The proper medicine for any disease is the one which is capable of producing a similar group of symptoms when given to a healthy person.

It is of course necessary to know what are the trains of symptoms excited by different substances, when administered to persons in health, if any such can be shown to exist. Hahnemann and his disciples give catalogues of the symptoms which they affirm were produced upon themselves or others by a large number of drugs which they submitted to experiment.

The second great fact which Hahnemann professes to have established is the efficacy of medicinal substances reduced to a wonderful degree of minuteness or dilution. The following account of his mode of preparing his medicines is from his work on Chronic Diseases, which has not, I believe, yet been translated into English. A grain of the substance, if it is solid, a drop if it is liquid, is to be added to about a third part of one hundred grains of sugar of milk in an unglazed porcelain capsule which has had the polish removed from the lower part of its cavity by rubbing it with wet sand; they are to be mingled for an instant with a bone or horn spatula, and then rubbed together for six minutes; then the mass is to be scraped together from the mortar and pestle, which is to take four minutes; then to be again rubbed for six minutes. Four minutes are then to be devoted to scraping the powder into a heap, and the second third of the hundred grains of sugar of milk to be added. Then they are to be stirred an instant and rubbed six minutes,--again to be scraped together four minutes and forcibly rubbed six; once more scraped together for four minutes, when the last third of the hundred grains of sugar of milk is to be added and mingled by stirring with the spatula; six minutes of forcible rubbing, four of scraping together, and six more (positively the last six) of rubbing, finish this part of the process.

Every grain of this powder contains the hundredth of a grain of the medicinal substance mingled with the sugar of milk. If, therefore, a grain of the powder just prepared is mingled with another hundred grains of

sugar of milk, and the process just described repeated, we shall have a powder of which every grain contains the hundredth of the hundredth, or the ten thousandth part of a grain of the medicinal substance. Repeat the same process with the same quantity of fresh sugar of milk, and every grain of your powder will contain the millionth of a grain of the medicinal substance. When the powder is of this strength, it is ready to employ in the further solutions and dilutions to be made use of in practice.

A grain of the powder is to be taken, a hundred drops of alcohol are to be poured on it, the vial is to be slowly turned for a few minutes, until the powder is dissolved, and two shakes are to be given to it. On this point I will quote Hahnemann's own words. "A long experience and multiplied observations upon the sick lead me within the last few years to prefer giving only two shakes to medicinal liquids, whereas I formerly used to give ten." The process of dilution is carried on in the same way as the attenuation of the powder was done; each successive dilution with alcohol reducing the medicine to a hundredth part of the quantity of that which preceded it. In this way the dilution of the original millionth of a grain of medicine contained in the grain of powder operated on is carried successively to the billionth, trillionth, quadrillionth, quintillionth, and very often much higher fractional divisions. A dose of any of these medicines is a minute fraction of a drop, obtained by moistening with them one or more little globules of sugar, of which Hahnemann says it takes about two hundred to weigh a grain.

As an instance of the strength of the medicines prescribed by Hahnemann, I will mention carbonate of lime. He does not employ common chalk, but prefers a little portion of the friable part of an oystershell. Of this substance, carried to the sextillionth degree, so much as one or two globules of the size mentioned can convey is a common dose. But for

persons of very delicate nerves it is proper that the dilution should be carried to the decillionth degree. That is, an important medicinal effect is to be expected from the two hundredth or hundredth part of the millionth of a grain of oyster-shell. This is only the tenth degree of potency, but some of his disciples profess to have obtained palpable effects from “much higher dilutions.”

The third great doctrine of Hahnemann is the following. Seven eighths at least of all chronic diseases are produced by the existence in the system of that infectious disorder known in the language of science by the appellation of PSORA, but to the less refined portion of the community by the name of ITCH. In the words of Hahnemann’s “Organon,” “This Psora is the sole true and fundamental cause that produces all the other countless forms of disease, which, under the names of nervous debility, hysteria, hypochondriasis, insanity, melancholy, idiocy, madness, epilepsy, and spasms of all kinds, softening of the bones, or rickets, scoliosis and cyphosis, caries, cancer, fungua haematodes, gout,--yellow jaundice and cyanosis, dropsy,--” [”The degrees of DILUTION must not be confounded with those of POTENCY. The large figures denote the degrees of POTENCY.]

1st dilution,--One hundredth of a drop or grain.

2d “ One ten thousandth.

3d “ One millionth, marked I.

4th “ One hundred millionth.

- 5th “ One ten thousand millionth.
- 6th “ One million millionth, or one billionth, marked II.
- 7th “ One hundred billionth.
- 8th “ One ten thousand billionth.
- 9th “ One million billionth, or one trillionth, marked III.
- 10th “ One hundred trillionth.
- 11th “ One ten thousand trillionth.
- 12th “ One million trillionth, or one quadrillionth, marked
IV.,--and so on indefinitely.

“Gastralgia, epistaxis, haemoptysis,--asthma and suppuration of the lungs,--megrim, deafness, cataract and amaurosis,--paralysis, loss of sense, pains of every kind, etc., appear in our pathology as so many peculiar, distinct, and independent diseases.”

For the last three centuries, if the same authority may be trusted, under the influence of the more refined personal habits which have prevailed, and the application of various external remedies which repel the affection from the skin; Psora has revealed itself in these numerous forms of internal disease, instead of appearing, as in former periods, under the aspect of an external malady.

These are the three cardinal doctrines of Hahnemann, as laid down in those standard works of Homoeopathy, the “Organon” and the “Treatise on Chronic Diseases.”

Several other principles may be added, upon all of which he insists with great force, and which are very generally received by his disciples.

1. Very little power is allowed to the curative efforts of nature. Hahnemann goes so far as to say that no one has ever seen the simple efforts of nature effect the durable recovery of a patient from a chronic disease. In general, the Homoeopathist calls every recovery which happens under his treatment a cure.
2. Every medicinal substance must be administered in a state of the most perfect purity, and uncombined with any other. The union of several remedies in a single prescription destroys its utility, and, according to the "Organon," frequently adds a new disease.
3. A large number of substances commonly thought to be inert develop great medicinal powers when prepared in the manner already described; and a great proportion of them are ascertained to have specific antidotes in case their excessive effects require to be neutralized.
4. Diseases should be recognized, as far as possible, not by any of the common names imposed upon them, as fever or epilepsy, but as individual collections of symptoms, each of which differs from every other collection.

5. The symptoms of any complaint must be described with the most minute exactness, and so far as possible in the patient's own words. To illustrate the kind of circumstances the patient is expected to record, I will mention one or two from the 313th page of the "Treatise on Chronic Diseases,"—being the first one at which I opened accidentally.

"After dinner, disposition to sleep; the patient winks."

"After dinner, prostration and feeling of weakness (nine days after taking the remedy)."

This remedy was that same oyster-shell which is to be prescribed "fractions of the sextillionth or decillionth degree." According to Hahnemann, the action of a single dose of the size mentioned does not fully display itself in some cases until twenty-four or even thirty days after it is taken, and in such instances has not exhausted its good effects until towards the fortieth or fiftieth day,—before which time it would be absurd and injurious to administer a new remedy.

So much for the doctrines of Hahnemann, which have been stated without comment, or exaggeration of any of their features, very much as any adherent of his opinions might have stated them, if obliged to compress them into so narrow a space.

Does Hahnemann himself represent Homoeopathy as it now exists? He certainly ought to be its best representative, after having created it, and devoted his life to it for half a century. He is spoken of as the great physician of the time, in most, if not all Homoeopathic works. If he is not authority on the subject of his own doctrines, who is? So far as I am aware, not one tangible discovery in the so-called science has ever been ascribed

to any other observer; at least, no general principle or law, of consequence enough to claim any prominence in Homoeopathic works, has ever been pretended to have originated with any of his illustrious disciples. He is one of the only two Homoeopathic writers with whom, as I shall mention, the Paris publisher will have anything to do upon his own account. The other is Jahr, whose Manual is little more than a catalogue of symptoms and remedies. If any persons choose to reject Hahnemann as not in the main representing Homoeopathy, if they strike at his authority, if they wink out of sight his deliberate and formally announced results, it is an act of suicidal rashness; for upon his sagacity and powers of observation, and experience, as embodied in his works, and especially in his *Materia Medica*, repose the foundations of Homoeopathy as a practical system.

So far as I can learn from the conflicting statements made upon the subject, the following is the present condition of belief.

1. All of any note agree that the law *Similia similibus* is the only fundamental principle in medicine. Of course if any man does not agree to this the name Homoeopathist can no longer be applied to him with propriety.
2. The belief in and employment of the infinitesimal doses is general, and in some places universal, among the advocates of Homoeopathy; but a distinct movement has been made in Germany to get rid of any restriction to the use of these doses, and to employ medicines with the same license as other practitioners.

3. The doctrine of the origin of most chronic diseases in Psora, notwithstanding Hahnemann says it cost him twelve years of study and research to establish the fact and its practical consequences, has met with great neglect and even opposition from very many of his own disciples.

It is true, notwithstanding, that, throughout most of their writings which I have seen, there runs a prevailing tone of great deference to Hahnemann's opinions, a constant reference to his authority, a general agreement with the minor points of his belief, and a pretence of harmonious union in a common faith. [Those who will take the trouble to look over Hull's Translation of Jahr's Manual may observe how little comparative space is given to remedies resting upon any other authority than that of Hahnemann.]

Many persons, and most physicians and scientific men, would be satisfied with the statement of these doctrines, and examine them no further. They would consider it vastly more probable that any observer in so fallacious and difficult a field of inquiry as medicine had been led into error, or walked into it of his own accord, than that such numerous and extraordinary facts had really just come to light. They would feel a right to exercise the same obduracy towards them as the French Institute is in the habit of displaying when memoirs or models are offered to it relating to the squaring of the circle or perpetual motion; which it is the rule to pass over without notice. They would feel as astronomers and natural philosophers must have felt when, some half a dozen years ago, an unknown man came forward, and asked for an opportunity to demonstrate to Arago and his colleagues that the moon and planets were at a distance of a little more than a hundred miles from the earth. And so they would not even look into Homoeopathy, though all its advocates

should exclaim in the words of Mr. Benjamin Douglass Perkins, vender of the Metallic Tractors, that “On all discoveries there are persons who, without descending to any inquiry into the truth, pretend to know, as it were by intuition, that newly asserted facts are founded in the grossest errors.” And they would lay their heads upon their pillows with a perfectly clear conscience, although they were assured that they were behaving in the same way that people of old did towards Harvey, Galileo, and Copernicus, the identical great names which were invoked by Mr. Benjamin Douglass Perkins.

But experience has shown that the character of these assertions is not sufficient to deter many, from examining their claims to belief. I therefore lean but very slightly on the extravagance and extreme apparent singularity of their pretensions. I might have omitted them, but on the whole it seemed more just to the claims of my argument to suggest the vast complication of improbabilities involved in the statements enumerated. Every one must of course judge for himself as to the weight of these objections, which are by no means brought forward as a proof of the extravagance of Homoeopathy, but simply as entitled to a brief consideration before the facts of the case are submitted to our scrutiny.

The three great asserted discoveries of Hahnemann are entirely unconnected with and independent of each other. Were there any natural relation between them it would seem probable enough that the discovery of the first would have led to that of the others. But assuming it to be a fact that diseases are cured by remedies capable of producing symptoms like their own, no manifest relation exists between this fact and the next assertion, namely, the power of the infinitesimal doses. And allowing both these to be true, neither has the remotest affinity to the third new

doctrine, that which declares seven eighths of all chronic diseases to be owing to Psora.

This want of any obvious relation between Hahnemann's three cardinal doctrines appears to be self-evident upon inspection. But if, as is often true with his disciples, they prefer the authority of one of their own number, I will refer them to Dr. Trinks's paper on the present state of Homoeopathy in Europe, with which, of course, they are familiar, as his name is mentioned as one of the most prominent champions of their faith, in their American official organ. It would be a fact without a parallel in the history, not merely of medicine, but of science, that three such unconnected and astonishing discoveries, each of them a complete revolution of all that ages of the most varied experience had been taught to believe, should spring full formed from the brain of a single individual.

Let us look a moment at the first of his doctrines. Improbable though it may seem to some, there is no essential absurdity involved in the proposition that diseases yield to remedies capable of producing like symptoms. There are, on the other hand, some analogies which lend a degree of plausibility to the statement. There are well-ascertained facts, known from the earliest periods of medicine, showing that, under certain circumstances, the very medicine which, from its known effects, one would expect to aggravate the disease, may contribute to its relief. I may be permitted to allude, in the most general way, to the case in which the spontaneous efforts of an overtaken stomach are quieted by the agency of a drug which that organ refuses to entertain upon any terms. But that every cure ever performed by medicine should have been founded upon this principle, although without the knowledge of a physician; that the Homoeopathic axiom is, as Hahnemann asserts, "the sole law of nature in therapeutics," a law of which nothing more than a transient glimpse

ever presented itself to the innumerable host of medical observers, is a dogma of such sweeping extent, and pregnant novelty, that it demands a corresponding breadth and depth of unquestionable facts to cover its vast pretensions.

So much ridicule has been thrown upon the pretended powers of the minute doses that I shall only touch upon this point for the purpose of conveying, by illustrations, some shadow of ideas far transcending the powers of the imagination to realize. It must be remembered that these comparisons are not matters susceptible of dispute, being founded on simple arithmetical computations, level to the capacity of any intelligent schoolboy. A person who once wrote a very small pamphlet made some show of objecting to calculations of thus kind, on the ground that the highest dilutions could easily be made with a few ounces of alcohol. But he should have remembered that at every successive dilution he lays aside or throws away ninety-nine hundredths of the fluid on which he is operating, and that, although he begins with a drop, he only prepares a millionth, billionth, trillionth, and similar fractions of it, all of which, added together, would constitute but a vastly minute portion of the drop with which he began. But now let us suppose we take one single drop of the Tincture of Camomile, and that the whole of this were to be carried through the common series of dilutions.

A calculation nearly like the following was made by Dr. Panvini, and may be readily followed in its essential particulars by any one who chooses.

For the first dilution it would take 100 drops of alcohol.

For the second dilution it would take 10;000 drops, or about a pint.

For the third dilution it would take 100 pints.

For the fourth dilution it would take 10,000 pints, or more than 1,000 gallons, and so on to the ninth dilution, which would take ten billion gallons, which he computed would fill the basin of Lake Agnano, a body of water two miles in circumference. The twelfth dilution would of course fill a million such lakes. By the time the seventeenth degree of dilution should be reached, the alcohol required would equal in quantity the waters of ten thousand Adriatic seas. Trifling errors must be expected, but they are as likely to be on one side as the other, and any little matter like Lake Superior or the Caspian would be but a drop in the bucket.

Swallowers of globules, one of your little pellets, moistened in the mingled waves of one million lakes of alcohol, each two miles in circumference, with which had been blended that one drop of Tincture of Camomile, would be of precisely the strength recommended for that medicine in your favorite Jahr's Manual, "against the most sudden, frightful, and fatal diseases!" [In the French edition of 1834, the proper doses of the medicines are mentioned, and Camomile is marked IV. Why are the doses omitted in Hull's Translation, except in three instances out of the whole two hundred remedies, notwithstanding the promise in the preface that "some remarks upon the doses used may be found at the head of each medicine"? Possibly because it makes no difference whether they are employed in one Homoeopathic dose or another; but then it is very singular that such precise directions were formerly given in the same work, and that Hahnemann's "experience" should have led him to draw the nice distinctions we have seen in a former part of this Lecture (p. 44).]

And proceeding on the common data, I have just made a calculation which shows that this single drop of Tincture of Camomile, given in the quantity ordered by Jahr's Manual, would have supplied every individual

of the whole human family, past and present, with more than five billion doses each, the action of each dose lasting about four days.

Yet this is given only at the quadrillionth, or fourth degree of potency, and various substances are frequently administered at the decillionth or tenth degree, and occasionally at still higher attenuations with professed medicinal results. Is there not in this as great an exception to all the hitherto received laws of nature as in the miracle of the loaves and fishes? Ask this question of a Homoeopathist, and he will answer by referring to the effects produced by a very minute portion of vaccine matter, or the extraordinary diffusion of odors. But the vaccine matter is one of those substances called morbid poisons, of which it is a peculiar character to multiply themselves, when introduced into the system, as a seed does in the soil. Therefore the hundredth part of a grain of the vaccine matter, if no more than this is employed, soon increases in quantity, until, in the course of about a week, it is a grain or more, and can be removed in considerable drops. And what is a very curious illustration of Homoeopathy, it does not produce its most characteristic effects until it is already in sufficient quantity not merely to be visible, but to be collected for further use. The thoughtlessness which can allow an inference to be extended from a product of disease possessing this susceptibility of multiplication when conveyed into the living body, to substances of inorganic origin, such as silex or sulphur, would be capable of arguing that a pebble may produce a mountain, because an acorn can become a forest.

As to the analogy to be found between the alleged action of the infinitely attenuated doses, and the effects of some odorous substances which possess the extraordinary power of diffusing their imponderable emanations through a very wide space, however it may be abused in argument, and rapidly as it evaporates on examination, it is not like that just mentioned,

wholly without meaning. The fact of the vast diffusion of some odors, as that of musk or the rose, for instance, has long been cited as the most remarkable illustration of the divisibility of matter, and the nicety of the senses. And if this were compared with the effects of a very minute dose of morphia on the whole system, or the sudden and fatal impression of a single drop of prussic acid, or, with what comes still nearer, the poisonous influence of an atmosphere impregnated with invisible malaria, we should find in each of these examples an evidence of the degree to which nature, in some few instances, concentrates powerful qualities in minute or subtile forms of matter. But if a man comes to me with a pestle and mortar in his hand, and tells me that he will take a little speck of some substance which nobody ever thought to have any smell at all, as, for instance, a grain of chalk or of charcoal, and that he will, after an hour or two of rubbing and scraping, develop in a portion of it an odor which, if the whole grain were used, would be capable of pervading an apartment, a house, a village, a province, an empire, nay, the entire atmosphere of this broad planet upon which we tread; and that from each of fifty or sixty substances he can in this way develop a distinct and hitherto unknown odor: and if he tries to show that all this is rendered quite reasonable by the analogy of musk and roses, I shall certainly be justified in considering him incapable of reasoning, and beyond the reach of my argument. What if, instead of this, he professes to develop new and wonderful medicinal powers from the same speck of chalk or charcoal, in such proportions as would impregnate every pond, lake, river, sea, and ocean of our globe, and appeals to the same analogy in favor of the probability of his assertion.

All this may be true, notwithstanding these considerations. But so extraordinary would be the fact, that a single atom of substances which a child might swallow without harm by the teaspoonful could, by an easy mechanical process, be made to develop such inconceivable powers, that nothing but the strictest agreement of the most cautious experimenters, secured by every guaranty that they were honest and faithful, appealing to repeated experiments in public, with every precaution to guard against error, and with the most plain and peremptory results, should induce us to lend any credence to such pretensions.

The third doctrine, that Psora, the other name of which you remember, is the cause of the great majority of chronic diseases, is a startling one, to say the least. That an affection always recognized as a very unpleasant personal companion, but generally regarded as a mere temporary incommodity, readily yielding to treatment in those unfortunate enough to suffer from it, and hardly known among the better classes of society, should be all at once found out by a German physician to be the great scourge of mankind, the cause of their severest bodily and mental calamities, cancer and consumption, idiocy and madness, must excite our unqualified surprise. And when the originator of this singular truth ascribes, as in the page now open before me, the declining health of a disgraced courtier, the chronic malady of a bereaved mother, even the melancholy of the love-sick and slighted maiden, to nothing more nor less than the insignificant, unseemly, and almost unmentionable ITCH, does it not seem as if the very soil upon which we stand were dissolving into chaos, over the earthquake-heaving of discovery?

And when one man claims to have established these three independent truths, which are about as remote from each other as the discovery of the law of gravitation, the invention of printing, and that of the mariner's

compass, unless the facts in their favor are overwhelming and unanimous, the question naturally arises, Is not this man deceiving himself, or trying to deceive others?

I proceed to examine the proofs of the leading ideas of Hahnemann and his school.

In order to show the axiom, *similia similibus curantur* (or like is cured by like), to be the basis of the healing art,—“the sole law of nature in therapeutics,”—it is necessary,

1. That the symptoms produced by drugs in healthy persons should be faithfully studied and recorded.
2. That drugs should be shown to be always capable of curing those diseases most like their own symptoms.
3. That remedies should be shown not to cure diseases when they do not produce symptoms resembling those presented in these diseases.

The effects of drugs upon healthy persons have been studied by Hahnemann and his associates. Their results were made known in his *Materia Medica*, a work in three large volumes in the French translation, published about eight years ago. The mode of experimentation appears to have been, to take the substance on trial, either in common or minute doses, and then to set down every little sensation, every little movement of mind or body, which occurred within many succeeding hours or days, as being produced solely by the substance employed. When I have enumerated some of the symptoms attributed to the power of the drugs taken, you will be able to judge how much value is to be ascribed to the assertions of such observers.

The following list was taken literally from the *Materia Medica* of Hahnemann, by my friend M. Vernois, for whose accuracy I am willing to be responsible. He has given seven pages of these symptoms, not selected, but taken at hazard from the French translation of the work. I shall be very brief in my citations.

“After stooping some time, sense of painful weight about the head upon resuming the erect posture.”

“An itching, tickling sensation at the outer edge of the palm of the left hand, which obliges the person to scratch.” The medicine was acetate of lime, and as the action of the globule taken is said to last twenty-eight days, you may judge how many such symptoms as the last might be supposed to happen.

Among the symptoms attributed to muriatic acid are these: a catarrh, sighing, pimples; “after having written a long time with the back a little bent over, violent pain in the back and shoulder-blades, as if from a strain,” — “dreams which are not remembered,--disposition to mental dejection,--wakefulness before and after midnight.”

I might extend this catalogue almost indefinitely. I have not cited these specimens with any view to exciting a sense of the ridiculous, which many others of those mentioned would not fail to do, but to show that the common accidents of sensation, the little bodily inconveniences to which all of us are subject, are seriously and systematically ascribed to whatever medicine may have been exhibited, even in the minute doses I have mentioned, whole days or weeks previously.

To these are added all the symptoms ever said by anybody, whether deserving confidence or not, as I shall hereafter illustrate, to be produced by the substance in question.

The effects of sixty-four medicinal substances, ascertained by one or both of these methods, are enumerated in the *Materia Medica* of Hahnemann, which may be considered as the basis of practical Homoeopathy. In the *Manual of Jahr*, which is the common guide, so far as I know, of those who practise Homoeopathy in these regions, two hundred remedies are enumerated, many of which, however, have never been employed in practice. In at least one edition there were no means of distinguishing those which had been tried upon the sick from the others. It is true that marks have been added in the edition employed here, which serve to distinguish them; but what are we to think of a standard practical author on *Materia Medica*, who at one time omits to designate the proper doses of his remedies, and at another to let us have any means of knowing whether a remedy has ever been tried or not, while he is recommending its employment in the most critical and threatening diseases?

I think that, from what I have shown of the character of Hahnemann's experiments, it would be a satisfaction to any candid inquirer to know whether other persons, to whose assertions he could look with confidence, confirm these pretended facts. Now there are many individuals, long and well known to the scientific world, who have tried these experiments upon healthy subjects, and utterly deny that their effects have at all corresponded to Hahnemann's assertions.

I will take, for instance, the statements of Andral (and I am not referring to his well-known public experiments in his hospital) as to the result of his own trials. This distinguished physician is Professor of Medicine in

the School of Paris, and one of the most widely known and valued authors upon practical and theoretical subjects the profession can claim in any country. He is a man of great kindness of character, a most liberal eclectic by nature and habit, of unquestioned integrity, and is called, in the leading article of the first number of the "Homoeopathic Examiner," "an eminent and very enlightened allopathist." Assisted by a number of other persons in good health, he experimented on the effects of cinchona, aconite, sulphur, arnica, and the other most highly extolled remedies. His experiments lasted a year, and he stated publicly to the Academy of Medicine that they never produced the slightest appearance of the symptoms attributed to them. The results of a man like this, so extensively known as one of the most philosophical and candid, as well as brilliant of instructors, and whose admirable abilities and signal liberality are generally conceded, ought to be of great weight in deciding the question.

M. Double, a well-known medical writer and a physician of high standing in Paris, had occasion so long ago as 1801, before he had heard of Homoeopathy, to make experiments upon Cinchona, or Peruvian bark. He and several others took the drug in every kind of dose for four months, and the fever it is pretended by Hahnemann to excite never was produced.

M. Bonnet, President of the Royal Society of Medicine of Bordeaux, had occasion to observe many soldiers during the Peninsular War, who made use of Cinchona as a preservative against different diseases, but he never found it to produce the pretended paroxysms.

If any objection were made to evidence of this kind, I would refer to the express experiments on many of the Homoeopathic substances, which were given to healthy persons with every precaution as to diet and regi-

men, by M. Louis Fleury, without being followed by the slightest of the pretended consequences. And let me mention as a curious fact, that the same quantity of arsenic given to one animal in the common form of the unprepared powder, and to another after having been rubbed up into six hundred globules, offered no particular difference of activity in the two cases.

This is a strange contradiction to the doctrine of the development of what they call dynamic power, by means of friction and subdivision.

In 1835 a public challenge was offered to the best known Homoeopathic physician in Paris to select any ten substances asserted to produce the most striking effects; to prepare them himself; to choose one by lot without knowing which of them he had taken, and try it upon himself or any intelligent and devoted Homoeopathist, and, waiting his own time, to come forward and tell what substance had been employed. The challenge was at first accepted, but the acceptance retracted before the time of trial arrived.

From all this I think it fair to conclude that the catalogues of symptoms attributed in Homoeopathic works to the influence of various drugs upon healthy persons are not entitled to any confidence.

It is necessary to show, in the next place, that medicinal substances are always capable of curing diseases most like their own symptoms. For facts relating to this question we must look to two sources; the recorded experience of the medical profession in general, and the results of trials made according to Homoeopathic principles, and capable of testing the truth of the doctrine.

No person, that I am aware of, has ever denied that in some cases there exists a resemblance between the effects of a remedy and the symptoms of diseases in which it is beneficial. This has been recognized, as Hahnemann himself has shown, from the time of Hippocrates. But according to the records of the medical profession, as they have been hitherto interpreted, this is true of only a very small proportion of useful remedies. Nor has it ever been considered as an established truth that the efficacy of even these few remedies was in any definite ratio to their power of producing symptoms more or less like those they cured.

Such was the state of opinion when Hahnemann came forward with the proposition that all the cases of successful treatment found in the works of all preceding medical writers were to be ascribed solely to the operation of the Homoeopathic principle, which had effected the cure, although without the physician's knowledge that this was the real secret. And strange as it may seem, he was enabled to give such a degree of plausibility to this assertion, that any person not acquainted somewhat with medical literature, not quite familiar, I should rather say, with the relative value of medical evidence, according to the sources whence it is derived, would be almost frightened into the belief, at seeing the pages upon pages of Latin names he has summoned as his witnesses.

It has hitherto been customary, when examining the writings of authors of preceding ages, upon subjects as to which they were less enlightened than ourselves, and which they were very liable to misrepresent, to exercise some little discretion; to discriminate, in some measure, between writers deserving confidence and those not entitled to it. But there is not the least appearance of any such delicacy on the part of Hahnemann. A large majority of the names of old authors he cites are wholly unknown to science. With some of them I have been long acquainted, and I know that

their accounts of diseases are no more to be trusted than their contemporary Ambroise Pare's stories of mermaids, and similar absurdities. But if my judgment is rejected, as being a prejudiced one, I can refer to Cullen, who mentioned three of Hahnemann's authors in one sentence, as being "not necessarily bad authorities; but certainly such when they delivered very improbable events;" and as this was said more than half a century ago, it could not have had any reference to Hahnemann. But although not the slightest sign of discrimination is visible in his quotations,--although for him a handful of chaff from Schenck is all the same thing as a measure of wheat from Morgagni,--there is a formidable display of authorities, and an abundant proof of ingenious researches to be found in each of the great works of Hahnemann with which I am familiar. [Some painful surmises might arise as to the erudition of Hahnemann's English Translator, who makes two individuals of "Zacutus, Lucitanus," as well as respecting that of the conductors of an American Homoeopathic periodical, who suffer the name of the world-renowned Cardanus to be spelt Cardamus in at least three places, were not this gross ignorance of course attributable only to the printer.]

It is stated by Dr. Leo-Wolf, that Professor Joerg, of Leipsic, has proved many of Hahnemann's quotations from old authors to be adulterate and false. What particular instances he has pointed out I have no means of learning. And it is probably wholly impossible on this side of the Atlantic, and even in most of the public libraries of Europe, to find anything more than a small fraction of the innumerable obscure publications which the neglect of grocers and trunkmakers has spared to be ransacked by the all-devouring genius of Homoeopathy. I have endeavored to verify such passages as my own library afforded me the means of doing. For some I have looked in vain, for want, as I am willing to believe, of more exact

references. But this I am able to affirm, that, out of the very small number which I have been able, to trace back to their original authors, I have found two to be wrongly quoted, one of them being a gross misrepresentation.

The first is from the ancient Roman author, Caelius Aurelianus; the second from the venerable folio of Forestus. Hahnemann uses the following expressions,—if he is not misrepresented in the English Translation of the ‘Organon’: “Asclepiades on one occasion cured an inflammation of the brain by administering a small quantity of wine.” After correcting the erroneous reference of the Translator, I can find no such case alluded to in the chapter. But Caelius Aurelianus mentions two modes of treatment employed by Asclepiades, into both of which the use of wine entered, as being “in the highest degree irrational and dangerous.” [Caelius Aurel. De Morb. Acut. et Chron. lib. I. cap. xv. not xvi. Amsterdam. Wetstein, 1755.]

In speaking of the oil of anise-seed, Hahnemann says that Forestus observed violent colic caused by its administration. But, as the author tells the story, a young man took, by the counsel of a surgeon, an acrid and virulent medicine, the name of which is not given, which brought on a most cruel fit of the gripes and colic. After this another surgeon was called, who gave him oil of anise-seed and wine, “which increased his suffering.” [Observ. et Curat. Med. lib. XXI obs. xiii. Frankfort, 1614.] Now if this was the Homoeopathic remedy, as Hahnemann pretends, it might be a fair question why the young man was not cured by it. But it is a much graver question why a man who has shrewdness and learning enough to go so far after his facts, should think it right to treat them with such astonishing negligence or such artful unfairness.

Even if every word he had pretended to take from his old authorities were to be found in them, even if the authority of every one of these authors were beyond question, the looseness with which they are used to prove whatever Hahnemann chooses is beyond the bounds of credibility. Let me give one instance to illustrate the character of this man's mind. Hahnemann asserts, in a note annexed to the 110th paragraph of the "Organon," that the smell of the rose will cause certain persons to faint. And he says in the text that substances which produce peculiar effects of this nature on particular constitutions cure the same symptoms in people in general. Then in another note to the same paragraph he quotes the following fact from one of the last sources one would have looked to for medical information, the Byzantine Historians.

"It was by these means (i.e. Homoeopathically) that the Princess Eudisia with rose-water restored a person who had fainted!"

Is it possible that a man who is guilty of such pedantic folly as this,--a man who can see a confirmation of his doctrine in such a recovery as this,--a recovery which is happening every day, from a breath of air, a drop or two of water, untying a bonnet-string, loosening a stay-lace, and which can hardly help happening, whatever is done,--is it possible that a man, of whose pages, not here and there one, but hundreds upon hundreds are loaded with such trivialities, is the Newton, the Columbus, the Harvey of the nineteenth century!

The whole process of demonstration he employs is this. An experiment is instituted with some drug upon one or more healthy persons. Everything that happens for a number of days or weeks is, as we have seen, set down as an effect of the medicine. Old volumes are then ransacked promiscuously, and every morbid sensation or change that anybody ever said was

produced by the drug in question is added to the list of symptoms. By one or both of these methods, each of the sixty-four substances enumerated by Hahnemann is shown to produce a very large number of symptoms, the lowest in his scale being ninety-seven, and the highest fourteen hundred and ninety-one. And having made out this list respecting any drug, a catalogue which, as you may observe in any Homoeopathic manual, contains various symptoms belonging to every organ of the body, what can be easier than to find alleged cures in every medical author which can at once be attributed to the Homoeopathic principle; still more if the grave of extinguished credulity is called upon to give up its dead bones as living witnesses; and worst of all, if the monuments of the past are to be mutilated in favor of “the sole law of Nature in therapeutics”?

There are a few familiar facts of which great use has been made as an entering wedge for the Homoeopathic doctrine. They have been suffered to pass current so long that it is time they should be nailed to the counter, a little operation which I undertake, with perfect cheerfulness, to perform for them.

The first is a supposed illustration of the Homoeopathic law found in the precept given for the treatment of parts which have been frozen, by friction with snow or similar means. But we deceive ourselves by names, if we suppose the frozen part to be treated by cold, and not by heat. The snow may even be actually warmer than the part to which it is applied. But even if it were at the same temperature when applied, it never did and never could do the least good to a frozen part, except as a mode of regulating the application of what? of heat. But the heat must be applied gradually, just as food must be given a little at a time to those perishing with hunger. If the patient were brought into a warm room, heat would be applied very rapidly, were not something interposed to prevent this,

and allow its gradual admission. Snow or iced water is exactly what is wanted; it is not cold to the part; it is very possibly warm, on the contrary, for these terms are relative, and if it does not melt and let the heat in, or is not taken away, the part will remain frozen up until doomsday. Now the treatment of a frozen limb by heat, in large or small quantities, is not Homoeopathy.

The next supposed illustration of the Homoeopathic law is the alleged successful management of burns, by holding them to the fire. This is a popular mode of treating those burns which are of too little consequence to require any more efficacious remedy, and would inevitably get well of themselves, without any trouble being bestowed upon them. It produces a most acute pain in the part, which is followed by some loss of sensibility, as happens with the eye after exposure to strong light, and the ear after being subjected to very intense sounds. This is all it is capable of doing, and all further notions of its efficacy must be attributed merely to the vulgar love of paradox. If this example affords any comfort to the Homoeopathist, it seems as cruel to deprive him of it as it would be to convince the mistress of the smoke-jack or the flatiron that the fire does not literally “draw the fire out,” which is her hypothesis.

But if it were true that frost-bites were cured by cold and burns by heat, it would be subversive, so far as it went, of the great principle of Homoeopathy.

For you will remember that this principle is that Like cures Like, and not that Same cures Same; that there is resemblance and not identity between the symptoms of the disease and those produced by the drug which cures it, and none have been readier to insist upon this distinction than the Homoeopathists themselves. For if Same cures Same, then every

poison must be its own antidote,--which is neither a part of their theory nor their so-called experience. They have been asked often enough, why it was that arsenic could not cure the mischief which arsenic had caused, and why the infectious cause of small-pox did not remedy the disease it had produced, and then they were ready enough to see the distinction I have pointed out. O no! it was not the hair of the same dog, but only of one very much like him!

A third instance in proof of the Homoeopathic law is sought for in the acknowledged efficacy of vaccination. And how does the law apply to this? It is granted by the advocates of Homoeopathy that there is a resemblance between the effects of the vaccine virus on a person in health and the symptoms of small-pox. Therefore, according to the rule, the vaccine virus will cure the small-pox, which, as everybody knows, is entirely untrue. But it prevents small-pox, say the Homoeopaths. Yes, and so does small-pox prevent itself from ever happening again, and we know just as much of the principle involved in the one case as in the other. For this is only one of a series of facts which we are wholly unable to explain. Small-pox, measles, scarlet-fever, hooping-cough, protect those who have them once from future attacks; but nettle-rash and catarrh and lung fever, each of which is just as Homoeopathic to itself as any one of the others, have no such preservative power. We are obliged to accept the fact, unexplained, and we can do no more for vaccination than for the rest.

I come now to the most directly practical point connected with the subject, namely,--

What is the state of the evidence as to the efficacy of the proper Homoeopathic treatment in the cure of diseases.

As the treatment adopted by the Homoeopaths has been almost universally by means of the infinitesimal doses, the question of their efficacy is thrown open, in common with that of the truth of their fundamental axiom, as both are tested in practice.

We must look for facts as to the actual working of Homoeopathy to three sources.

1. The statements of the unprofessional public.
2. The assertions of Homoeopathic practitioners.
3. The results of trials by competent and honest physicians, not pledged to the system.

I think, after what we have seen of medical facts, as they are represented by incompetent persons, we are disposed to attribute little value to all statements of wonderful cures, coming from those who have never been accustomed to watch the caprices of disease, and have not cooled down their young enthusiasm by the habit of tranquil observation. Those who know nothing of the natural progress of a malady, of its ordinary duration, of its various modes of terminating, of its liability to accidental complications, of the signs which mark its insignificance or severity, of what is to be expected of it when left to itself, of how much or how little is to be anticipated from remedies, those who know nothing or next to nothing of all these things, and who are in a great state of excitement from benevolence, sympathy, or zeal for a new medical discovery, can hardly be expected to be sound judges of facts which have misled so many sagacious men, who have spent their lives in the daily study and observation of them. I believe that, after having drawn the portrait of defunct Perkinism, with its five thousand printed cures, and its million

and a half computed ones, its miracles blazoned about through America, Denmark, and England; after relating that forty years ago women carried the Tractors about in their pockets, and workmen could not make them fast enough for the public demand; and then showing you, as a curiosity, a single one of these instruments, an odd one of a pair, which I obtained only by a lucky accident, so utterly lost is the memory of all their wonderful achievements; I believe, after all this, I need not waste time in showing that medical accuracy is not to be looked for in the florid reports of benevolent associations, the assertions of illustrious patrons, the lax effusions of daily journals, or the effervescent gossip of the tea-table.

Dr. Hering, whose name is somewhat familiar to the champions of Homeopathy, has said that “the new healing art is not to be judged by its success in isolated cases only, but according to its success in general, its innate truth, and the incontrovertible nature of its innate principles.”

We have seen something of “the incontrovertible nature of its innate principles,” and it seems probable, on the whole, that its success in general must be made up of its success in isolated cases. Some attempts have been made, however, to finish the whole matter by sweeping statistical documents, which are intended to prove its triumphant success over the common practice.

It is well known to those who have had the good fortune to see the “Homeopathic Examiner,” that this journal led off, in its first number, with a grand display of everything the newly imported doctrine had to show for itself. It is well remarked, on the twenty-third page of this article, that “the comparison of bills of mortality among an equal number of sick, treated by divers methods, is a most poor and lame way to get at conclu-

sions touching principles of the healing art.” In confirmation of which, the author proceeds upon the twenty-fifth page to prove the superiority of the Homoeopathic treatment of cholera, by precisely these very bills of mortality. Now, every intelligent physician is aware that the poison of cholera differed so much in its activity at different times and, places, that it was next to impossible to form any opinion as to the results of treatment, unless every precaution was taken to secure the most perfectly corresponding conditions in the patients treated, and hardly even then. Of course, then, a Russian Admiral, by the name of Mordvinov, backed by a number of so-called physicians practising in Russian villages, is singularly competent to the task of settling the whole question of the utility of this or that kind of treatment; to prove that, if not more than eight and a half per cent. of those attacked with the disease perished, the rest owed their immunity to Hahnemann. I can remember when more than a hundred patients in a public institution were attacked with what, I doubt not, many Homoeopathic physicians (to say nothing of Homoeopathic admirals) would have called cholera, and not one of them died, though treated in the common way, and it is my firm belief that, if such a result had followed the administration of the omnipotent globules, it would have been in the mouth of every adept in Europe, from Quin of London to Spohr of Gandersheim. No longer ago than yesterday, in one of the most widely circulated papers of this city, there was published an assertion that the mortality in several Homoeopathic Hospitals was not quite five in a hundred, whereas, in what are called by the writer Allopathic Hospitals, it is said to be eleven in a hundred. An honest man should be ashamed of such an argumentum ad ignorantiam. The mortality of a hospital depends not merely on the treatment of the patients, but on the class of diseases it is in the habit of receiving, on the place where it is, on the season, and many other circumstances.

For instance, there are many hospitals in the great cities of Europe that receive few diseases of a nature to endanger life, and, on the other hand, there are others where dangerous diseases are accumulated out of the common proportion. Thus, in the wards of Louis, at the Hospital of La Pitie, a vast number of patients in the last stages of consumption were constantly entering, to swell the mortality of that hospital. It was because he was known to pay particular attention to the diseases of the chest that patients laboring under those fatal affections to an incurable extent were so constantly coming in upon him. It is always a miserable appeal to the thoughtlessness of the vulgar, to allege the naked fact of the less comparative mortality in the practice of one hospital or of one physician than another, as an evidence of the superiority of their treatment. Other things being equal, it must always be expected that those institutions and individuals enjoying to the highest degree the confidence of the community will lose the largest proportion of their patients; for the simple reason that they will naturally be looked to by those suffering from the gravest class of diseases; that many, who know that they are affected with mortal disease, will choose to die under their care or shelter, while the subjects of trifling maladies, and merely troublesome symptoms, amuse themselves to any extent among the fancy practitioners. When, therefore, Dr. Mublenbein, as stated in the "Homoeopathic Examiner," and quoted in yesterday's "Daily Advertiser," asserts that the mortality among his patients is only one per cent. since he has practised Homoeopathy, whereas it was six per cent. when he employed the common mode of practice, I am convinced by this, his own statement, that the citizens of Brunswick, whenever they are seriously sick, take good care not to send for Dr. Muhlenbein!

It is evidently impossible that I should attempt, within the compass of a single lecture, any detailed examination of the very numerous cases reported in the Homoeopathic Treatises and Journals. Having been in the habit of receiving the French “Archives of Homoeopathic Medicine” until the premature decease of that Journal, I have had the opportunity of becoming acquainted somewhat with the style of these documents, and experiencing whatever degree of conviction they were calculated to produce. Although of course I do not wish any value to be assumed for my opinion, such as it is, I consider that you are entitled to hear it. So far, then, as I am acquainted with the general character of the cases reported by the Homoeopathic physicians, they would for the most part be considered as wholly undeserving a place in any English, French, or American periodical of high standing, if, instead of favoring the doctrine they were intended to support, they were brought forward to prove the efficacy of any common remedy administered by any common practitioner. There are occasional exceptions to this remark; but the general truth of it is rendered probable by the fact that these cases are always, or almost always, written with the single object of showing the efficacy of the medicine used, or the skill of the practitioner, and it is recognized as a general rule that such cases deserve very little confidence. Yet they may sound well enough, one at a time, to those who are not fully aware of the fallacies of medical evidence. Let me state a case in illustration. Nobody doubts that some patients recover under every form of practice. Probably all are willing to allow that a large majority, for instance, ninety in a hundred, of such cases as a physician is called to in daily practice, would recover, sooner or later, with more or less difficulty, provided nothing were done to interfere seriously with the efforts of nature.

Suppose, then, a physician who has a hundred patients prescribes to each of them pills made of some entirely inert substance, as starch, for instance. Ninety of them get well, or if he chooses to use such language, he cures ninety of them. It is evident, according to the doctrine of chances, that there must be a considerable number of coincidences between the relief of the patient and the administration of the remedy. It is altogether probable that there will happen two or three very striking coincidences out of the whole ninety cases, in which it would seem evident that the medicine produced the relief, though it had, as we assumed, nothing to do with it. Now suppose that the physician publishes these cases, will they not have a plausible appearance of proving that which, as we granted at the outset, was entirely false? Suppose that instead of pills of starch he employs microscopic sugarplums, with the five' million billion trillionth part of a suspicion of aconite or pulsatilla, and then publishes his successful cases, through the leaden lips of the press, or the living ones of his female acquaintances,--does that make the impression a less erroneous one? But so it is that in Homoeopathic works and journals and gossip one can never, or next to never, find anything but successful cases, which might do very well as a proof of superior skill, did it not prove as much for the swindling advertisers whose certificates disgrace so many of our newspapers. How long will it take mankind to learn that while they listen to "the speaking hundreds and units," who make the world ring with the pretended triumphs they have witnessed, the "dumb millions" of deluded and injured victims are paying the daily forfeit of their misplaced confidence!

I am sorry to see, also, that a degree of ignorance as to the natural course of diseases is often shown in these published cases, which, although it may not be detected by the unprofessional reader, conveys an unpleasant impression to those who are acquainted with the subject. Thus a young woman affected with jaundice is mentioned in the German “Annals of Clinical Homoeopathy” as having been cured in twenty-nine days by *pulsatilla* and *nux vomica*. Rummel, a well-known writer of the same school, speaks of curing a case of jaundice in thirty-four days by Homoeopathic doses of *pulsatilla*, *aconite*, and *cinchona*. I happened to have a case in my own household, a few weeks since, which lasted about ten days, and this was longer than I have repeatedly seen it in hospital practice, so that it was nothing to boast of.

Dr. Munneche of Lichtenburg in Saxony is called to a patient with sprained ankle who had been a fortnight under the common treatment. The patient gets well by the use of *arnica* in a little more than a month longer, and this extraordinary fact is published in the French “Archives of Homoeopathic Medicine.”

In the same Journal is recorded the case of a patient who with nothing more, so far as any proof goes, than influenza, gets down to her shop upon the sixth day.

And again, the cool way in which everything favorable in a case is set down by these people entirely to their treatment, may be seen in a case of croup reported in the “Homoeopathic Gazette” of Leipsic, in which leeches, blistering, inhalation of hot vapor, and powerful internal medicine had been employed, and yet the merit was all attributed to one drop of some Homoeopathic fluid.

I need not multiply these quotations, which illustrate the grounds of an opinion which the time does not allow me to justify more at length; other such cases are lying open before me; there is no end to them if more were wanted; for nothing is necessary but to look into any of the numerous broken-down Journals of Homoeopathy, the volumes of which may be found on the shelves of those curious in such matters.

A number of public trials of Homoeopathy have been made in different parts of the world. Six of these are mentioned in the Manifesto of the "Homoeopathic Examiner." Now to suppose that any trial can absolutely silence people, would be to forget the whole experience of the past. Dr. Haygarth and Dr. Alderson could not stop the sale of the five-guinea Tractors, although they proved that they could work the same miracles with pieces of wood and tobacco-pipe. It takes time for truth to operate as well as Homoeopathic globules. Many persons thought the results of these trials were decisive enough of the nullity of the treatment; those who wish to see the kind of special pleading and evasion by which it is attempted to cover results which, stated by the "Homoeopathic Examiner" itself, look exceedingly like a miserable failure, may consult the opening flourish of that Journal. I had not the intention to speak of these public trials at all, having abundant other evidence on the point. But I think it best, on the whole, to mention two of them in a few words,--that instituted at Naples and that of Andral.

There have been few names in the medical profession, for the last half century, so widely known throughout the world of science as that of M. Esquirol, whose life was devoted to the treatment of insanity, and who was without a rival in that department of practical medicine. It is from an analysis communicated by him to the "Gazette Medicale de Paris" that I derive my acquaintance with the account of the trial at Naples by

Dr. Panvini, physician to the Hospital della Pace. This account seems to be entirely deserving of credit. Ten patients were set apart, and not allowed to take any medicine at all,--much against the wish of the Homoeopathic physician. All of them got well, and of course all of them would have been claimed as triumphs if they had been submitted to the treatment. Six other slight cases (each of which is specified) got well under the Homoeopathic treatment, none of its asserted specific effects being manifested.

All the rest were cases of grave disease; and so far as the trial, which was interrupted about the fortieth day, extended, the patients grew worse, or received no benefit. A case is reported on the page before me of a soldier affected with acute inflammation in the chest, who took successively aconite, bryonia, nux vomica, and pulsatilla, and after thirty-eight days of treatment remained without any important change in his disease. The Homoeopathic physician who treated these patients was M. de Horatiis, who had the previous year been announcing his wonderful cures. And M. Esquirol asserted to the Academy of Medicine in 1835, that this M. de Horatiis, who is one of the prominent personages in the "Examiner's" Manifesto published in 1840, had subsequently renounced Homoeopathy. I may remark, by the way, that this same periodical, which is so very easy in explaining away the results of these trials, makes a mistake of only six years or a little more as to the time when this at Naples was instituted.

M. Andral, the "eminent and very enlightened allopathist" of the "Homoeopathic Examiner," made the following statement in March, 1835, to the Academy of Medicine: "I have submitted this doctrine to experiment; I can reckon at this time from one hundred and thirty to one hundred and forty cases, recorded with perfect fairness, in a great hospital, un-

der the eye of numerous witnesses; to avoid every objection—I obtained my remedies of M. Guibourt, who keeps a Homoeopathic pharmacy, and whose strict exactness is well known; the regimen has been scrupulously observed, and I obtained from the sisters attached to the hospital a special regimen, such as Hahnemann orders. I was told, however, some months since, that I had not been faithful to all the rules of the doctrine. I therefore took the trouble to begin again; I have studied the practice of the Parisian Homoeopaths, as I had studied their books, and I became convinced that they treated their patients as I had treated mine, and I affirm that I have been as rigorously exact in the treatment as any other person.”

And he expressly asserts the entire nullity of the influence of all the Homoeopathic remedies tried by him in modifying, so far as he could observe, the progress or termination of diseases. It deserves notice that he experimented with the most boasted substances,—cinchona, aconite, mercury, bryonia, belladonna. Aconite, for instance, he says he administered in more than forty cases of that collection of feverish symptoms in which it exerts so much power, according to Hahnemann, and in not one of them did it have the slightest influence, the pulse and heat remaining as before.

These statements look pretty honest, and would seem hard to be explained away, but it is calmly said that he “did not know enough of the method to select the remedies with any tolerable precision.” [“Homoeopathic Examiner, vol. i. p. 22.]

“Nothing is left to the caprice of the physician.” (In a word, instead of being dependent upon blind chance, that there is an infallible law, guided by which; the physician **MUST** select the proper remedies.) [‘Ibid.,’ in a

notice of Menzel's paper.] Who are they that practice Homoeopathy, and say this of a man with the *Materia Medica* of Hahnemann lying before him? Who are they that send these same globules, on which he experimented, accompanied by a little book, into families, whose members are thought competent to employ them, when they deny any such capacity to a man whose life has been passed at the bedside of patients, the most prominent teacher in the first Medical Faculty in the world, the consulting physician of the King of France, and one of the most renowned practical writers, not merely of his nation, but of his age? I leave the quibbles by which such persons would try to creep out from under the crushing weight of these conclusions to the unfortunates who suppose that a reply is equivalent to an answer.

Dr. Baillie, one of the physicians in the great Hotel Dieu of Paris, invited two Homoeopathic practitioners to experiment in his wards. One of these was Curie, now of London, whose works are on the counters of some of our bookstores, and probably in the hands of some of my audience. This gentleman, whom Dr. Baillie declares to be an enlightened man, and perfectly sincere in his convictions, brought his own medicines from the pharmacy which furnished Hahnemann himself, and employed them for four or five months upon patients in his ward, and with results equally unsatisfactory, as appears from Dr. Baillie's statement at a meeting of the Academy of Medicine. And a similar experiment was permitted by the Clinical Professor of the Hotel Dieu of Lyons, with the same complete failure.

But these are old and prejudiced practitioners. Very well, then take the statement of Dr. Fleury, a most intelligent young physician, who treated homoeopathically more than fifty patients, suffering from diseases which it was not dangerous to treat in this way, taking every kind of precaution

as to regimen, removal of disturbing influences, and the state of the atmosphere, insisted upon by the most vigorous partisans of the doctrine, and found not the slightest effect produced by the medicines. And more than this, read nine of these cases, which he has published, as I have just done, and observe the absolute nullity of aconite, belladonna, and bryonia, against the symptoms over which they are pretended to exert such palpable, such obvious, such astonishing influences. In the view of these statements, it is impossible not to realize the entire futility of attempting to silence this asserted science by the flattest and most peremptory results of experiment. Were all the hospital physicians of Europe and America to devote themselves, for the requisite period, to this sole pursuit, and were their results to be unanimous as to the total worthlessness of the whole system in practice, this slippery delusion would slide through their fingers without the slightest discomposure, when, as they supposed, they had crushed every joint in its tortuous and trailing body.

3. I have said, that to show the truth of the Homoeopathic doctrine, as announced by Hahnemann, it would be necessary to show, in the third place, that remedies never cure diseases when they are not capable of producing similar symptoms! The burden of this somewhat comprehensive demonstration lying entirely upon the advocates of this doctrine, it may be left to their mature reflections.

It entered into my original plan to treat of the doctrine relating to Psora, or itch,—an almost insane conception, which I am glad to get rid of, for this is a subject one does not care to handle without gloves. I am saved this trouble, however, by finding that many of the disciples of Hahnemann, those disciples the very gospel of whose faith stands upon his word, make very light of his authority on this point, although he himself says, “It has cost me twelve years of study and research to trace out the

source of this incredible number of chronic affections, to discover this great truth, which remained concealed from all my predecessors and contemporaries, to establish the basis of its demonstration, and find out, at the same time, the curative medicines that were fit to combat this hydra in all its different forms.”

But, in the face of all this, the following remarks are made by Wolff, of Dresden, whose essays, according to the editor of the “Homoeopathic Examiner,” “represent the opinions of a large majority of Homoeopaths in Europe.”

“It cannot be unknown to any one at all familiar with Homoeopathic literature, that Hahnemann’s idea of tracing the large majority of chronic diseases to actual itch has met with the greatest opposition from Homoeopathic physicians themselves.” And again, “If the Psoric theory has led to no proper schism, the reason is to be found in the fact that it is almost without any influence in practice.”

We are told by Jahr, that Dr. Griesselich, “Surgeon to the Grand Duke of Baden,” and a “distinguished” Homoeopathist, actually asked Hahnemann for the proof that chronic diseases, such as dropsy, for instance, never arise from any other cause than itch; and that, according to common report, the venerable sage was highly incensed (*fort courroucé*) with Dr. Hartmann, of Leipsic, another “distinguished” Homoeopathist, for maintaining that they certainly did arise from other causes.

And Dr. Fielitz, in the “Homoeopathic Gazette” of Leipsic, after saying, in a good-natured way, that Psora is the Devil in medicine, and that physicians are divided on this point into diabolists and exorcists, declares that, according to a remark of Hahnemann, the whole civilized world is affected with Psora. I must therefore disappoint any advocate of

Hahnemann who may honor me with his presence, by not attacking a doctrine on which some of the disciples of his creed would be very happy to have its adversaries waste their time and strength. I will not meddle with this excrescence, which, though often used in time of peace, would be dropped, like the limb of a shell-fish, the moment it was assailed; time is too precious, and the harvest of living extravagances nods too heavily to my sickle, that I should blunt it upon straw and stubble.

I will close the subject with a brief examination of some of the statements made in Homoeopathic works, and more particularly in the brilliant Manifesto of the "Examiner," before referred to. And first, it is there stated under the head of "Homoeopathic Literature," that "SEVEN HUNDRED volumes have been issued from the press developing the peculiarities of the system, and many of them possessed of a scientific character that savans know well how to respect." If my assertion were proper evidence in the case, I should declare, that, having seen a good many of these publications, from the year 1834, when I bought the work of the Rev. Thomas Everest, [Dr. Curie speaks of this silly pamphlet as having been published in 1835.] to within a few weeks, when I received my last importation of Homoeopathic literature, I have found that all, with a very few exceptions, were stitched pamphlets varying from twenty or thirty pages to somewhat less than a hundred, and generally resembling each other as much as so many spelling-books.

But not being evidence in the case, I will give you the testimony of Dr. Trinks, of Dresden, who flourishes on the fifteenth page of the same Manifesto as one of the most distinguished among the Homoeopathists of Europe. I translate the sentence literally from the "Archives de la Médecine Homoeopathique."

“The literature of Homoeopathy, if that honorable name must be applied to all kinds of book-making, has been degraded to the condition of the humblest servitude. Productions without talent, without spirit, without discrimination, flat and pitiful eulogies, exaggerations surpassing the limits of the most robust faith, invectives against such as dared to doubt the dogmas which had been proclaimed, or catalogues of remedies; of such materials is it composed! From distance to distance only, have appeared some memoirs useful to science or practice, which appear as so many green oases in the midst of this literary desert.”

It is a very natural as well as a curious question to ask, What has been the success of Homoeopathy in the different countries of Europe, and what is its present condition?

The greatest reliance of the advocates of Homoeopathy is of course on Germany. We know very little of its medical schools, its medical doctrines, or its medical men, compared with those of England and France. And, therefore, when an intelligent traveller gives a direct account from personal inspection of the miserable condition of the Homoeopathic hospital at Leipsic, the first established in Europe, and the first on the list of the ever-memorable Manifesto, it is easy enough answer or elude the fact by citing various hard names of “distinguished” practitioners, which sound just as well to the uninformed public as if they were Meckel, or Tiedemann, or Langenbeck. Dr. Leo-Wolf, who, to be sure, is opposed to Homoeopathy, but who is a scholar, and ought to know something of his own countrymen, assures us that “Dr. Kopp is the only German Homoeopathist, if we can call him so, who has been distinguished as an author and practitioner before he examined this method.” And Dr. Lee, the same gentleman in whose travels the paragraph relating to the Leipsic Hospital is to be found, says the same thing. And I will cheerfully expose

myself to any impertinent remark which it might suggest, to assure my audience that I never heard or saw one authentic Homoeopathic name of any country in Europe, which I had ever heard mentioned before as connected with medical science by a single word or deed sufficient to make it in any degree familiar to my ears, unless Arnold of Heidelberg is the anatomist who discovered a little nervous centre, called the otic ganglion. But you need ask no better proof of who and what the German adherents of this doctrine must be, than the testimony of a German Homoeopathist as to the wretched character of the works they manufacture to enforce its claims.

As for the act of this or that government tolerating or encouraging Homoeopathy, every person of common intelligence knows that it is a mere form granted or denied according to the general principles of policy adopted in different states, or the degree of influence which some few persons who have adopted it may happen to have at court. What may be the value of certain pompous titles with which many of the advocates of Homoeopathy are honored, it might be disrespectful to question. But in the mean time the judicious inquirer may ponder over an extract which I translate from a paper relating to a personage well known to the community as Williams the Oculist, with whom I had the honor of crossing the Atlantic some years since, and who himself handed me two copies of the paper in question.

“To say that he was oculist of Louis XVIII. and of Charles X., and that he now enjoys the same title with respect to His Majesty, Louis Philippe, and the King of the Belgians, is unquestionably to say a great deal; and yet it is one of the least of his titles to public confidence. His reputation rests upon a basis more substantial even than the numerous diplomas

with which he is provided, than the membership of the different medical societies which have chosen him as their associate," etc., etc.

And as to one more point, it is time that the public should fully understand that the common method of supporting barefaced imposture at the present day, both in Europe and in this country, consists in trumping up "Dispensaries," "Colleges of Health," and other advertising charitable clap-traps, which use the poor as decoy-ducks for the rich, and the proprietors of which have a strong predilection for the title of "Professor." These names, therefore, have come to be of little or no value as evidence of the good character, still less of the high pretensions of those who invoke their authority. Nor does it follow, even when a chair is founded in connection with a well-known institution, that it has either a salary or an occupant; so that it may be, and probably is, a mere harmless piece of toleration on the part of the government if a Professorship of Homoeopathy is really in existence at Jena or Heidelberg. And finally, in order to correct the error of any who might suppose that the whole Medical Profession of Germany has long since fallen into the delusions of Hahnemann, I will quote two lines which a celebrated anatomist and surgeon (whose name will occur again in this lecture in connection with a very pleasing letter) addressed to the French Academy of Medicine in 1835. "I happened to be in Germany some months since, at a meeting of nearly six hundred physicians; one of them wished to bring up the question of Homoeopathy; they would not even listen to him." This may have been very impolite and bigoted, but that is not precisely the point in reference to which I mention the circumstance.

But if we cannot easily get at Germany, we can very easily obtain exact information from France and England. I took the trouble to write some months ago to two friends in Paris, in whom I could place confidence,

for information upon the subject. One of them answered briefly to the effect that nothing was said about it. When the late Curator of the Lowell Institute, at his request, asked about the works upon the subject, he was told that they had remained a long time on the shelves quite unsalable, and never spoken of.

The other gentleman, [Dr. Henry T. Bigelow, now Professor of Surgery in Harvard University] whose name is well known to my audience, and who needs no commendation of mine, had the kindness to procure for me many publications upon the subject, and some information which sets the whole matter at rest, so far as Paris is concerned. He went directly to the Baillieres, the principal and almost the only publishers of all the Homoeopathic books and journals in that city. The following facts were taken by him from the account-books of this publishing firm. Four Homoeopathic Journals have been published in Paris; three of them by the Baillieres.

The reception they met with may be judged of by showing the number of subscribers to each on the books of the publishing firm.

A Review published by some other house, which lasted one year, and had about fifty subscribers, appeared in 1834, 1835.

There were only four Journals of Homoeopathy ever published in Paris. The Baillieres informed my correspondent that the sale of Homoeopathic books was much less than formerly, and that consequently they should undertake to publish no new books upon the subject, except those of Jahr or Hahnemann. "This man," says my correspondent,--referring to one of the brothers,--"the publisher and headquarters of Homoeopathy in Paris, informs me that it is going down in England and Germany as

well as in Paris.” For all the facts he had stated he pledged himself as responsible.

Homoeopathy was in its prime in Paris, he said, in 1836 and 1837, and since then has been going down.

Louis told my correspondent that no person of distinction in Paris had embraced Homoeopathy, and that it was declining. If you ask who Louis is, I refer you to the well-known Homoeopathist, Peschier of Geneva, who says, addressing him, “I respect no one more than yourself; the feeling which guides your researches, your labors, and your pen, is so honorable and rare, that I could not but bow down before it; and I own, if there were any allopathist who inspired me with higher veneration, it would be him and not yourself whom I should address.”

Among the names of “Distinguished Homoeopathists,” however, displayed in imposing columns, in the index of the “Homoeopathic Examiner,” are those of MARJOLIN, AMUSSAT, and BRESCHET, names well known to the world of science, and the last of them identified with some of the most valuable contributions which anatomical knowledge has received since the commencement of the present century. One Dr. Chrysaora, who stands sponsor for many facts in that Journal, makes the following statement among the rest: “Professors, who are esteemed among the most distinguished of the Faculty (Faculty de Medicine), both as to knowledge and reputation, have openly confessed the power of Homoeopathia in forms of disease where the ordinary method of practice proved totally insufficient. It affords me the highest pleasure to select from among these gentlemen, Marjolin, Amussat, and Breschet.”

Here is a literal translation of an original letter, now in my possession, from one of these Homoeopathists to my correspondent:--

“DEAR SIR, AND RESPECTED PROFESSIONAL BROTHER:

“You have had the kindness to inform me in your letter that a new American Journal, the ‘New World,’ has made use of my name in support of the pretended Homoeopathic doctrines, and that I am represented as one of the warmest partisans of Homoeopathy in France.

“I am vastly surprised at the reputation manufactured for me upon the new continent; but I am obliged, in deference to truth, to reject it with my whole energy. I spurn far from me everything which relates to that charlatanism called Homoeopathy, for these pretended doctrines cannot endure the scrutiny of wise and enlightened persons, who are guided by honorable sentiments in the practice of the noblest of arts.

“PARIS, 3d November, 1841

“I am, etc., etc.,

“G. BRESCHET,

“Professor in the Faculty of Medicine, Member of the Institute, Surgeon of Hotel Dieu, and Consulting Surgeon to the King, etc.” [I first saw M. Breschet’s name mentioned in that Journal]

Concerning Amussat, my correspondent writes, that he was informed by Madame Hahnemann, who converses in French more readily than her husband, and therefore often speaks for him, that “he was not a physician, neither Homoeopathist nor Allopathist, but that he was the surgeon of their own establishment; that is, performed as a surgeon all the operations they had occasion for in their practice.”

I regret not having made any inquiries as to Marjolin, who, I doubt not, would strike his ponderous snuff-box until it resounded like the Grecian

horse, at hearing such a doctrine associated with his respectable name. I was not aware, when writing to Paris, that this worthy Professor, whose lectures I long attended, was included in these audacious claims; but after the specimens I have given of the accuracy of the foreign correspondence of the "Homoeopathic Examiner," any further information I might obtain would seem so superfluous as hardly to be worth the postage.

Homoeopathy may be said, then, to be in a sufficiently miserable condition in Paris. Yet there lives, and there has lived for years, the illustrious Samuel Hahnemann, who himself assured my correspondent that no place offered the advantages of Paris in its investigation, by reason of the attention there paid to it.

In England, it appears by the statement of Dr. Curie in October, 1839, about eight years after its introduction into the country, that there were eighteen Homoeopathic physicians in the United Kingdom, of whom only three were to be found out of London, and that many of these practised Homoeopathy in secret.

It will be seen, therefore, that, according to the recent statement of one of its leading English advocates, Homoeopathy had obtained not quite half as many practical disciples in England as Perkinism could show for itself in a somewhat less period from the time of its first promulgation in that country.

Dr. Curie's letter, dated London, October 30, 1839, says there is "one in Dublin, Dr. Luther; at Glasgow, Dr. Scott." The "distinguished" Chrysaora writes from Paris, dating October 20, 1839, "On the other hand, Homoeopathy is commencing to make an inroad into England by the way of Ireland. At Dublin, distinguished physicians have already embraced the new system, and a great part of the nobility and gentry of that city

have emancipated themselves from the English fashion and professional authority.”

But the Marquis of Anglesea and Sir Edward Lytton Bulwer patronize Homoeopathy; the Queen Dowager Adelaide has been treated by a Homoeopathic physician. “Jarley is the delight of the nobility and gentry.” “The Royal Family are the patrons of Jarley.”

Let me ask if a Marquis and a Knight are better than two Lords, and if the Dowager of Royalty is better than Royalty itself, all of which illustrious dignities were claimed in behalf of Benjamin Douglass Perkins?

But if the balance is thought too evenly suspended in this case, another instance can be given in which the evidence of British noblemen and their ladies is shown to be as valuable in establishing the character of a medical man or doctrine, as would be the testimony of the Marquis of Waterford concerning the present condition and prospects of missionary enterprise. I have before me an octavo volume of more than four hundred pages, in which, among much similar matter, I find highly commendatory letters from the Marchioness of Ormond, Lady Harriet Kavanagh, the Countess of Buckinghamshire, the Right Hon. Viscount Ingestre, M. P., and the Most Noble, the Marquis of Sligo,--all addressed to “John St. John Long, Esq,” a wretched charlatan, twice tried for, and once convicted of, manslaughter at the Old Bailey.

This poor creature, too, like all of his tribe, speaks of the medical profession as a great confederation of bigoted monopolists. He, too, says that “If an innovator should appear, holding out hope to those in despair, and curing disorders which the faculty have recorded as irremediable, he is at once, and without inquiry, denounced as an empiric and an impostor.” He, too, cites the inevitable names of Galileo and Harvey, and

refers to the feelings excited by the great discovery of Jenner. From the treatment of the great astronomer who was visited with the punishment of other heretics by the ecclesiastical authorities of a Catholic country some centuries since, there is no very direct inference to be drawn to the medical profession of the present time. His name should be babbled no longer, after having been placarded for the hundredth time in the pages of St. John Long. But if we are doomed to see constant reference to the names of Harvey and Jenner in every worthless pamphlet containing the prospectus of some new trick upon the public, let us, once for all, stare the facts in the face, and see how the discoveries of these great men were actually received by the medical profession.

In 1628, Harvey published his first work upon the circulation. His doctrines were a complete revolution of the prevailing opinions of all antiquity. They immediately found both champions and opponents; of which last, one only, Riolanus, seemed to Harvey worthy of an answer, on account of his "rank, fame, and learning." Controversy in science, as in religion, was not, in those days, carried on with all the courtesy which our present habits demand, and it is possible that some hard words may have been applied to Harvey, as it is very certain that he used the most contemptuous expressions towards others.

Harvey declares in his second letter to Riolanus, "Since the first discovery of the circulation, hardly a day, or a moment, has passed without my hearing it both well and ill spoken of; some attack it with great hostility, others defend it with high encomiums; one party believe that I have abundantly proved the truth of the doctrine against all the weight of opposing arguments, by experiments, observations, and dissections; others think it not yet sufficiently cleared up, and free from objections." Two

really eminent Professors, Plempius of Louvain, and Walaeus of Leyden, were among its early advocates.

The opinions sanctioned by the authority of long ages, and the names of Hippocrates and Galen, dissolved away, gradually, but certainly, before the demonstrations of Harvey. Twenty-four years after the publication of his first work, and six years before his death, his bust in marble was placed in the Hall of the College of Physicians, with a suitable inscription recording his discoveries.

Two years after this he was unanimously invited to accept the Presidency of that body; and he lived to see his doctrine established, and all reputable opposition withdrawn.

There were many circumstances connected with the discovery of Dr. Jenner which were of a nature to excite repugnance and opposition. The practice of inoculation for the small-pox had already disarmed that disease of many of its terrors. The introduction of a contagious disease from a brute creature into the human system naturally struck the public mind with a sensation of disgust and apprehension, and a part of the medical public may have shared these feelings. I find that Jenner's discovery of vaccination was made public in June, 1798. In July of the same year the celebrated surgeon, Mr. Cline, vaccinated a child with virus received from Dr. Jenner, and in communicating the success of this experiment, he mentions that Dr. Lister, formerly of the Small-Pox Hospital, and himself, are convinced of the efficacy of the cow-pox. In November of the same year, Dr. Pearson published his "Inquiry," containing the testimony of numerous practitioners in different parts of the kingdom, to the efficacy of the practice. Dr. HAYGARTH, who was so conspicuous in exposing the follies of Perkinism, was among the very earliest to express

his opinion in favor of vaccination. In 1801, Dr. Lettsom mentions the circumstance “as being to the honor of the medical professors, that they have very generally encouraged this salutary practice, although it is certainly calculated to lessen their pecuniary advantages by its tendency to extirpate a fertile source of professional practice.”

In the same year the Medical Committee of Paris spoke of vaccination in a public letter, as “the most brilliant and most important discovery of the eighteenth century.” The Directors of a Society for the Extermination of the Small-Pox, in a Report dated October 1st, 1807, “congratulate the public on the very favorable opinion which the Royal College of Physicians of London, after a most minute and laborious investigation made by the command of his Majesty, have a second time expressed on the subject of vaccination, in their Report laid before the House of Commons, in the last session of Parliament; in consequence of which the sum of twenty thousand pounds was voted to Dr. Jenner, as a remuneration for his discovery, in addition to ten thousand pounds before granted.” (In June, 1802.)

These and similar accusations, so often brought up against the Medical Profession, are only one mode in which is manifested a spirit of opposition not merely to medical science, but to all science, and to all sound knowledge. It is a spirit which neither understands itself nor the object at which it is aiming. It gropes among the loose records of the past, and the floating fables of the moment, to glean a few truths or falsehoods tending to prove, if they prove anything, that the persons who have passed their lives in the study of a branch of knowledge the very essence of which must always consist in long and accurate observation, are less competent to judge of new doctrines in their own department than the rest of the

community. It belongs to the clown in society, the destructive in politics, and the rogue in practice.

The name of Harvey, whose great discovery was the legitimate result of his severe training and patient study, should be mentioned only to check the pretensions of presumptuous ignorance. The example of Jenner, who gave his inestimable secret, the result of twenty-two years of experiment and researches, unpurchased, to the public,--when, as was said in Parliament, he might have made a hundred thousand pounds by it as well as any smaller sum,--should be referred to only to rebuke the selfish venders of secret remedies, among whom his early history obliges us reluctantly to record Samuel Hahnemann. Those who speak of the great body of physicians as if they were united in a league to support the superannuated notions of the past against the progress of improvement, have read the history of medicine to little purpose. The prevalent failing of this profession has been, on the contrary, to lend a too credulous ear to ambitious and plausible innovators. If at the present time ten years of public notoriety have passed over any doctrine professing to be of importance in medical science, and if it has not succeeded in raising up a powerful body of able, learned, and ingenious advocates for its claims, the fault must be in the doctrine and not in the medical profession.

Homoeopathy has had a still more extended period of trial than this, and we have seen with what results. It only remains to throw out a few conjectures as to the particular manner in which it is to break up and disappear.

1. The confidence of the few believers in this delusion will never survive the loss of friends who may die of any acute disease, under a treatment such as that prescribed by Homoeopathy. It is doubtful how far cases of this kind will be trusted to its tender mercies, but wherever it acquires any considerable foothold, such cases must come, and with them the ruin of those who practise it, should any highly valued life be thus sacrificed.
2. After its novelty has worn out, the ardent and capricious individuals who constitute the most prominent class of its patrons will return to visible doses, were it only for the sake of a change.
3. The Semi-Homoeopathic practitioner will gradually withdraw from the rotten half of his business and try to make the public forget his connection with it.
4. The ultra Homoeopathist will either recant and try to rejoin the medical profession; or he will embrace some newer and if possible equally extravagant doctrine; or he will stick to his colors and go down with his sinking doctrine. Very few will pursue the course last mentioned.

A single fact may serve to point out in what direction there will probably be a movement of the dissolving atoms of Homoeopathy. On the 13th page of the too frequently cited Manifesto of the "Examiner" I read the following stately paragraph:

"Bigelius, M. D., physician to the Emperor of Russia, whose elevated reputation is well known in Europe, has been an acknowledged advocate

of Hahnemann's doctrines for several years. He abandoned Allopathia for Homoeopathia." The date of this statement is January, 1840. I find on looking at the booksellers' catalogues that one Bigel, or Bigelius, to speak more classically, has been at various times publishing Homoeopathic books for some years.

Again, on looking into the "Encyclographie des Sciences Medicales" for April, 1840, I find a work entitled "Manual of HYDROSUDOPATHY, or the Treatment of Diseases by Cold Water, etc., etc., by Dr. Bigel, Physician of the School of Strasburg, Member of the Medico-Chirurgical Institute of Naples, of the Academy of St. Petersburg,--Assessor of the College of the Empire of Russia, Physician of his late Imperial Highness the Grand Duke Constantine, Chevalier of the Legion of Honor, etc." Hydrosudopathy or Hydropathy, as it is sometimes called, is a new medical doctrine or practice which has sprung up in Germany since Homoeopathy, which it bids fair to drive out of the market, if, as Dr. Bigel says, fourteen physicians afflicted with diseases which defied themselves and their colleagues came to Graefenberg, in the year 1836 alone, and were cured. Now Dr. Bigel, "whose elevated reputation is well known in Europe," writes as follows: "The reader will not fail to see in this defence of the curative method of Graefenberg a profession of medical faith, and he will be correct in so doing." And his work closes with the following sentence, worthy of so distinguished an individual: "We believe, with religion, that the water of baptism purifies the soul from its original sin; let us believe also, with experience, that it is for our corporeal sins the redeemer of the human body." If Bigel, Physician to the late Grand Duke Constantine, is identical with Bigel whom the "Examiner" calls Physician to the Emperor of Russia, it appears that he is now actively engaged

in throwing cold water at once upon his patients and the future prospects of Homoeopathy.

If, as must be admitted, no one of Hahnemann's doctrines is received with tolerable unanimity among his disciples, except the central axiom, *Similia similibus curantur*; if this axiom itself relies mainly for its support upon the folly and trickery of Hahnemann, what can we think of those who announce themselves ready to relinquish all the accumulated treasures of our art, to trifle with life upon the strength of these fantastic theories? What shall we think of professed practitioners of medicine, if, in the words of Jahr, "from ignorance, for their personal convenience, or through charlatanism, they treat their patients one day Homoeopathically and the next Allopathically;" if they parade their pretended new science before the unguarded portion of the community; if they suffer their names to be coupled with it wherever it may gain a credulous patient; and deny all responsibility for its character, refuse all argument for its doctrines, allege no palliation for the ignorance and deception interwoven with every thread of its flimsy tissue, when they are questioned by those competent to judge and entitled to an answer?

Such is the pretended science of Homoeopathy, to which you are asked to trust your lives and the lives of those dearest to you. A mingled mass of perverse ingenuity, of tinsel erudition, of imbecile credulity, and of artful misrepresentation, too often mingled in practice, if we may trust the authority of its founder, with heartless and shameless imposition. Because it is suffered so often to appeal unanswered to the public, because it has its journals, its patrons, its apostles, some are weak enough to suppose it can escape the inevitable doom of utter disgrace and oblivion. Not many years can pass away before the same curiosity excited by one

of Perkins's Tractors will be awakened at the sight of one of the Infinitesimal Globules. If it should claim a longer existence, it can only be by falling into the hands of the sordid wretches who wring their bread from the cold grasp of disease and death in the hovels of ignorant poverty.

As one humble member of a profession which for more than two thousand years has devoted itself to the pursuit of the best earthly interests of mankind, always assailed and insulted from without by such as are ignorant of its infinite perplexities and labors, always striving in unequal contest with the hundred-armed giant who walks in the noonday, and sleeps not in the midnight, yet still toiling, not merely for itself and the present moment, but for the race and the future, I have lifted my voice against this lifeless delusion, rolling its shapeless bulk into the path of a noble science it is too weak to strike, or to injure.

Chapter II: Currents and Counter-Currents in Medical Science

An Address delivered before the Massachusetts Medical Society, at the Annual Meeting, May 30, 1860.

“Facultate magis quam violentia.”

HIPPOCRATES.

Our Annual Meeting never fails to teach us at least one lesson. The art whose province it is to heal and to save cannot protect its own ranks from the inroads of disease and the waste of the Destroyer.

Seventeen of our associates have been taken from us since our last Anniversary. Most of them followed their calling in the villages or towns that lie among the hills or along the inland streams. Only those who have lived the kindly, mutually dependent life of the country, can tell how near the physician who is the main reliance in sickness of all the families throughout a thinly settled region comes to the hearts of the people among whom he labors, how they value him while living, how they cherish his memory when dead. For these friends of ours who have gone before, there is now no more toil; they start from their slumbers no more at the cry of pain; they sally forth no more into the storms; they ride no longer over the lonely roads that knew them so well; their wheels are rusting on their axles or rolling with other burdens; their watchful eyes are closed to all the sorrows they lived to soothe. Not one of these was famous in the great world; some were almost unknown beyond their own immediate circle. But they have left behind them that loving remembrance which is better than fame, and if their epitaphs are chiselled briefly in stone, they are written at full length on living tablets in a thousand homes to which they carried their ever-welcome aid and sympathy.

One whom we have lost, very widely known and honored, was a leading practitioner of this city. His image can hardly be dimmed in your recollection, as he stood before you only three years ago, filling the same place with which I am now honored. To speak of him at all worthily, would be to write the history of professional success, won without special aid at starting, by toil, patience, good sense, pure character, and pleasing manners; won in a straight uphill ascent, without one breathing-space until he sat down, not to rest, but to die. If prayers could have shielded him from the stroke, if love could have drawn forth the weapon, and skill could have healed the wound, this passing tribute might have been left to other lips and to another generation.

Let us hope that our dead have at last found that rest which neither summer nor winter, nor day nor night, had granted to their unending earthly labors! And let us remember that our duties to our brethren do not cease when they become unable to share our toils, or leave behind them in want and woe those whom their labor had supported. It is honorable to the Profession that it has organized an Association for the relief of its suffering members and their families; it owes this tribute to the ill-rewarded industry and sacrifices of its less fortunate brothers who wear out health and life in the service of humanity. I have great pleasure in referring to this excellent movement, which gives our liberal profession a chance to show its liberality, and serves to unite us all, the successful and those whom fortune has cast down, in the bonds of a true brotherhood.

A medical man, as he goes about his daily business after twenty years of practice, is apt to suppose that he treats his patients according to the teachings of his experience. No doubt this is true to some extent; to what extent depending much on the qualities of the individual. But it is easy to prove that the prescriptions of even wise physicians are very commonly

founded on something quite different from experience. Experience must be based on the permanent facts of nature. But a glance at the prevalent modes of treatment of any two successive generations will show that there is a changeable as well as a permanent element in the art of healing; not merely changeable as diseases vary, or as new remedies are introduced, but changeable by the going out of fashion of special remedies, by the decadence of a popular theory from which their fitness was deduced, or other cause not more significant. There is no reason to suppose that the present time is essentially different in this respect from any other. Much, therefore, which is now very commonly considered to be the result of experience, will be recognized in the next, or in some succeeding generation, as no such result at all, but as a foregone conclusion, based on some prevalent belief or fashion of the time.

There are, of course, in every calling, those who go about the work of the day before them, doing it according to the rules of their craft, and asking no questions of the past or of the future, or of the aim and end to which their special labor is contributing. These often consider and call themselves practical men. They pull the oars of society, and have no leisure to watch the currents running this or that way; let theorists and philosophers attend to them. In the mean time, however, these currents are carrying the practical men, too, and all their work may be thrown away, and worse than thrown away, if they do not take knowledge of them and get out of the wrong ones and into the right ones as soon as they may. Sir Edward Parry and his party were going straight towards the pole in one of their arctic expeditions, travelling at the rate of ten miles a day. But the ice over which they travelled was drifting straight towards the equator, at the rate of twelve miles a day, and yet no man among them would have known that he was travelling two miles a day backward unless he had

lifted his eyes from the track in which he was plodding. It is not only going backward that the plain practical workman is liable to, if he will not look up and look around; he may go forward to ends he little dreams of. It is a simple business for a mason to build up a niche in a wall; but what if, a hundred years afterwards when the wall is torn down, the skeleton of a murdered man drop out of the niche? It was a plain practical piece of carpentry for a Jewish artisan to fit two pieces of timber together according to the legal pattern in the time of Pontius Pilate; he asked no questions, perhaps, but we know what burden the cross bore on the morrow! And so, with subtler tools than trowels or axes, the statesman who works in policy without principle, the theologian who works in forms without a soul, the physician who, calling himself a practical man, refuses to recognize the larger laws which govern his changing practice, may all find that they have been building truth into the wall, and hanging humanity upon the cross.

The truth is, that medicine, professedly founded on observation, is as sensitive to outside influences, political, religious, philosophical, imaginative, as is the barometer to the changes of atmospheric density. Theoretically it ought to go on its own straightforward inductive path, without regard to changes of government or to fluctuations of public opinion. But look a moment while I clash a few facts together, and see if some sparks do not reveal by their light a closer relation between the Medical Sciences and the conditions of Society and the general thought of the time, than would at first be suspected.

Observe the coincidences between certain great political and intellectual periods and the appearance of illustrious medical reformers and teachers. It was in the age of Pericles, of Socrates, of Plato, of Phidias, that Hippocrates gave to medical knowledge the form which it retained

for twenty centuries. With the world-conquering Alexander, the world-embracing Aristotle, appropriating anatomy and physiology, among his manifold spoils of study, marched abreast of his royal pupil to wider conquests. Under the same Ptolemies who founded the Alexandrian Library and Museum, and ordered the Septuagint version of the Hebrew Scriptures, the infallible Herophilus [”Contradicere Herophilo in anatomicis, est contradicere evangelium,” was a saying of Fallopius.] made those six hundred dissections of which Tertullian accused him, and the sagacious Erasistratus introduced his mild antiphlogistic treatment in opposition to the polypharmacy and antidotal practice of his time. It is significant that the large-minded Galen should have been the physician and friend of the imperial philosopher Marcus Aurelius. The Arabs gave laws in various branches of knowledge to those whom their arms had invaded, or the terror of their spreading dominion had reached, and the point from which they started was, as Humboldt acknowledges, “the study of medicine, by which they long ruled the Christian Schools,” and to which they added the department of chemical pharmacy.

Look at Vesalius, the contemporary of Luther. Who can fail to see one common spirit in the radical ecclesiastic and the reforming court-physician? Both still to some extent under the dominion of the letter: Luther holding to the real presence; Vesalius actually causing to be drawn and engraved two muscles which he knew were not found in the human subject, because they had been described by Galen, from dissections of the lower animals. Both breaking through old traditions in the search of truth; one, knife in hand, at the risk of life and reputation, the other at the risk of fire and fagot, with that mightier weapon which all the devils could not silence, though they had been thicker than the tiles on the house-tops. How much the physician of the Catholic Charles V. had in

common with the great religious destructive, may be guessed by the relish with which he tells the story how certain Pavian students exhumed the body of an “*elegans scortum*,” or lovely dame of ill repute, the favorite of a monk of the order of St. Anthony, who does not seem to have resisted temptation so well as the founder of his order. We have always ranked the physician Rabelais among the early reformers, but I do not know that Vesalius has ever been thanked for his hit at the morals of the religious orders, or for turning to the good of science what was intended for the “benefit of clergy.”

Our unfortunate medical brother, Michael Servetus, the spiritual patient to whom the theological moxa was applied over the entire surface for the cure of his heresy, came very near anticipating Harvey. The same quickened thought of the time which led him to dispute the dogma of the Church, opened his mind to the facts which contradicted the dogmas of the Faculty.

Harvey himself was but the posthumous child of the great Elizabethan period. Bacon was at once his teacher and his patient. The founder of the new inductive philosophy had only been dead two years when the treatise on the Circulation, the first-fruit of the Restoration of Science, was given to the world.

And is it to be looked at as a mere accidental coincidence, that while Napoleon was modernizing the political world, Bichat was revolutionizing the science of life and the art that is based upon it; that while the young general was scaling the Alps, the young surgeon was climbing the steeper summits of unexplored nature; that the same year read the announcement of those admirable “*Researches on Life and Death*,” and the bulletins of the battle of Marengo?

If we come to our own country, who can fail to recognize that Benjamin Rush, the most conspicuous of American physicians, was the intellectual offspring of the movement which produced the Revolution? "The same hand," says one of his biographers, "which subscribed the declaration of the political independence of these States, accomplished their emancipation from medical systems formed in foreign countries, and wholly unsuitable to the state of diseases in America."

Following this general course of remark, I propose to indicate in a few words the direction of the main intellectual current of the time, and to point out more particularly some of the eddies which tend to keep the science and art of medicine from moving with it, or even to carry them backwards.

The two dominant words of our time are law and average, both pointing to the uniformity of the order of being in which we live. Statistics have tabulated everything,--population, growth, wealth, crime, disease. We have shaded maps showing the geographical distribution of larceny and suicide. Analysis and classification have been at work upon all tangible and visible objects. The Positive Philosophy of Comte has only given expression to the observing and computing mind of the nineteenth century.

In the mean time, the great stronghold of intellectual conservatism, traditional belief, has been assailed by facts which would have been indicted as blasphemy but a few generations ago. Those new tables of the law, placed in the hands of the geologist by the same living God who spoke from Sinai to the Israelites of old, have remodelled the beliefs of half the civilized world. The solemn scepticism of science has replaced the sneering doubts of witty philosophers. The more positive knowledge we

gain, the more we incline to question all that has been received without absolute proof.

As a matter of course, this movement has its partial reactions. The province of faith is claimed as a port free of entry to unsupported individual convictions. The tendency to question is met by the unanalyzing instinct of reverence. The old church calls back its frightened truants. Some who have lost their hereditary religious belief find a resource in the revelations of Spiritualism. By a parallel movement, some of those who have become medical infidels pass over to the mystic band of believers in the fancied miracles of Homoeopathy.

Under these influences transmitted to, or at least shared by, the medical profession, the old question between "Nature," so called, and "Art," or professional tradition, has reappeared with new interest. I say the old question, for Hippocrates stated the case on the side of "Nature" more than two thousand years ago. Miss Florence Nightingale,--and if I name her next to the august Father of the Healing Art, its noblest daughter well deserves that place of honor,--Miss Florence Nightingale begins her late volume with a paraphrase of his statement. But from a very early time to this there has always been a strong party against "Nature." Themison called the practice of Hippocrates "a meditation upon death." Dr. Rush says: "It is impossible to calculate the mischief which Hippocrates, has done, by first marking Nature with his name and afterwards letting her loose upon sick people. Millions have perished by her hands in all ages and countries." Sir John Forbes, whose defence of "Nature" in disease you all know, and to the testimonial in whose honor four of your Presidents have contributed, has been recently greeted, on retiring from the profession, with a wish that his retirement had been twenty years sooner,

and the opinion that no man had done so much to destroy the confidence of the public in the medical profession.

In this Society we have had the Hippocratic and the Themisonic side fairly represented. The treatise of one of your early Presidents on the Mercurial Treatment is familiar to my older listeners. Others who have held the same office have been noted for the boldness of their practice, and even for partiality to the use of complex medication. On the side of "Nature" we have had, first of all, that remarkable discourse on Self-Limited Diseases, [On Self-Limited Diseases. A Discourse delivered before the Massachusetts Medical Society, at their Annual Meeting, May 27, 1835. By Jacob Bigelow, M. D.] which has given the key-note to the prevailing medical tendency of this neighborhood, at least, for the quarter of a century since it was delivered. Nor have we forgotten the address delivered at Springfield twenty years later, [Search out the Secrets, of Nature. By Augustus A. Gould, M. D. Read at the Annual Meeting, June 27, 1855.] full of good sense and useful suggestions, to one of which suggestions we owe the learned, impartial, judicious, well-written Prize Essay of Dr. Worthington Hooker. [Rational Therapeutics. A Prize Essay. By Worthington Hooker, M. D., of New Haven. Boston. 1857.] We should not omit from the list the important address of another of our colleagues, [On the Treatment of Compound and Complicated Fractures. By William J. Walker, M. D. Read at the Annual Meeting, May 29, 1845.] showing by numerous cases the power of Nature in healing compound fractures to be much greater than is frequently supposed,--affording, indeed, more striking illustrations than can be obtained from the history of visceral disease, of the supreme wisdom, forethought, and adaptive dexterity of that divine Architect, as shown in repairing the shattered columns which support the living temple of the body.

We who are on the side of "Nature" please ourselves with the idea that we are in the great current in which the true intelligence of the time is moving. We believe that some who oppose, or fear, or denounce our movement are themselves caught in various eddies that set back against the truth. And we do most earnestly desire and most actively strive, that Medicine, which, it is painful to remember, has been spoken of as "the withered branch of science" at a meeting of the British Association, shall be at length brought fully to share, if not to lead, the great wave of knowledge which rolls with the tides that circle the globe.

If there is any State or city which might claim to be the American headquarters of the nature-trusting heresy, provided it be one, that State is Massachusetts, and that city is its capital. The effect which these doctrines have upon the confidence reposed in the profession is a matter of opinion. For myself, I do not believe this confidence can be impaired by any investigations which tend to limit the application of troublesome, painful, uncertain, or dangerous remedies. Nay, I will venture to say this, that if every specific were to fail utterly, if the cinchona trees all died out, and the arsenic mines were exhausted, and the sulphur regions were burned up, if every drug from the vegetable, animal, and mineral kingdom were to disappear from the market, a body of enlightened men, organized as a distinct profession, would be required just as much as now, and respected and trusted as now, whose province should be to guard against the causes of disease, to eliminate them if possible when still present, to order all the conditions of the patient so as to favor the efforts of the system to right itself, and to give those predictions of the course of disease which only experience can warrant, and which in so many cases relieve the exaggerated fears of sufferers and their friends, or warn them in season of impending danger. Great as the loss would be if

certain active remedies could no longer be obtained, it would leave the medical profession the most essential part of its duties, and all, and more than all, its present share of honors; for it would be the death-blow to charlatanism, which depends for its success almost entirely on drugs, or at least on a nomenclature that suggests them.

There is no offence, then, or danger in expressing the opinion, that, after all which has been said, the community is still overdosed: The best proof of it is, that “no families take so little medicine as those of doctors, except those of apothecaries, and that old practitioners are more sparing of active medicines than younger ones.” [Dr. James Jackson has kindly permitted me to make the following extract from a letter just received by him from Sir James Clark, and dated May 26, 1860: “As a physician advances in age, he generally, I think, places less confidence in the ordinary medical treatment than he did, not only during his early, but even his middle period of life.”] The conclusion from these facts is one which the least promising of Dr. Howe’s pupils in the mental department could hardly help drawing.

Part of the blame of over-medication must, I fear, rest with the profession, for yielding to the tendency to self-delusion, which seems inseparable from the practice of the art of healing. I need only touch on the common modes of misunderstanding or misapplying the evidence of nature.

First, there is the natural incapacity for sound observation, which is like a faulty ear in music. We see this in many persons who know a good deal about books, but who are not sharp-sighted enough to buy a horse or deal with human diseases.

Secondly, there is in some persons a singular inability to weigh the value of testimony; of which, I think, from a pretty careful examination of

his books, Hahnemann affords the best specimen outside the walls of Bedlam.

The inveterate logical errors to which physicians have always been subject are chiefly these:

The mode of inference per enumerationem simplicem, in scholastic phrase; that is, counting only their favorable cases. This is the old trick illustrated in Lord Bacon's story of the gifts of the shipwrecked people, hung up in the temple.—Behold! they vowed these gifts to the altar, and the gods saved them. Ay, said a doubting bystander, but how many made vows of gifts and were shipwrecked notwithstanding? The numerical system is the best corrective of this and similar errors. The arguments commonly brought against its application to all matters of medical observation, treatment included, seem to apply rather to the tabulation of facts ill observed, or improperly classified, than to the method itself.

The post hoc ergo propter hoc error: he got well after taking my medicine; therefore in consequence of taking it.

The false induction from genuine facts of observation, leading to the construction of theories which are then deductively applied in the face of the results of direct observation. The school of Broussais has furnished us with a good example of this error.

And lastly, the error which Sir Thomas Browne calls giving "a reason of the golden tooth;" that is, assuming a falsehood as a fact, and giving reasons for it, commonly fanciful ones, as is constantly done by that class of incompetent observers who find their "golden tooth" in the fabulous effects of the homoeopathic materia medica,—which consists of sugar of milk and a nomenclature.

Another portion of the blame rests with the public itself, which insists on being poisoned. Somebody buys all the quack medicines that build palaces for the mushroom, say rather, the toadstool millionaires. Who is it? These people have a constituency of millions. The popular belief is all but universal that sick persons should feed on noxious substances. One of our members was called not long since to a man with a terribly sore mouth. On inquiry he found that the man had picked up a box of unknown pills, in Howard Street, and had proceeded to take them, on general principles, pills being good for people. They happened to contain mercury, and hence the trouble for which he consulted our associate.

The outside pressure, therefore, is immense upon the physician, tending to force him to active treatment of some kind. Certain old superstitions, still lingering in the mind of the public, and not yet utterly expelled from that of the profession, are at the bottom of this, or contribute to it largely. One of the most ancient is, that disease is a malignant agency, or entity, to be driven out of the body by offensive substances, as the smoke of the fish's heart and liver drove the devil out of Tobit's bridal chamber, according to the Apochrypha. Epileptics used to suck the blood from the wounds of dying gladiators. [Plinii Hist. Mundi. lib. xxviii. c. 4.] The Hon. Robert Boyle's little book was published some twenty or thirty years before our late President, Dr. Holyoke, was born. [A Collection of Choice and Safe Remedies. The Fifth Edition, corrected. London, 1712. Dr. Holyoke was born in 1728.] In it he recommends, as internal medicines, most of the substances commonly used as fertilizers of the soil. His "Album Graecum" is best left untranslated, and his "Zebethum Occidentale" is still more transcendently unmentionable except in a strange dialect. It sounds odiously to us to hear him recommend for dysentery a powder made from "the sole of an old shoe worn by some man that walks

much.” Perhaps nobody here ever heard of tying a stocking, which had been worn during the day, round the neck at night for a sore throat. The same idea of virtue in unlovely secretions! [The idea is very ancient. “*Sordes hominis*” “*Sudore et oleo medicinam facientibus.*”—Plin. xxviii. 4.]

Even now the Homoeopathists have been introducing the venom of serpents, under the learned title of *Lachesis*, and outraging human nature with infusions of the *pediculus capitis*; that is, of course, as we understand their dilutions, the names of these things; for if a fine-tooth-comb insect were drowned in Lake Superior, we cannot agree with them in thinking that every drop of its waters would be impregnated with all the pedicular virtues they so highly value. They know what they are doing. They are appealing to the detestable old superstitious presumption in favor of whatever is nauseous and noxious as being good for the sick.

Again, we all occasionally meet persons stained with nitrate of silver, given for epilepsy. Read what Dr. Martin says, about the way in which it came to be used, in his excellent address before the Norfolk County Medical Society, and the evidence I can show, but have not time for now, and then say what you think of the practice which on such presumptions turns a white man as blue as the double-tattooed King of the Cannibal Islands! [Note A.]

If medical superstitions have fought their way down through all the rationalism and scepticism of the nineteenth century, of course the theories of the schools, supported by great names, adopted into the popular belief and incorporated with the general mass of misapprehension with reference to disease, must be expected to meet us at every turn in the shape of bad practice founded on false doctrine. A French patient complains that his blood heats him, and expects his doctor to bleed him. An English

or American one says he is bilious, and will not be easy without a dose of calomel. A doctor looks at a patient's tongue, sees it coated, and says the stomach is foul; his head full of the old saburrall notion which the extreme inflammation-doctrine of Broussais did so much to root out, but which still leads, probably, to much needless and injurious wrong of the stomach and bowels by evacuants, when all they want is to be let alone. It is so hard to get anything out of the dead hand of medical tradition! The mortmain of theorists extinct in science clings as close as that of ecclesiastics defunct in law.

One practical hint may not be out of place here. It seems to be sometimes forgotten, by those who must know the fact, that the tongue is very different, anatomically and physiologically, from the stomach. Its condition does not in the least imply a similar one of the stomach, which is a very different structure, covered with a different kind of epithelium, and furnished with entirely different secretions. A silversmith will, for a dollar, make a small hoe, of solid silver, which will last for centuries, and will give a patient more comfort, used for the removal of the accumulated epithelium and fungous growths which constitute the "fur," than many a prescription with a split-footed Rx before it, addressed to the parts out of reach.

I think more of this little implement on account of its agency in saving the Colony at Plymouth in the year 1623. Edward Winslow heard that Massasoit was sick and like to die. He found him with a houseful of people about him, women rubbing his arms and legs, and friends "making such a hellish noise" as they probably thought would scare away the devil of sickness. Winslow gave him some conserve, washed his mouth, scraped his tongue, which was in a horrid state, got down some drink, made him some broth, dosed him with an infusion of strawberry leaves

and sassafras root, and had the satisfaction of seeing him rapidly recover. Massasoit, full of gratitude, revealed the plot which had been formed to destroy the colonists, whereupon the Governor ordered Captain Miles Standish to see to them; who thereupon, as everybody remembers, stabbed Pecksuot with his own knife, broke up the plot, saved the colony, and thus rendered Massachusetts and the Massachusetts Medical Society a possibility, as they now are a fact before us. So much for this parenthesis of the tongue-scraper, which helped to save the young colony from a much more serious scrape, and may save the Union yet, if a Presidential candidate should happen to be taken sick as Massasoit was, and his tongue wanted cleaning,--which process would not hurt a good many politicians, with or without a typhoid fever.

Again, see how the "bilious" theory works in every-day life here and now, illustrated by a case from actual life. A youthful practitioner, whose last molars have not been a great while cut, meets an experienced and noted physician in consultation. This is the case. A slender, lymphatic young woman is suckling two lusty twins, the intervals of suction being occupied on her part with palpitations, headaches, giddiness, throbbing in the head, and various nervous symptoms, her cheeks meantime getting bloodless, and her strength running away in company with her milk. The old experienced physician, seeing the yellowish waxy look which is common in anaemic patients, considers it a "bilious" case, and is for giving a rousing emetic. Of course, he has to be wheedled out of this, a recipe is written for beefsteaks and porter, the twins are ignominiously expelled from the anaemic bosom, and forced to take prematurely to the bottle, and this prolific mother is saved for future usefulness in the line of maternity.

The practice of making a profit on the medicine ordered has been held up to reprobation by one at least of the orators who have preceded me. That the effect of this has been ruinous in English practice I cannot doubt, and that in this country the standard of practice was in former generations lowered through the same agency is not unlikely. I have seen an old account-book in which the physician charged an extra price for gilding his rich patients' pills. If all medicine were very costly, and the expense of it always came out of the physician's fee, it would really be a less objectionable arrangement than this other most pernicious one. He would naturally think twice before he gave an emetic or cathartic which evacuated his own pocket, and be sparing of the cholagogues that emptied the biliary ducts of his own wallet, unless he were sure they were needed. If there is any temptation, it should not be in favor of giving noxious agents, as it clearly must be in the case of English druggists and "General Practitioners." The complaint against the other course is a very old one. Pliny, inspired with as truly Roman horror of quackery as the elder Cato,--who declared that the Greek doctors had sworn to exterminate all barbarians, including the Romans, with their drugs, but is said to have physicked his own wife to death, notwithstanding,--Pliny says, in so many words, that the cerates and cataplasms, plasters, collyria, and antidotes, so abundant in his time, as in more recent days, were mere tricks to make money.

A pretty strong eddy, then, or rather many eddies, setting constantly back from the current of sober observation of nature, in the direction of old superstitions and fancies, of exploded theories, of old ways of making money, which are very slow to pass out of fashion.

But there are other special American influences which we are bound to take cognizance of. If I wished to show a student the difficulties of getting at truth from medical experience, I would give him the history of

epilepsy to read. If I wished him to understand the tendencies of the American medical mind, its sanguine enterprise, its self-confidence, its audacious handling of Nature, its impatience with her old-fashioned ways of taking time to get a sick man well, I would make him read the life and writings of Benjamin Rush. Dr. Rush thought and said that there were twenty times more intellect and a hundred times more knowledge in the country in 1799 than before the Revolution. His own mind was in a perpetual state of exaltation produced by the stirring scenes in which he had taken a part, and the quickened life of the time in which he lived. It was not the state to favor sound, calm observation. He was impatient, and Nature is profoundly imperturbable. We may adjust the beating of our hearts to her pendulum if we will and can, but we may be very sure that she will not change the pendulum's rate of going because our hearts are palpitating. He thought he had mastered yellow-fever. "Thank God," he said, "out of one hundred patients whom I have visited or prescribed for this day, I have lost none." Where was all his legacy of knowledge when Norfolk was decimated? Where was it when the blue flies were buzzing over the coffins of the unburied dead piled up in the cemetery of New Orleans, at the edge of the huge trenches yawning to receive them?

One such instance will do as well as twenty. Dr. Rush must have been a charming teacher, as he was an admirable man. He was observing, rather than a sound observer; eminently observing, curious, even, about all manner of things. But he could not help feeling as if Nature had been a good deal shaken by the Declaration of Independence, and that American art was getting to be rather too much for her,--especially as illustrated in his own practice. He taught thousands of American students, he gave a direction to the medical mind of the country more than any other one man; perhaps he typifies it better than any other. It has clearly tended

to extravagance in remedies and trust in remedies, as in everything else. How could a people which has a revolution once in four years, which has contrived the Bowie-knife and the revolver, which has chewed the juice out of all the superlatives in the language in Fourth of July orations, and so used up its epithets in the rhetoric of abuse that it takes two great quarto dictionaries to supply the demand; which insists in sending out yachts and horses and boys to out-sail, out-run, out-fight, and checkmate all the rest of creation; how could such a people be content with any but “heroic” practice? What wonder that the stars and stripes wave over doses of ninety grains of sulphate of quinine, [More strictly, ninety-six grains in two hours. *Dunglison’s Practice*, 1842, vol. ii. p. 520. Eighty grains in one dose. *Ibid.* p. 536. Ninety-six grains of sulphate of quinine are equal to eight ounces of good bark.—Wood & Bache.] and that the American eagle screams with delight to see three drachms of calomel given at a single mouthful?

Add to this the great number of Medical Journals, all useful, we hope, most of them necessary, we trust, many of them excellently well conducted, but which must find something to fill their columns, and so print all the new plans of treatment and new remedies they can get hold of, as the newspapers, from a similar necessity, print the shocking catastrophes and terrible murders.

Besides all this, here are we, the great body of teachers in the numberless medical schools of the Union, some of us lecturing to crowds who clap and stamp in the cities, some of us wandering over the country, like other professional fertilizers, to fecundate the minds of less demonstrative audiences at various scientific stations; all of us talking habitually to those supposed to know less than ourselves, and loving to claim as much for our art as we can, not to say for our own schools, and possibly indi-

rectly for our own practical skill. Hence that annual crop of introductory lectures; the useful blossoming into the ornamental, as the cabbage becomes glorified in the cauliflower; that lecture-room literature of adjectives, that declamatory exaggeration, that splendid show of erudition borrowed from D'Israeli, and credited to Lord Bacon and the rest, which have suggested to our friends of the Medical Journals an occasional epigram at our expense. Hence the tendency in these productions, and in medical lectures generally, to overstate the efficacy of favorite methods of cure, and hence the premium offered for showy talkers rather than sagacious observers, for the men of adjectives rather than of nouns substantive in the more ambitious of these institutions.

Such are some of the eddies in which we are liable to become involved and carried back out of the broad stream of philosophical, or, in other words, truth-loving, investigations. The causes of disease, in the mean time, have been less earnestly studied in the eagerness of the search for remedies. Speak softly! Women have been borne out from an old-world hospital, two in one coffin, that the horrors of their prison-house might not be known, while the very men who were discussing the treatment of the disease were stupidly conveying the infection from bed to bed, as rat-killers carry their poisons from one household to another. Do not some of you remember that I have had to fight this private-pestilence question against a scepticism which sneered in the face of a mass of evidence such as the calm statisticians of the Insurance office could not listen to without horror and indignation? [”The Contagiousness of Puerperal Fever.”—N. E. Quar. Jour. of Medicine and Surgery, April, 1843. Reprinted, with Additions. Boston: Ticknor & Fields. 1855.] Have we forgotten what is told in one of the books published under our own sanction, that a simple measure of ventilation, proposed by Dr. John Clark, had saved more than

sixteen thousand children's lives in a single hospital? How long would it have taken small doses of calomel and rhubarb to save as many children? These may be useful in prudent hands, but how insignificant compared to the great hygienic conditions! Causes, causes, and again causes,--more and more we fall back on these as the chief objects of our attention. The shortest system of medical practice that I know of is the oldest, but not the worst. It is older than Hippocrates, older than Chiron the Centaur. Nature taught it to the first mother when she saw her first-born child putting some ugly pebble or lurid berry into its mouth. I know not in what language it was spoken, but I know that in English it would sound thus: Spit it out!

Art can do something more than say this. It can sometimes reach the pebble or berry after it has been swallowed. But the great thing is to keep these things out of children's mouths, and as soon as they are beyond our reach, to be reasonable and patient with Nature, who means well, but does not like to hurry, and who took nine calendar months, more or less, to every mother's son among us, before she thought he was fit to be shown to the public.

Suffer me now to lay down a few propositions, whether old or new it matters little, not for your immediate acceptance, nor yet for your hasty rejection, but for your calm consideration.

But first, there are a number of terms which we are in the habit of using in a vague though not unintelligible way, and which it is as well now to define. These terms are the tools with which we are to work, and the first thing is to sharpen them. It is nothing to us that they have been sharpened a thousand times before; they always get dull in the using,

and every new workman has a right to carry them to the grindstone and sharpen them to suit himself.

Nature, in medical language, as opposed to Art, means trust in the reactions of the living system against, ordinary normal impressions.

Art, in the same language, as opposed to Nature, means an intentional resort to extraordinary abnormal impressions for the relief of disease.

The reaction of the living system is the essence of both. Food is nothing, if there is no digestive act to respond to it. We cannot raise a blister on a dead man, or hope that a carminative forced between his lips will produce its ordinary happy effect.

Disease, dis-ease,--disturbed quiet, uncomfortableness,--means imperfect or abnormal reaction of the living system, and its more or less permanent results.

Food, in its largest sense, is whatever helps to build up the normal structures, or to maintain their natural actions.

Medicine, in distinction from food, is every unnatural or noxious agent applied for the relief of disease.

Physic means properly the Natural art, and Physician is only the Greek synonyme of Naturalist.

With these few explanations I proceed to unfold the propositions I have mentioned.

Disease and death, if we may judge by the records of creation, are inherently and essentially necessary in the present order of things. A perfect intelligence, trained by a perfect education, could do no more than keep the laws of the physical and spiritual universe. An imperfect intelligence, imperfectly taught,--and this is the condition of our finite humanity,--will certainly fail to keep all these laws perfectly. Disease is one of the penalties of one of the forms of such failure. It is prefigured in the perturbations of the planets, in the disintegration of the elemental masses; it has left its traces in the fossil organisms of extinct creations. [Professor Agassiz has kindly handed me the following note: "There are abnormal structures in animals of all ages anterior to the creation of mankind. Malformed specimens of Crinoids are known from the Triassic and Jurassic deposits. Malformed and diseased bones of tertiary mammalia have been collected in the caverns of Gailenreuth with traces of healing."]

But it is especially the prerogative, I had almost said privilege, of educated and domesticated beings, from man down to the potato, serving to teach them, and such as train them, the laws of life, and to get rid of those who will not mind or cannot be kept subject to these laws.

Disease, being always an effect, is always in exact proportion to the sum of its causes, as much in the case of Spigelius, who dies of a scratch, as in that of the man who recovers after an iron bar has been shot through his brain. The one prevalent failing of the medical art is to neglect the causes and quarrel with the effect.

There are certain general facts which include a good deal of what is called and treated as disease. Thus, there are two opposite movements of life to be seen in cities and elsewhere, belonging to races which, from various persistent causes, are breeding down and tending to run out, and to races

which are breeding up, or accumulating vital capital,--a descending and an ascending series. Let me give an example of each; and that I may incidentally remove a common impression about this country as compared with the Old World, an impression which got tipsy with conceit and staggered into the attitude of a formal proposition in the work of Dr. Robert Knox, I will illustrate the downward movement from English experience, and the upward movement from a family history belonging to this immediate neighborhood.

Miss Nightingale speaks of "the fact so often seen of a great-grandmother, who was a tower of physical vigor, descending into a grandmother perhaps a little less vigorous, but still sound as a bell, and healthy to the core, into a mother languid and confined to her carriage and house; and lastly into a daughter sickly and confined to her bed." So much for the descending English series; now for the ascending American series.

Something more than one hundred and thirty years ago there graduated at Harvard College a delicate youth, who lived an invalid life and died at the age of about fifty. His two children were both of moderate physical power, and one of them diminutive in stature. The next generation rose in physical development, and reached eighty years of age and more in some of its members. The fourth generation was of fair average endowment. The fifth generation, great-great-grandchildren of the slender invalid, are several of, them of extraordinary bodily and mental power; large in stature, formidable alike with their brains and their arms, organized on a more extensive scale than either of their parents.

This brief account illustrates incidentally the fallacy of the universal-degeneration theory applied to American life; the same on which one of our countrymen has lately brought some very forcible facts to bear in a

muscular discussion of which we have heard rather more than is good for us. But the two series, American and English, ascending and descending, were adduced with the main purpose of showing the immense difference of vital endowments in different strains of blood; a difference to which all ordinary medication is in all probability a matter of comparatively trivial purport. Many affections which art has to strive against might be easily shown to be vital to the well-being of society. Hydrocephalus, tabes mesenterica, and other similar maladies, are natural agencies which cut off the children of races that are sinking below the decent minimum which nature has established as the condition of viability, before they reach the age of reproduction. They are really not so much diseases, as manifestations of congenital incapacity for life; the race would be ruined if art could ever learn always to preserve the individuals subject to them. We must do the best we can for them, but we ought also to know what these "diseases" mean.

Again, invalidism is the normal state of many organizations. It can be changed to disease, but never to absolute health by medicinal appliances. There are many ladies, ancient and recent, who are perpetually taking remedies for irremediable pains and aches. They ought to have headaches and back-aches and stomach-aches; they are not well if they do not have them. To expect them to live without frequent twinges is like expecting a doctor's old chaise to go without creaking; if it did, we might be sure the springs were broken. There is no doubt that the constant demand for medicinal remedies from patients of this class leads to their over-use; often in the case of cathartics, sometimes in that of opiates. I have been told by an intelligent practitioner in a Western town, that the constant prescription of opiates by certain physicians in his vicinity has rendered the habitual use of that drug in all that region very prevalent; more com-

mon, I should think, than alcoholic drunkenness in the most intemperate localities of which I have known anything. A frightful endemic demoralization betrays itself in the frequency with which the haggard features and drooping shoulders of the opium-drunkards are met with in the streets.

The next proposition I would ask you to consider is this: The presumption always is that every noxious agent, including medicines proper, which hurts a well man, hurts a sick one. [Note B.]

Let me illustrate this proposition before you decide upon it. If it were known that a prize-fighter were to have a drastic purgative administered two or three days before a contest, or a large blister applied to his back, no one will question that it would affect the betting on his side unfavorably; we will say to the amount of five per cent. Now the drain upon the resources of the system produced in such a case must be at its minimum, for the subject is a powerful man, in the prime of life, and in admirable condition. If the drug or the blister takes five per cent. from his force of resistance, it will take at least as large a fraction from any invalid. But this invalid has to fight a champion who strikes hard but cannot be hit in return, who will press him sharply for breath, but will never pant himself while the wind can whistle through his fleshless ribs. The suffering combatant is liable to want all his stamina, and five per cent. may lose him the battle.

All noxious agents, all appliances which are not natural food or stimuli, all medicines proper, cost a patient, on the average, five per cent. of his vital force, let us say. Twenty times as much waste of force produced by any of them, that is, would exactly kill him, nothing less than kill him, and nothing more. If this, or something like this, is true, then all these medications are, *prima facie*, injurious.

In the game of Life-or-Death, Rouge et Noir, as played between the Doctor and the Sexton, this five per cent., this certain small injury entering into the chances is clearly the sexton's perquisite for keeping the green table, over which the game is played, and where he hoards up his gains. Suppose a blister to diminish a man's pain, effusion or dyspnoea to the saving of twenty per cent. in vital force; his profit from it is fifteen, in that case, for it always hurts him five to begin with, according to our previous assumption.

Presumptions are of vast importance in medicine, as in law. A man is presumed innocent until he is proved guilty. A medicine—that is, a noxious agent, like a blister, a seton, an emetic, or a cathartic should always be presumed to be hurtful. It always is directly hurtful; it may sometimes be indirectly beneficial. If this presumption were established, and disease always assumed to be the innocent victim of circumstances, and not punishable by medicines, that is, noxious agents, or poisons, until the contrary was shown, we should not so frequently hear the remark commonly, perhaps erroneously, attributed to Sir Astley Cooper, but often repeated by sensible persons, that, on the whole, more harm than good is done by medication. Throw out opium, which the Creator himself seems to prescribe, for we often see the scarlet poppy growing in the cornfields, as if it were foreseen that wherever there is hunger to be fed there must also be pain to be soothed; throw out a few specifics which our art did not discover, and is hardly needed to apply [Note C.]; throw out wine, which is a food, and the vapors which produce the miracle of anaesthesia, and I firmly believe that if the whole *materia medica*, as now used, could be sunk to the bottom of the sea, it would be all the better for mankind, -and all the worse for the fishes.

But to justify this proposition, I must add that the injuries inflicted by over-medication are to a great extent masked by disease. Dr. Hooker believes that the typhus syncopata of a preceding generation in New England “was often in fact a brandy and opium disease.” How is a physician to distinguish the irritation produced by his blister from that caused by the inflammation it was meant to cure? How can he tell the exhaustion produced by his evacuants from the collapse belonging to the disease they were meant to remove?

Lastly, medication without insuring favorable hygienic conditions is like amputation without ligatures. I had a chance to learn this well of old, when physician to the Broad Street district of the Boston Dispensary. There, there was no help for the utter want of wholesome conditions, and if anybody got well under my care, it must have been in virtue of the rough-and-tumble constitution which emerges from the struggle for life in the street gutters, rather than by the aid of my prescriptions.

But if the *materia medica* were lost overboard, how much more pains would be taken in ordering all the circumstances surrounding the patient (as can be done everywhere out of the crowded pauper districts), than are taken now by too many who think they do their duty and earn their money when they write a recipe for a patient left in an atmosphere of domestic malaria, or to the most negligent kind of nursing! I confess that I should think my chance of recovery from illness less with Hippocrates for my physician and Mrs. Gamp for my nurse, than if I were in the hands of Hahnemann himself, with Florence Nightingale or good Rebecca Taylor to care for me.

If I am right in maintaining that the presumption is always against the use of noxious agents in disease, and if any whom I might influ-

ence should adopt this as a principle of practice, they will often find themselves embarrassed by the imperative demand of patients and their friends for such agents where a case is not made out against this standing presumption. I must be permitted to say, that I think the French, a not wholly uncivilized people, are in advance of the English and ourselves in the art of prescribing for the sick without hurting them. And I do confess that I think their varied ptisans and syrups are as much preferable to the mineral regimen of bug-poison and ratsbane, so long in favor on the other side of the Channel, as their art of preparing food for the table to the rude cookery of those hard-feeding and much-dosing islanders. We want a reorganized cuisine of invalidism perhaps as much as the culinary reform, for which our lyceum lecturers, and others who live much at hotels and taverns, are so urgent. Will you think I am disrespectful if I ask whether, even in Massachusetts, a dose of calomel is not sometimes given by a physician on the same principle as that upon which a landlord occasionally prescribes bacon and eggs,--because he cannot think of anything else quite so handy? I leave my suggestion of borrowing a hint from French practice to your mature consideration.

I may, however, call your attention, briefly, to the singular fact, that English and American practitioners are apt to accuse French medical practice of inertness, and French surgical practice of unnecessary activity. Thus, Dr. Bostock considers French medical treatment, with certain exceptions, as "decidedly less effective" than that of his own country. Mr. S. Cooper, again, defends the simple British practice of procuring union by the first intention against the attacks of M. Roux and Baron Larrey. [Cooper's Surg. Diet. art. "Wounds." Yet Mr. John Bell gives the French surgeons credit for introducing this doctrine of adhesion, and accuses O'Halloran of "rudeness and ignorance," and "bold, uncivil language," in disputing

their teaching. Princ. of Surgery, vol. i. p. 42. Mr. Hunter succeeded at last in naturalizing the doctrine and practice, but even he had to struggle against the perpetual jealousy of rivals, and died at length assassinated by an insult.] We have often heard similar opinions maintained by our own countrymen. While Anglo-American criticism blows hot or cold on the two departments of French practice, it is not, I hope, indecent to question whether all the wisdom is necessarily with us in both cases.

Our art has had two or three lessons which have a deep meaning to those who are willing to read them honestly. The use of water-dressings in surgery completed the series of reforms by which was abolished the “coarse and cruel practice” of the older surgeons, who with their dressings and acrid balsams, their tents and leaden tubes, “absolutely delayed the cure.” The doctrine of Broussais, transient as was its empire, reversed the practice of half of Christendom for a season, and taught its hasty disciples to shun their old favorite remedies as mortal poisons. This was not enough permanently to shift the presumption about drugs where it belonged, and so at last, just as the sympathetic powder and the Unguentum Armarium came in a superstitious age to kill out the abuses of external over-medication, the solemn farce of Homoeopathy was enacted in the face of our own too credulous civilization, that under shelter of its pretences the “inward bruises” of over-drugged viscera might be allowed to heal by the first intention. Its lesson we must accept, whether we will or not; its follies we are tired of talking about. The security of the medical profession against this and all similar fancies is in the average constitution of the human mind with regard to the laws of evidence.

My friends and brothers in Art! There is nothing to be feared from the utterance of any seeming heresy to which you may have listened. I cannot compromise your collective wisdom. If I have strained the truth one

hair's breadth for the sake of an epigram or an antithesis, you are accustomed to count the normal pulse-beats of sound judgment, and know full well how to recognize the fever—throbs of conceit and the nervous palpitations of rhetoric.

The freedom with which each of us speaks his thought in this presence, belongs in part to the assured position of the Profession in our Commonwealth, to the attitude of Science, which is always fearless, and to the genius of the soil on which we stand, from which Nature withheld the fatal gift of malaria only to fill it with exhalations that breed the fever of inquiry in our blood and in our brain. But mainly we owe the large license of speech we enjoy to those influences and privileges common to us all as self-governing Americans.

This Republic is the chosen home of minorities, of the less power in the presence of the greater. It is a common error to speak of our distinction as consisting in the rule of the majority. Majorities, the greater material powers, have always ruled before. The history of most countries has been that of majorities, mounted majorities, clad in iron, armed with death treading down the tenfold more numerous minorities. In the old civilizations they root themselves like oaks in the soil; men must live in their shadow or cut them down. With us the majority is only the flower of the passing noon, and the minority is the bud which may open in the next morning's sun. We must be tolerant, for the thought which stammers on a single tongue today may organize itself in the growing consciousness of the time, and come back to us like the voice of the multitudinous waves of the ocean on the morrow.

Twenty-five years have passed since one of your honored Presidents spoke to this Society of certain limitations to the power of our Art, now very

generally conceded. Some were troubled, some were almost angry, thinking the Profession might suffer from such concessions. It has certainly not suffered here; if, as some affirm, it has lost respect anywhere, it was probably for other, and no doubt sufficient reasons.

Since that time the civilization of this planet has changed hands. Strike out of existence at this moment every person who was breathing on that day, May 27, 1835, and every institution of society, every art and every science would remain intact and complete in the living that would be left. Every idea the world then held has been since dissolved and recrystallized.

We are repeating the same process. Not to make silver shrines for our old divinities, even though by this craft we should have our wealth, was this Society organized and carried on by the good men and true who went before us. Not for this, but to melt the gold out of the past, though its dross should fly in dust to all the winds of heaven, to save all our old treasures of knowledge and mine deeply for new, to cultivate that mutual respect of which outward courtesy is the sign, to work together, to feel together, to take counsel together, and to stand together for the truth, now, always, here, everywhere; for this our fathers instituted, and we accept, the offices and duties of this time-honored Society.

**Chapter III:
Border Lines of Knowledge in
Some Provinces of Medical Science**

An Introductory Lecture delivered before the Medical Class of Harvard University, November 6, 1861.

[This Lecture appears as it would have been delivered had the time allowed been less strictly, limited. Passages necessarily omitted have been restored, and points briefly touched have been more fully considered. A few notes have been added for the benefit of that limited class of students who care to track an author through the highways and by-ways of his reading. I owe my thanks to several of my professional brethren who have communicated with me on subjects with which they are familiar; especially to Dr. John Dean, for the opportunity of profiting by his unpublished labors, and to Dr. Hasket Derby, for information and references to recent authorities relating to the anatomy and physiology of the eye.]

The entrance upon a new course of Lectures is always a period of interest to instructors and pupils. As the birth of a child to a parent, so is the advent of a new class to a teacher. As the light of the untried world to the infant, so is the dawning of the light resting over the unexplored realms of science to the student. In the name of the Faculty I welcome you, Gentlemen of the Medical Class, new-born babes of science, or lustier nurslings, to this morning of your medical life, and to the arms and the bosom of this ancient University. Fourteen years ago I stood in this place for the first time to address those who occupied these benches. As I recall these past seasons of our joint labors, I feel that they have been on the whole prosperous, and not undeserving of their prosperity.

For it has been my privilege to be associated with a body of true and faithful workers; I cannot praise them freely to their faces, or I should be proud to discourse of the harmonious diligence and the noble spirit in

which they have toiled together, not merely to teach their several branches, but to elevate the whole standard of teaching.

I may speak with less restraint of those gentlemen who have aided me in the most laborious part of my daily duties, the Demonstrators, to whom the successive classes have owed so much of their instruction. They rise before me, the dead and the living, in the midst of the most grateful recollections. The fair, manly face and stately figure of my friend, Dr. Samuel Parkman, himself fit for the highest offices of teaching, yet willing to be my faithful assistant in the time of need, come back to me with the long sigh of regret for his early loss to our earthly companionship. Every year I speak the eulogy of Dr. Ainsworth's patient toil as I show his elaborate preparations: When I take down my "American Cyclopaedia" and borrow instruction from the learned articles of Dr. Kneeland, I cease to regret that his indefatigable and intelligent industry was turned into a broader channel. And what can I say too cordial of my long associated companion and friend, Dr. Hodges, whose admirable skill, working through the swiftest and surest fingers that ever held a scalpel among us, has delighted class after class, and filled our Museum with monuments which will convey his name to unborn generations?

This day belongs, however, not to myself and my recollections, but to all of us who teach and all of you who listen, whether experts in our specialties or aliens to their mysteries, or timid neophytes just entering the portals of the hall of science. Look in with me, then, while I attempt to throw some rays into its interior, which shall illuminate a few of its pillars and cornices, and show at the same time how many niches and alcoves remain in darkness.

SCIENCE is the topography of ignorance. From a few elevated points we triangulate vast spaces, inclosing infinite unknown details. We cast the lead, and draw up a little sand from abysses we may never reach with our dredges.

The best part of our knowledge is that which teaches us where knowledge leaves off and ignorance begins. Nothing more clearly separates a vulgar from a superior mind, than the confusion in the first between the little that it truly knows, on the one hand, and what it half knows and what it thinks it knows on the other.

That which is true of every subject is especially true of the branch of knowledge which deals with living beings. Their existence is a perpetual death and reanimation. Their identity is only an idea, for we put off our bodies many times during our lives, and dress in new suits of bones and muscles.

“Thou art not thyself;

For thou exist'st on many a thousand grains

That issue out of dust.”

If it is true that we understand ourselves but imperfectly in health, this truth is more signally manifested in disease, where natural actions imperfectly understood, disturbed in an obscure way by half-seen causes, are creeping and winding along in the dark toward their destined issue, sometimes using our remedies as safe stepping-stones, occasionally, it may be, stumbling over them as obstacles.

I propose in this lecture to show you some points of contact between our ignorance and our knowledge in several of the branches upon the

study of which you are entering. I may teach you a very little directly, but I hope much more from the trains of thought I shall suggest. Do not expect too much ground to be covered in this rapid survey. Our task is only that of sending out a few pickets under the starry flag of science to the edge of that dark domain where the ensigns of the obstinate rebel, Ignorance, are flying undisputed. We are not making a reconnoissance in force, still less advancing with the main column. But here are a few roads along which we have to march together, and we wish to see clearly how far our lines extend, and where the enemy's outposts begin.

Before touching the branches of knowledge that deal with organization and vital functions, let us glance at that science which meets you at the threshold of your study, and prepares you in some measure to deal with the more complex problems of the living laboratory.

CHEMISTRY. includes the art of separating and combining the elements of matter, and the study of the changes produced by these operations. We can hardly say too much of what it has contributed to our knowledge of the universe and our power of dealing with its materials. It has given us a catalogue *raisonne* of the substances found upon our planet, and shown how everything living and dead is put together from them. It is accomplishing wonders before us every day, such as Arabian story-tellers used to string together in their fables. It spreads the sensitive film on the artificial retina which looks upon us through the optician's lens for a few seconds, and fixes an image that will outlive its original. It questions the light of the sun, and detects the vaporized metals floating around the great luminary,—iron, sodium, lithium, and the rest,—as if the chemist of our remote planet could fill his bell-glasses from its fiery atmosphere. It lends the power which flashes our messages in thrills that leave the lazy chariot of day behind them. It seals up a few dark grains

in iron vases, and lo! at the touch of a single spark, rises in smoke and flame a mighty Afrit with a voice like thunder and an arm that shatters like an earthquake. The dreams of Oriental fancy have become the sober facts of our every-day life, and the chemist is the magician to whom we owe them.

To return to the colder scientific aspect of chemistry. It has shown us how bodies stand affected to each other through an almost boundless range of combinations. It has given us a most ingenious theory to account for certain fixed relations in these combinations. It has successfully eliminated a great number of proximate compounds, more or less stable, from organic structures. It has invented others which form the basis of long series of well-known composite substances. In fact, we are perhaps becoming overburdened with our list of proximate principles, demonstrated and hypothetical.

How much nearer have we come to the secret of force than Lully and Geber and the whole crew of juggling alchemists? We have learned a great deal about the how, what have we learned about the why?

Why does iron rust, while gold remains untarnished, and gold amalgamate, while iron refuses the alliance of mercury?

The alchemists called gold Sol, the sun, and iron Mars, and pleased themselves with fancied relations between these substances and the heavenly bodies, by which they pretended to explain the facts they observed. Some of their superstitions have lingered in practical medicine to the present day, but chemistry has grown wise enough to confess the fact of absolute ignorance.

What is it that makes common salt crystallize in the form of cubes, and saltpetre in the shape of six-sided prisms? We see no reason why it should not have been just the other way, salt in prisms and saltpetre in cubes, or why either should take an exact geometrical outline, any more than coagulating albumen.

But although we had given up attempting to explain the essential nature of affinities and of crystalline types, we might have supposed that we had at least fixed the identity of the substances with which we deal, and determined the laws of their combination. All at once we find that a simple substance changes face, puts off its characteristic qualities and resumes them at will;--not merely when we liquefy or vaporize a solid, or reverse the process; but that a solid is literally transformed into another solid under our own eyes. We thought we knew phosphorus. We warm a portion of it sealed in an empty tube, for about a week. It has become a brown infusible substance, which does not shine in the dark nor oxidate in the air. We heat it to 500 F., and it becomes common phosphorus again. We transmute sulphur in the same singular way. Nature, you know, gives us carbon in the shape of coal and in that of the diamond. It is easy to call these changes by the name allotropism, but not the less do they confound our hasty generalizations.

These facts of allotropism have some corollaries connected with them rather startling to us of the nineteenth century. There may be other transmutations possible besides those of phosphorus and sulphur. When Dr. Prout, in 1840, talked about azote and carbon being "formed" in the living system, it was looked upon as one of those freaks of fancy to which philosophers, like other men, are subject. But when Professor Faraday, in 1851, says, at a meeting of the British Association, that "his hopes are in the direction of proving that bodies called simple were really com-

pounds, and may be formed artificially as soon as we are masters of the laws influencing their combinations,”—when he comes forward and says that he has tried experiments at transmutation, and means, if his life is spared, to try them again,—how can we be surprised at the popular story of 1861, that Louis Napoleon has established a gold-factory and is glutting the mints of Europe with bullion of his own making?

And so with reference to the law of combinations. The old maxim was, *Corpora non agunt nisi soluta*. If two substances, a and b, are inclosed in a glass vessel, c, we do not expect the glass to change them, unless a or b or the compound a b has the power of dissolving the glass. But if for a I take oxygen, for b hydrogen, and for c a piece of spongy platinum, I find the first two combine with the common signs of combustion and form water, the third in the mean time undergoing no perceptible change. It has played the part of the unwedded priest, who marries a pair without taking a fee or having any further relation with the parties. We call this catalysis, catalytic action, the action of presence, or by what learned name we choose. Give what name to it we will, it is a manifestation of power which crosses our established laws of combination at a very open angle of intersection. I think we may find an analogy for it in electrical induction, the disturbance of the equilibrium of the electricity of a body by the approach of a charged body to it, without interchange of electrical conditions between the two bodies. But an analogy is not an explanation, and why a few drops of yeast should change a saccharine mixture to carbonic acid and alcohol,—a little leaven leavening the whole lump,—not by combining with it, but by setting a movement at work, we not only cannot explain, but the fact is such an exception to the recognized laws of combination that Liebig is unwilling to admit the new force at all to which Berzelius had given the name so generally accepted.

The phenomena of isomerism, or identity of composition and proportions of constituents with difference of qualities, and of isomorphism, or identity of form in crystals which have one element substituted for another, were equally surprises to science; and although the mechanism by which they are brought about can be to a certain extent explained by a reference to the hypothetical atoms of which the elements are constituted, yet this is only turning the difficulty into a fraction with an infinitesimal denominator and an infinite numerator.

So far we have studied the working of force and its seeming anomalies in purely chemical phenomena. But we soon find that chemical force is developed by various other physical agencies,—by heat, by light, by electricity, by magnetism, by mechanical agencies; and, vice versa, that chemical action develops heat, light, electricity, magnetism, mechanical force, as we see in our matches, galvanic batteries, and explosive compounds. Proceeding with our experiments, we find that every kind of force is capable of producing all other kinds, or, in Mr. Faraday's language, that "the various forms under which the forces of matter are made manifest have a common origin, or, in other words, are so directly related and mutually dependent that they are convertible one into another."

Out of this doctrine naturally springs that of the conservation of force, so ably illustrated by Mr. Grove, Dr. Carpenter, and Mr. Faraday. This idea is no novelty, though it seems so at first sight. It was maintained and disputed among the giants of philosophy. Des Cartes and Leibnitz denied that any new motion originated in nature, or that any ever ceased to exist; all motion being in a circle, passing from one body to another, one losing what the other gained. Newton, on the other hand, believed that new motions were generated and existing ones destroyed. On the first supposition, there is a fixed amount of force always circulating in

the universe. On the second, the total amount may be increasing or diminishing. You will find in the “Annual of Scientific Discovery” for 1858 a very interesting lecture by Professor Helmholtz of Bonn, in which it is maintained that a certain portion of force is lost in every natural process, being converted into unchangeable heat, so that the universe will come to a stand-still at last, all force passing into heat, and all heat into a state of equilibrium.

The doctrines of the convertibility or specific equivalence of the various forms of force, and of its conservation, which is its logical consequence, are very generally accepted, as I believe, at the present time, among physicists. We are naturally led to the question, What is the nature of force? The three illustrious philosophers just referred to agree in attributing the general movements of the universe to the immediate Divine action. The doctrine of “preestablished harmony” was an especial contrivance of Leibnitz to remove the Creator from unworthy association with the less divine acts of living beings. Obsolete as this expression sounds to our ears, the phrase laws of the universe, which we use so constantly with a wider application, appears to me essentially identical with it.

Force does not admit of explanation, nor of proper definition, any more than the hypothetical substratum of matter. If we assume the Infinite as omnipresent, omniscient, omnipotent, we cannot suppose Him excluded from any part of His creation, except from rebellious souls which voluntarily exclude Him by the exercise of their fatal prerogative of free-will. Force, then, is the act of immanent Divinity. I find no meaning in mechanical explanations. Newton’s hypothesis of an ether filling the heavenly spaces does not, I confess, help my conceptions. I will, and the muscles of my vocal organs shape my speech. God wills, and the universe articulates His power, wisdom, and goodness. That is all I know. There is

no bridge my mind can throw from the “immaterial” cause to the “material” effect.

The problem of force meets us everywhere, and I prefer to encounter it in the world of physical phenomena before reaching that of living actions. It is only the name for the incomprehensible cause of certain changes known to our consciousness, and assumed to be outside of it. For me it is the Deity Himself in action.

I can therefore see a large significance in the somewhat bold language of Burdach: “There is for me but one miracle, that of infinite existence, and but one mystery, the manner in which the finite proceeds from the infinite. So soon as we recognize this incomprehensible act as the general and primordial miracle, of which our reason perceives the necessity, but the manner of which our intelligence cannot grasp, so soon as we contemplate the nature known to us by experience in this light, there is for us no other impenetrable miracle or mystery.”

Let us turn to a branch of knowledge which deals with certainties up to the limit of the senses, and is involved in no speculations beyond them. In certain points of view, HUMAN ANATOMY may be considered an almost exhausted science. From time to time some small organ which had escaped earlier observers has been pointed out,—such parts as the tensor tarsi, the otic ganglion, or the Pacinian bodies; but some of our best anatomical works are those which have been classic for many generations. The plates of the bones in Vesalius, three centuries old, are still masterpieces of accuracy, as of art. The magnificent work of Albinus on the muscles, published in 1747, is still supreme in its department, as the constant references of the most thorough recent treatise on the subject, that of Theile, sufficiently show. More has been done in unravelling the

mysteries of the fasciae, but there has been a tendency to overdo this kind of material analysis. Alexander Thomson split them up into cobwebs, as you may see in the plates to Velpeau's *Surgical Anatomy*. I well remember how he used to shake his head over the coarse work of Scarpa and Astley Cooper,—as if Denner, who painted the separate hairs of the beard and pores of the skin in his portraits, had spoken lightly of the pictures of Rubens and Vandyk.

Not only has little been added to the catalogue of parts, but some things long known had become half-forgotten. Louis and others confounded the solitary glands of the lower part of the small intestine with those which “the great Brunner,” as Haller calls him, described in 1687 as being found in the duodenum. The display of the fibrous structure of the brain seemed a novelty as shown by Spurzheim. One is startled to find the method anticipated by Raymond Vieussens nearly two centuries ago. I can hardly think Gordon had ever looked at his figures, though he names their author, when he wrote the captious and sneering article which attracted so much attention in the pages of the “*Edinburgh Review*.”

This is the place, if anywhere, to mention any observations I could pretend to have made in the course of my teaching the structure of the human body. I can make no better show than most of my predecessors in this well-reaped field. The nucleated cells found connected with the cancellated structure of the bones, which I first pointed out and had figured in 1847, and have shown yearly from that time to the present, and the fossa masseterica, a shallow concavity on the ramus of the lower jaw, for the lodgment of the masseter muscle, which acquires significance when examined by the side of the deep cavity on the corresponding part in some carnivora to which it answers, may perhaps be claimed as deserv-

ing attention. I have also pleased myself by making a special group of the six radiating muscles which diverge from the spine of the axis, or second cervical vertebra, and by giving to it the name *stella musculosa nuchae*. But this scanty catalogue is only an evidence that one may teach long and see little that has not been noted by those who have gone before him. Of course I do not think it necessary to include rare, but already described anomalies, such as the episternal bones, the *rectus sternalis*, and other interesting exceptional formations I have encountered, which have shown a curious tendency to present themselves several times in the same season, perhaps because the first specimen found calls our attention to any we may subsequently meet with.

The anatomy of the scalpel and the amphitheatre was, then, becoming an exhausted branch of investigation. But during the present century the study of the human body has changed its old aspect, and become fertile in new observations. This rejuvenescence was effected by means of two principal agencies,--new methods and a new instrument.

Descriptive anatomy, as known from an early date, is to the body what geography is to the planet. Now geography was pretty well known so long ago as when Arrowsmith, who was born in 1750, published his admirable maps. But in that same year was born Werner, who taught a new way of studying the earth, since become familiar to us all under the name of Geology.

What geology has done for our knowledge of the earth, has been done for our knowledge of the body by that method of study to which is given the name of General Anatomy. It studies, not the organs as such, but the elements out of which the organs are constructed. It is the geology of the body, as that is the general anatomy of the earth. The extraordinary

genius of Bichat, to whom more than any other we owe this new method of study, does not require Mr. Buckle's testimony to impress the practitioner with the importance of its achievements. I have heard a very wise physician question whether any important result had accrued to practical medicine from Harvey's discovery of the circulation. But Anatomy, Physiology, and Pathology have received a new light from this novel method of contemplating the living structures, which has had a vast influence in enabling the practitioner at least to distinguish and predict the course of disease. We know as well what differences to expect in the habits of a mucous and of a serous membrane, as what mineral substances to look for in the chalk or the coal measures. You have only to read Cullen's description of inflammation of the lungs or of the bowels, and compare it with such as you may find in Laennec or Watson, to see the immense gain which diagnosis and prognosis have derived from general anatomy.

The second new method of studying the human structure, beginning with the labors of Scarpa, Burns, and Colles, grew up principally during the first third of this century. It does not deal with organs, as did the earlier anatomists, nor with tissues, after the manner of Bichat. It maps the whole surface of the body into an arbitrary number of regions, and studies each region successively from the surface to the bone, or beneath it. This hardly deserves the name of a science, although Velpeau has dignified it with that title, but it furnishes an admirable practical way for the surgeon who has to operate on a particular region of the body to study that region. If we are buying a farm, we are not content with the State map or a geological chart including the estate in question. We demand an exact survey of that particular property, so that we may know what we are dealing with. This is just what regional, or, as it is sometimes

called, surgical anatomy, does for the surgeon with reference to the part on which his skill is to be exercised. It enables him to see with the mind's eye through the opaque tissues down to the bone on which they lie, as if the skin were transparent as the cornea, and the organs it covers translucent as the gelatinous pulp of a medusa.

It is curious that the Japanese should have anticipated Europe in a kind of rude regional anatomy. I have seen a manikin of Japanese make traced all over with lines, and points marking their intersection. By this their doctors are guided in the performance of acupuncture, marking the safe places to thrust in needles, as we buoy out our ship-channels, and doubtless indicating to learned eyes the spots where incautious meddling had led to those little accidents of shipwreck to which patients are unfortunately liable.

A change of method, then, has given us General and Regional Anatomy. These, too, have been worked so thoroughly, that, if not exhausted, they have at least become to a great extent fixed and positive branches of knowledge. But the first of them, General Anatomy, would never, have reached this positive condition but for the introduction of that, instrument which I have mentioned as the second great aid to modern progress.

This instrument is the achromatic microscope. For the history of the successive steps by which it became the effective scientific implement we now possess, I must refer you to the work of Mr. Quekett, to an excellent article in the "Penny Cyclopaedia," or to that of Sir David Brewster in the "Encyclopaedia Britannica." It is a most interesting piece of scientific history, which shows how the problem which Biot in 1821 pronounced insolvable was in the course of a few years practically solved, with a suc-

cess equal to that which Dollond had long before obtained with the telescope. It is enough for our purpose that we are now in possession of an instrument freed from all confusions and illusions, which magnifies a thousand diameters,--a million times in surface,--without serious distortion or discoloration of its object.

A quarter of a century ago, or a little more, an instructor would not have hesitated to put John Bell's "Anatomy" and Bostock's "Physiology" into a student's hands, as good authority on their respective subjects. Let us not be unjust to either of these authors. John Bell is the liveliest medical writer that I can remember who has written since the days of delightful old Ambroise Pare. His picturesque descriptions and bold figures are as good now as they ever were, and his book can never become obsolete. But listen to what John Bell says of the microscope:

"Philosophers of the last age had been at infinite pains to find the ultimate fibre of muscles, thinking to discover its properties in its form; but they saw just in proportion to the glasses which they used, or to their practice and skill in that art, which is now almost forsaken."

Dr. Bostock's work, neglected as it is, is one which I value very highly as a really learned compilation, full of original references. But Dr. Bostock says: "Much as the naturalist has been indebted to the microscope, by bringing into view many beings of which he could not otherwise have ascertained the existence, the physiologist has not yet derived any great benefit from the instrument."

These are only specimens of the manner in which the microscope and its results were generally regarded by the generation just preceding our own.

I have referred you to the proper authorities for the account of those improvements which about the year 1830 rendered the compound microscope an efficient and trustworthy instrument. It was now for the first time that a true general anatomy became possible. As early as 1816 Treviranus had attempted to resolve the tissues, of which Bichat had admitted no less than twenty-one, into their simple microscopic elements. How could such an attempt succeed, Henle well asks, at a time when the most extensively diffused of all the tissues, the areolar, was not at all understood? All that method could do had been accomplished by Bichat and his followers. It was for the optician to take the next step. The future of anatomy and physiology, as an enthusiastic micrologist of the time said, was in the hands of Messrs. Schieck and Pistor, famous opticians of Berlin.

In those earlier days of which I am speaking, all the points of minute anatomy were involved in obscurity. Some found globules everywhere, some fibres. Students disputed whether the conjunctiva extended over the cornea or not, and worried themselves over Gaultier de Claubry's stratified layers of the skin, or Breschet's blennogenous and chromatogenous organs. The dartos was a puzzle, the central spinal canal a myth, the decidua clothed in fable as much as the golden fleece. The structure of bone, now so beautifully made out,--even that of the teeth, in which old Leeuwenhoek, peeping with his octogenarian eyes through the minute lenses wrought with his own hands, had long ago seen the "pipes," as he called them,--was hardly known at all. The minute structure of the viscera lay in the mists of an uncertain microscopic vision. The intimate

recesses of the animal system were to the students of anatomy what the anterior of Africa long was to geographers, and the stories of microscopic explorers were as much sneered at as those of Bruce or Du Chailly, and with better reason.

Now what have we come to in our own day? In the first place, the minute structure of all the organs has been made out in the most satisfactory way. The special arrangements of the vessels and the ducts of all the glands, of the air-tubes and vesicles of the lungs, of the parts which make up the skin and other membranes, all the details of those complex parenchymatous organs which had confounded investigation so long, have been lifted out of the invisible into the sight of all observers. It is fair to mention here, that we owe a great deal to the art of minute injection, by which we are enabled to trace the smallest vessels in the midst of the tissues where they are distributed. This is an old artifice of anatomists. The famous Ruysch, who died a hundred and thirty years ago, showed that each of the viscera has its terminal vessels arranged in its own peculiar way; the same fact which you may see illustrated in Gerber's figures after the minute injections of Berres. I hope to show you many specimens of this kind in the microscope, the work of English and American hands. Professor Agassiz allows me also to make use of a very rich collection of injected preparations sent him by Professor Hyrtl, formerly of Prague, now of Vienna, for the proper exhibition of which I had a number of microscopes made expressly, by Mr. Grunow, during the past season. All this illustrates what has been done for the elucidation of the intimate details of formation of the organs.

But the great triumph of the microscope as applied to anatomy has been in the resolution of the organs and the tissues into their simple constituent anatomical elements. It has taken up general anatomy where Bichat

left it. He had succeeded in reducing the structural language of nature to syllables, if you will permit me to use so bold an image. The microscopic observers who have come after him have analyzed these into letters, as we may call them,--the simple elements by the combination of which Nature spells out successively tissues, which are her syllables, organs which are her words, systems which are her chapters, and so goes on from the simple to the complex, until she binds up in one living whole that wondrous volume of power and wisdom which we call the human body.

The alphabet of the organization is so short and simple, that I will risk fatiguing your attention by repeating it, according to the plan I have long adopted.

- A. Cells, either floating, as in the blood, or fixed, like those in the cancellated structure of bone, already referred to. Very commonly they have undergone a change of figure, most frequently a flattening which reduces them to scales, as in the epidermis and the epithelium.
- B. Simple, translucent, homogeneous solid, such as is found at the back of the cornea, or forming the intercellular substance of cartilage.
- C. The white fibrous element, consisting of very delicate, tenacious threads. This is the long staple textile substance of the body. It is to the organism what cotton is pretended to be to our Southern States. It pervades the whole animal fabric as areolar tissue, which is the universal packing and wrapping material. It forms the ligaments which bind the whole frame-work together. It furnishes the sinews, which are the channels of power. It enfolds

every muscle. It wraps the brain in its hard, insensible folds, and the heart itself beats in a purse that is made of it.

- D. The yellow elastic, fibrous element, the caoutchouc of the animal mechanism, which pulls things back into place, as the India-rubber band shuts the door we have opened.
- E. The striped muscular fibre,--the red flesh, which shortens itself in obedience to the will, and thus produces all voluntary active motion.
- F. The unstriped muscular fibre, more properly the fusiform-cell fibre, which carries on the involuntary internal movements.
- G. The nerve-cylinder, a glassy tube, with a pith of some firmness, which conveys sensation to the brain and the principle which induces motion from it.
- H. The nerve-corpucle, the centre of nervous power.
- I. The mucous tissue, as Virchow calls it, common in embryonic structures, seen in the vitreous humor of the adult.

To these add X, granules, of indeterminate shape and size, Y, for inorganic matters, such as the salts of bone and teeth, and Z, to stand as a symbol of the fluids, and you have the letters of what I have ventured to call the alphabet of the body.

But just as in language certain diphthongs and syllables are frequently recurring, so we have in the body certain secondary and tertiary combinations, which we meet more frequently than the solitary elements of which they are composed.

Thus A B, or a collection of cells united by simple structureless solid, is seen to be extensively employed in the body under the name of cartilage. Out of this the surfaces of the articulations and the springs of the breathing apparatus are formed. But when Nature came to the buffers of the spinal column (intervertebral disks) and the washers of the joints (semilunar fibrocartilages of the knee, etc.), she required more tenacity than common cartilage possessed. What did she do? What does man do in a similar case of need? I need hardly tell you. The mason lays his bricks in simple mortar. But the plasterer works some hair into the mortar which he is going to lay in large sheets on the walls. The children of Israel complained that they had no straw to make their bricks with, though portions of it may still be seen in the crumbling pyramid of Darshour, which they are said to have built. I visited the old house on Witch Hill in Salem a year or two ago, and there I found the walls coated with clay in which straw was abundantly mingled;--the old Judaizing witch-hangers copied the Israelites in a good many things. The Chinese and the Corsicans blend the fibres of amianthus in their pottery to give it tenacity. Now to return to Nature. To make her buffers and washers hold together in the shocks to which they would be subjected, she took common cartilage and mingled the white fibrous tissue with it, to serve the same purpose as the hair in the mortar, the straw in the bricks and in the plaster of the old wall, and the amianthus in the earthen vessels. Thus we have the combination A B C, or fibro-cartilage. Again, the bones were once only gristle or cartilage, A B. To give them solidity they were infiltrated with stone, in the form of salts of lime, an inorganic element, so that bone would be spelt out by the letters A, B, and Y.

If from these organic syllables we proceed to form organic words, we shall find that Nature employs three principal forms; namely, Vessels,

Membranes, and Parenchyma, or visceral tissue. The most complex of them can be resolved into a combination of these few simple anatomical constituents.

Passing for a moment into the domain of PATHOLOGICAL ANATOMY, we find the same elements in morbid growths that we have met with in normal structures. The pus-corpuscle and the white blood-corpuscle can only be distinguished by tracing them to their origin. A frequent form of so-called malignant disease proves to be only a collection of altered epithelium-cells. Even cancer itself has no specific anatomical element, and the diagnosis of a cancerous tumor by the microscope, though tolerably sure under the eye of an expert, is based upon accidental, and not essential points,—the crowding together of the elements, the size of the cell-nuclei, and similar variable characters.

Let us turn to PHYSIOLOGY. The microscope, which has made a new science of the intimate structure of the organs, has at the same time cleared up many uncertainties concerning the mechanism of the special functions. Up to the time of the living generation of observers, Nature had kept over all her inner workshops the forbidding inscription, No Admittance! If any prying observer ventured to spy through his magnifying tubes into the mysteries of her glands and canals and fluids, she covered up her work in blinding mists and bewildering halos, as the deities of old concealed their favored heroes in the moment of danger.

Science has at length sifted the turbid light of her lenses, and blanched their delusive rainbows.

Anatomy studies the organism in space. Physiology studies it also in time. After the study of form and composition follows close that of action, and this leads us along back to the first moment of the germ, and forward to

the resolution of the living frame into its lifeless elements. In this way Anatomy, or rather that branch of it which we call Histology, has become inseparably blended with the study of function. The connection between the science of life and that of intimate structure on the one hand, and composition on the other, is illustrated in the titles of two recent works of remarkable excellence,—“the Physiological Anatomy” of Todd and Bowman, and the “Physiological Chemistry” of Lehmann.

Let me briefly recapitulate a few of our acquisitions in Physiology, due in large measure to our new instruments and methods of research, and at the same time indicate the limits which form the permanent or the temporary boundaries of our knowledge. I will begin with the largest fact and with the most absolute and universally encountered limitation.

The “largest truth in Physiology” Mr. Paget considers to be “the development of ova through multiplication and division of their cells.” I would state it more broadly as the agency of the cell in all living processes. It seems at present necessary to abandon the original idea of Schwann, that we can observe the building up of a cell from the simple granules of a blastema, or formative fluid. The evidence points rather towards the axiom, *Omnis cellula a cellula*; that is, the germ of a new cell is always derived from a preexisting cell. The doctrine of Schwann, as I remarked long ago (1844), runs parallel with the nebular theory in astronomy, and they may yet stand or fall together.

As we have seen Nature anticipating the plasterer in fibro-cartilage, so we see her beforehand with the glassblower in her dealings with the cell. The artisan blows his vitreous bubbles, large or small, to be used afterwards as may be wanted. So Nature shapes her hyaline vesicles and modifies them to serve the needs of the part where they are found. The artisan whirls his

rod, and his glass bubble becomes a flattened disk, with its bull's-eye for a nucleus. These lips of ours are all glazed with microscopic tiles formed of flattened cells, each one of them with its nucleus still as plain and relatively as prominent, to the eye of the microscopist, as the bull's-eye in the old-fashioned windowpane. Everywhere we find cells, modified or unchanged. They roll in inconceivable multitudes (five millions and more to the cubic millimetre, according to Vierordt) as blood-disks through our vessels. A close-fitting mail of flattened cells coats our surface with a panoply of imbricated scales (more than twelve thousand millions), as Harting has computed, as true a defence against our enemies as the buckler of the armadillo or the carapace of the tortoise against theirs. The same little protecting organs pave all the great highways of the interior system. Cells, again, preside over the chemical processes which elaborate the living fluids; they change their form to become the agents of voluntary and involuntary motion; the soul itself sits on a throne of nucleated cells, and flashes its mandates through skeins of glassy filaments which once were simple chains of vesicles. And, as if to reduce the problem of living force to its simplest expression, we see the yolk of a transparent egg dividing itself in whole or in part, and again dividing and subdividing, until it becomes a mass of cells, out of which the harmonious diversity of the organs arranges itself, worm or man, as God has willed from the beginning.

This differentiation having been effected, each several part assumes its special office, having a life of its own adjusted to that of other parts and the whole. "Just as a tree constitutes a mass arranged in a definite manner, in which, in every single part, in the leaves as in the root, in the trunk as in the blossom, cells are discovered to be the ultimate elements, so is it also with the forms of animal life. Every animal presents itself as

a sum of vital unities, every one of which manifests all the characteristics of life.”

The mechanism is as clear, as unquestionable, as absolutely settled and universally accepted, as the order of movement of the heavenly bodies, which we compute backward to the days of the observatories on the plains of Shinar, and on the faith of which we regulate the movements of war and trade by the predictions of our ephemeris.

The mechanism, and that is all. We see the workman and the tools, but the skill that guides the work and the power that performs it are as invisible as ever. I fear that not every listener took the significance of those pregnant words in the passage I quoted from John Bell,--“thinking to discover its properties in its form.” We have discovered the working bee in this great hive of organization. We have detected the cell in the very act of forming itself from a nucleus, of transforming itself into various tissues, of selecting the elements of various secretions. But why one cell becomes nerve and another muscle, why one selects bile and another fat, we can no more pretend to tell, than why one grape sucks out of the soil the generous juice which princes hoard in their cellars, and another the wine which it takes three men to drink,--one to pour it down, another to swallow it, and a third to hold him while it is going down. Certain analogies between this selecting power and the phenomena of endosmosis in the elective affinities of chemistry we can find, but the problem of force remains here, as everywhere, unsolved and insolvable.

Do we gain anything by attempting to get rid of the idea of a special vital force because we find certain mutually convertible relations between forces in the body and out of it? I think not, any more than we should gain by getting rid of the idea and expression Magnetism because of its

correlation with electricity. We may concede the unity of all forms of force, but we cannot overlook the fixed differences of its manifestations according to the conditions under which it acts. It is a mistake, however, to think the mystery is greater in an organized body than in any other. We see a stone fall or a crystal form, and there is nothing stranger left to wonder at, for we have seen the Infinite in action.

Just so far as we can recognize the ordinary modes of operation of the common forces of nature,—gravity, cohesion, elasticity, transudation, chemical action, and the rest,—we see the so-called vital acts in the light of a larger range of known facts and familiar analogies. Matteucci's well-remembered lectures contain many and striking examples of the working of physical forces in physiological processes. Wherever rigid experiment carries us, we are safe in following this lead; but the moment we begin to theorize beyond our strict observation, we are in danger of falling into those mechanical follies which true science has long outgrown.

Recognizing the fact, then, that we have learned nothing but the machinery of life, and are no nearer to its essence, what is it that we have gained by this great discovery of the cell formation and function?

It would have been reward enough to learn the method Nature pursues for its own sake. If the sovereign Artificer lets us into his own laboratories and workshops, we need not ask more than the privilege of looking on at his work. We do not know where we now stand in the hierarchy of created intelligences. We were made a little lower than the angels. I speak it not irreverently; as the lower animals surpass man in some of their attributes, so it may be that not every angel's eye can see as broadly and as deeply into the material works of God as man himself, looking at the firmament through an equatorial of fifteen inches' aperture, and searching into the tissues with a twelfth of an inch objective.

But there are other positive gains of a more practical character. Thus we are no longer permitted to place the seat of the living actions in the extreme vessels, which are only the carriers from which each part takes what it wants by the divine right of the omnipotent nucleated cell. The organism has become, in the words already borrowed from Virchow, "a sum of vital unities." The strictum and laxum, the increased and diminished action of the vessels, out of which medical theories and methods of treatment have grown up, have yielded to the doctrine of local cell-communities, belonging to this or that vascular district, from which they help themselves, as contractors are wont to do from the national treasury.

I cannot promise to do more than to select a few of the points of contact between our ignorance and our knowledge which present particular interest in the existing state of our physiological acquisitions. Some of them involve the microscopic discoveries of which I have been speaking, some belong to the domain of chemistry, and some have relations with other departments of physical science.

If we should begin with the digestive function, we should find that the long-agitated question of the nature of the acid of the gastric juice is becoming settled in favor of the lactic. But the whole solvent agency of the digestive fluid enters into the category of that exceptional mode of action already familiar to us in chemistry as catalysis. It is therefore doubly difficult of explanation; first, as being, like all reactions, a fact not to be accounted for except by the imaginative appeal to "affinity," and secondly, as being one of those peculiar reactions provoked by an element which stands outside and looks on without compromising itself.

The doctrine of Mulder, so widely diffused in popular and scientific belief, of the existence of a common base of all albuminous substances, the

so-called protein, has not stood the test of rigorous analysis. The division of food into azotized and non-azotized is no doubt important, but the attempt to show that the first only is plastic or nutritive, while the second is simply calorifacient, or heat-producing, fails entirely in the face of the facts revealed by the study of man in different climates, and of numerous experiments in the feeding of animals. I must return to this subject in connection with the respiratory function.

The sugar-making faculty of the liver is another "catalytic" mystery, as great as the rest of them, and no greater. Liver-tissue brings sugar out of the blood, or out of its own substance;--why?

Quia est in eo

Virtus saccharitiva.

Just what becomes of the sugar beyond the fact of its disappearance before it can get into the general circulation and sweeten our tempers, it is hard to say.

The pancreatic fluid makes an emulsion of the fat contained in our food, but just how the fatty particles get into the villi we must leave Brucke and Kolliker to settle if they can.

No one has shown satisfactorily the process by which the blood-corpuscles are formed out of the lymph-corpuscles, nor what becomes of them. These two questions are like those famous household puzzles,--Where do the flies come from? and, Where do the pins go to?

There is a series of organs in the body which has long puzzled physiologists,--organs of glandular aspect, but having no ducts,--the spleen, the thyroid and thymus bodies, and the suprarenal capsules. We call them

vascular glands, and we believe that they elaborate colored and uncolored blood-cells; but just what changes they effect, and just how they effect them, it has proved a very difficult matter to determine. So of the noted glandules which form Peyer's patches, their precise office, though seemingly like those of the lymphatic glands, cannot be positively assigned, so far as I know, at the present time. It is of obvious interest to learn it with reference to the pathology of typhoid fever. It will be remarked that the coincidence of their changes in this disease with enlargement of the spleen suggests the idea of a similarity of function in these two organs.

The theories of the production of animal heat, from the times of Black, Lavoisier, and Crawford to those of Liebig, are familiar to all who have paid any attention to physiological studies. The simplicity of Liebig's views, and the popular form in which they have been presented, have given them wide currency, and incorporated them in the common belief and language of our text-books. Direct oxidation or combustion of the carbon and hydrogen contained in the food, or in the tissues themselves; the division of alimentary substances into respiratory, or non-azotized, and azotized,--these doctrines are familiar even to the classes in our high-schools. But this simple statement is boldly questioned. Nothing proves that oxygen combines (in the system) with hydrogen and carbon in particular, rather than with sulphur and azote. Such is the well-grounded statement of Robin and Verdeil. "It is very probable that animal heat is entirely produced by the chemical actions which take place in the organism, but the phenomenon is too complex to admit of our calculating it according to the quality of oxygen consumed." These last are the words of Regnault, as cited by Mr. Lewes, whose intelligent discussion of this and many of the most interesting physiological problems I strongly recommend to your attention.

This single illustration covers a wider ground than the special function to which it belongs. We are learning that the chemistry of the body must be studied, not simply by its ingesta and egesta, but that there is a long intermediate series of changes which must be investigated in their own light, under their own special conditions. The expression “sum of vital unities” applies to the chemical actions, as well as to other actions localized in special parts; and when the distinguished chemists whom I have just cited entitle their work a treatise on the immediate principles of the body, they only indicate the nature of that profound and subtle analysis which must take the place of all hasty generalizations founded on a comparison of the food with residual products.

I will only call your attention to the fact, that the exceptional phenomenon of the laboratory is the prevailing law of the organism. Nutrition itself is but one great catalytic process. As the blood travels its rounds, each part selects its appropriate element and transforms it to its own likeness. Whether the appropriating agent be cell or nucleus, or a structureless solid like the intercellular substance of cartilage, the fact of its presence determines the separation of its proper constituents from the circulating fluid, so that even when we are wounded bone is replaced by bone, skin by skin, and nerve by nerve.

It is hardly without a smile that we resuscitate the old question of the ‘vis insita’ of the muscular fibre, so famous in the discussions of Haller and his contemporaries. Speaking generally, I think we may say that Haller’s doctrine is the one now commonly received; namely, that the muscles contract in virtue of their own inherent endowments. It is true that Kolliker says no perfectly decisive fact has been brought forward to prove that the striated muscles contract without having been acted on by nerves. Yet Mr. Bowman’s observations on the contraction of isolated

fibres appear decisive enough (unless we consider them invalidated by Dr. Lionel Beale's recent researches), tending to show that each elementary fibre is supplied with nerves; and as to the smooth muscular fibres, we have Virchow's statement respecting the contractility of those of the umbilical cord, where there is not a trace of any nerves.

In the investigation of the nervous system, anatomy and physiology have gone hand in hand. It is very singular that so important, and seemingly simple, a fact as the connection of the nerve-tubes, at their origin or in their course, with the nerve-cells, should have so long remained open to doubt, as you may see that it did by referring to the very complete work of Sharpey and Quain (edition of 1849), the histological portion of which is cordially approved by Kolliker himself.

Several most interesting points of the minute anatomy of the nervous centres have been laboriously and skilfully worked out by a recent graduate of this Medical School, in a monograph worthy to stand in line with those of Lockhart Clarke, Stilling, and Schroder van der Kolk. I have had the privilege of examining and of showing some of you a number of Dr. Dean's skilful preparations. I have no space to give even an abstract of his conclusions. I can only refer to his proof of the fact, that a single cell may send its processes into several different bundles of nerve-roots, and to his demonstration of the curved ascending and descending fibres from the posterior nerveroots, to reach what he has called the longitudinal columns of the cornea. I must also mention Dr. Dean's exquisite microscopic photographs from sections of the medulla oblongata, which appear to me to promise a new development, if not a new epoch, in anatomical art.

It having been settled that the nerve-tubes can very commonly be traced directly to the nerve-cells, the object of all the observers in this department of anatomy is to follow these tubes to their origin. We have an infinite snarl of telegraph wires, and we may be reasonably sure, that, if we can follow them up, we shall find each of them ends in a battery somewhere. One of the most interesting problems is to find the ganglionic origin of the great nerves of the medulla oblongata, and this is the end to which, by the aid of the most delicate sections, colored so as to bring out their details, mounted so as to be imperishable, magnified by the best instruments, and now self-recorded in the light of the truth-telling sunbeam, our fellow-student is making a steady progress in a labor which I think bids fair to rank with the most valuable contributions to histology that we have had from this side of the Atlantic.

It is interesting to see how old questions are incidentally settled in the course of these new investigations. Thus, Mr. Clarke's dissections, confirmed by preparations of Mr. Dean's which I have myself examined, placed the fact of the decussation of the pyramids—denied by Haller, by Morgagni, and even by Stilling—beyond doubt. So the spinal canal, the existence of which, at least in the adult, has been so often disputed, appears as a coarse and unequivocal anatomical fact in many of the preparations referred to.

While these studies of the structure of the cord have been going on, the ingenious and indefatigable Brown-Sequard has been investigating the functions of its different parts with equal diligence. The microscopic anatomists had shown that the ganglionic corpuscles of the gray matter of the cord are connected with each other by their processes, as well as with the nerve-roots. M. Brown-Sequard has proved by numerous experiments that the gray substance transmits sensitive impressions and

muscular stimulation. The oblique ascending and descending fibres from the posterior nerve-roots, joining the “longitudinal columns of the cornua,” account for the results of Brown-Sequard’s sections of the posterior columns. The physiological experimenter has also made it evident that the decussation of the conductors of sensitive impressions has its seat in the spinal core, and not in the encephalon, as had been supposed. Not less remarkable than these results are the facts, which I with others of my audience have had the opportunity of observing, as shown by M. Brown-Sequard, of the artificial production of epilepsy in animals by injuring the spinal cord, and the induction of the paroxysm by pinching a certain portion of the skin. I would also call the student’s attention to his account of the relations of the nervous centres to nutrition and secretion, the last of which relations has been made the subject of an extended essay by our fellow countryman, Dr. H. F. Campbell of Georgia.

The physiology of the spinal cord seems a simple matter as you study it in Longet. The experiments of Brown-Sequard have shown the problem to be a complex one, and raised almost as many doubts as they have solved questions; at any rate, I believe all lecturers on physiology agree that there is no part of their task they dread so much as the analysis of the evidence relating to the special offices of the different portions of the medulla spinalis. In the brain we are sure that we do not know how to localize functions; in the spinal cord, we think we do know something; but there are so many anomalies, and seeming contradictions, and sources of fallacy, that beyond the facts of crossed paralysis of sensation, and the conducting agency of the gray substance, I am afraid we retain no cardinal principles discovered since the development of the reflex function took its place by Sir Charles Bell’s great discovery.

By the manner in which I spoke of the brain, you will see that I am obliged to leave phrenology sub Jove,--out in the cold,--as not one of the household of science. I am not one of its haters; on the contrary, I am grateful for the incidental good it has done. I love to amuse myself in its plaster Golgothas, and listen to the glib professor, as he discovers by his manipulations "All that disgraced my betters met in me."

I loved of old to see square-headed, heavy-jawed Spurzheim make a brain flower out into a corolla of marrowy filaments, as Vieussens had done before him, and to hear the dry-fibred but human-hearted George Combe teach good sense under the disguise of his equivocal system. But the pseudo-sciences, phrenology and the rest, seem to me only appeals to weak minds and the weak points of strong ones. There is a pica or false appetite in many intelligences; they take to odd fancies in place of wholesome truth, as girls gnaw at chalk and charcoal. Phrenology juggles with nature. It is so adjusted as to soak up all evidence that helps it, and shed all that harms it. It crawls forward in all weathers, like Richard Edgeworth's hygrometer. It does not stand at the boundary of our ignorance, it seems to me, but is one of the will-o'-the-wisps of its undisputed central domain of bog and quicksand. Yet I should not have devoted so many words to it, did I not recognize the light it has thrown on human actions by its study of congenital organic tendencies. Its maps of the surface of the head are, I feel sure, founded on a delusion, but its studies of individual character are always interesting and instructive.

The "snapping-turtle" strikes after its natural fashion when it first comes out of the egg. Children betray their tendencies in their way of dealing with the breasts that nourish them; nay, lean venture to affirm, that long before they are born they teach their mothers something of their turbulent or quiet tempers.

“Castor gaudet equis, ovo proanatus eodem Pugnus.”

Strike out the false pretensions of phrenology; call it anthropology; let it study man the individual in distinction from man the abstraction, the metaphysical or theological lay-figure; and it becomes “the proper study of mankind,” one of the noblest and most interesting of pursuits.

The whole physiology of the nervous system, from the simplest manifestation of its power in an insect up to the supreme act of the human intelligence working through the brain, is full of the most difficult yet profoundly interesting questions. The singular relations between electricity and nerve-force, relations which it has been attempted to interpret as meaning identity, in the face of palpable differences, require still more extended studies. You may be interested by Professor Faraday’s statement of his opinion on the matter. “Though I am not satisfied that the nervous fluid is only electricity, still I think that the agent in the nervous system maybe an inorganic force; and if there be reason for supposing that magnetism is a higher relation of force than electricity, so it may well be imagined that the nervous power may be of a still more exalted character, and yet within the reach of experiment.”

In connection with this statement, it is interesting to refer to the experiments of Helmholtz on the rapidity of transmission of the nervous actions. The rate is given differently in Valentin’s report of these experiments and in that found in the “Scientific Annual” for 1858. One hundred and eighty to three hundred feet per second is the rate of movement assigned for sensation, but all such results must be very vaguely approximative. Boxers, fencers, players at the Italian game of morn, “prestidigitators,” and all who depend for their success on rapidity of motion, know what differences there are in the personal equation of movement.

Reflex action, the mechanical sympathy, if I may so call it, of distant parts; Instinct, which is crystallized intelligence,--an absolute law with its invariable planes and angles introduced into the sphere of consciousness, as raphides are inclosed in the living cells of plants;

Intellect,--the operation of the thinking principle through material organs, with an appreciable waste of tissue in every act of thought, so that our clergymen's blood has more phosphates to get rid of on Monday than on any other day of the week; Will,--theoretically the absolute determining power, practically limited in different degrees by the varying organization of races and individuals, annulled or perverted by different ill-understood organic changes; on all these subjects our knowledge is in its infancy, and from the study of some of them the interdict of the Vatican is hardly yet removed.

I must allude to one or two points in the histology and physiology of the organs of sense. The anterior continuation of the retina beyond the ora serrata has been a subject of much discussion. If H. Muller and Kolliker can be relied upon, this question is settled by recognizing that a layer of cells, continued from the retina, passes over the surface of the zonula Zinnii, but that no proper nervous element is so prolonged forward.

I observe that Kolliker calls the true nervous elements of the retina "the layer of gray cerebral substance." In fact, the ganglionic corpuscles of each eye may be considered as constituting a little brain, connected with the masses behind by the commissure, commonly called the optic nerve. We are prepared, therefore, to find these two little brains in the most intimate relations with each other, as we find the cerebral hemispheres. We know that they are directly connected by fibres that arch round through the chiasma.

I mention these anatomical facts to introduce a physiological observation of my own, first announced in one of the lectures before the Medical Class, subsequently communicated to the American Academy of Arts and Sciences, and printed in its "Transactions" for February 14, 1860. I refer to the apparent transfer of impressions from one retina to the other, to which I have given the name reflex vision. The idea was suggested to me in consequence of certain effects noticed in employing the stereoscope. Professor William B. Rodgers has since called the attention of the American Scientific Association to some facts bearing on the subject, and to a very curious experiment of Leonardo da Vinci's, which enables the observer to look through the palm of his hand (or seem to), as if it had a hole bored through it. As he and others hesitated to accept my explanation, I was not sorry to find recently the following words in the "Observations on Man" of that acute observer and thinker, David Hartley. "An impression made on the right eye alone by a single object may propagate itself into the left, and there raise up an image almost equal in vividness to itself; and consequently when we see with one eye only, we may, however, have pictures in both eyes." Hartley, in 1784, had anticipated many of the doctrines which have since been systematized into the theory of reflex actions, and with which I have attempted to associate this act of reflex vision. My sixth experiment, however, in the communication referred to, appears to me to be a crucial one, proving the correctness of my explanation, and I am not aware that it has been before instituted.

Another point of great interest connected with the physiology of vision, and involved for a long time in great obscurity, is that of the adjustment of the eye to different distances. Dr. Clay Wallace of New York, who published a very ingenious little book on the eye about twenty years ago, with vignettes reminding one of Bewick, was among the first, if not

the first, to describe the ciliary muscle, to which the power of adjustment is generally ascribed. It is ascertained, by exact experiment with the phacueidoscope, that accommodation depends on change of form of the crystalline lens. Where the crystalline is wanting, as Mr. Ware long ago taught, no power of accommodation remains. The ciliary muscle is generally thought to effect the change of form of the crystalline. The power of accommodation is lost after the application of atropine, in consequence, as is supposed, of the paralysis of this muscle. This, I believe, is the nearest approach to a demonstration we have on this point.

I have only time briefly to refer to Professor Draper's most ingenious theory as to the photographic nature of vision, for an account of which I must refer to his original and interesting *Treatise on Physiology*.

It were to be wished that the elaborate and very interesting researches of the Marquis Corti, which have revealed such singular complexity of structure in the cochlea of the ear, had done more to clear up its doubtful physiology; but I am afraid we have nothing but hypotheses for the special part it plays in the act of hearing, and that we must say the same respecting the office of the semicircular canals.

The microscope has achieved some of its greatest triumphs in teaching us the changes which occur in the development of the embryo. No more interesting discovery stands recorded in the voluminous literature of this subject than the one originally announced by Martin Barry, afterwards discredited, and still later confirmed by Mr. Newport and others; namely the fact that the fertilizing filament reaches the interior of the ovum in various animals;--a striking parallel to the action of the pollen-tube

in the vegetable. But beyond the mechanical facts all is mystery in the movements of organization, as profound as in the fall of a stone or the formation of a crystal.

To the chemist and the microscopist the living body presents the same difficulties, arising from the fact that everything is in perpetual change in the organism. The fibrine of the blood puzzles the one as much as its globules puzzle the other. The difference between the branches of science which deal with space only, and those which deal with space and time, is this: we have no glasses that can magnify time. The figure I here show you was photographed from an object (*pleurosigma angulatum*) magnified a thousand diameters, or presenting a million times its natural surface. This other figure of the same object, enlarged from the one just shown, is magnified seven thousand diameters, or forty-nine million times in surface. When we can make the forty-nine millionth of a second as long as its integer, physiology and chemistry will approach nearer the completeness of anatomy.

Our reverence becomes more worthy, or, if you will, less unworthy of its Infinite Object in proportion as our intelligence is lifted and expanded to a higher and broader understanding of the Divine methods of action. If Galen called his heathen readers to admire, the power, the wisdom, the providence, the goodness of the "Framer of the animal body,"—if Mr. Boyle, the student of nature, as Addison and that friend of his who had known him for forty years tell us, never uttered the name of the Supreme Being without making a distinct pause in his speech, in token of his devout recognition of its awful meaning,—surely we, who inherit the accumulated wisdom of nearly two hundred years since the time of the British philosopher, and of almost two thousand since the Greek physician, may well lift our thoughts from the works we study to their great

Artificer. These wonderful discoveries which we owe to that mighty little instrument, the telescope of the inner firmament with all its included worlds; these simple formulae by which we condense the observations of a generation in a single axiom; these logical analyses by which we fence out the ignorance we cannot reclaim, and fix the limits of our knowledge,--all lead us up to the inspiration of the Almighty, which gives understanding to the world's great teachers. To fear science or knowledge, lest it disturb our old beliefs, is to fear the influx of the Divine wisdom into the souls of our fellow-men; for what is science but the piecemeal revelation,--uncovering,--of the plan of creation, by the agency of those chosen prophets of nature whom God has illuminated from the central light of truth for that single purpose?

The studies which we have glanced at are preliminary in your education to the practical arts which make use of them,--the arts of healing,--surgery and medicine. The more you examine the structure of the organs and the laws of life, the more you will find how resolutely each of the cell-republics which make up the *E pluribus unum* of the body maintains its independence. Guard it, feed it, air it, warm it, exercise or rest it properly, and the working elements will do their best to keep well or to get well. What do we do with ailing vegetables? Dr. Warren, my honored predecessor in this chair, bought a country-place, including half of an old orchard. A few years afterwards I saw the trees on his side of the fence looking in good health, while those on the other side were scraggy and miserable. How do you suppose this change was brought about? By watering them with Fowler's solution? By digging in calomel freely about their roots? Not at all; but by loosening the soil round them, and supplying them with the right kind of food in fitting quantities.

Now a man is not a plant, or, at least, he is a very curious one, for he carries his soil in his stomach, which is a kind—of portable flower-pot, and he grows round it, instead of out of it. He has, besides, a singularly complex nutritive apparatus and a nervous system. But recollect the doctrine already enunciated in the language of Virchow, that an animal, like a tree, is a sum of vital unities, of which the cell is the ultimate element. Every healthy cell, whether in a vegetable or an animal, necessarily performs its function properly so long as it is supplied with its proper materials and stimuli. A cell may, it is true, be congenitally defective, in which case disease is, so to speak, its normal state. But if originally sound and subsequently diseased, there has certainly been some excess, deficiency, or wrong quality in the materials or stimuli applied to it. You remove this injurious influence and substitute a normal one; remove the baked coal-ashes, for instance, from the roots of a tree, and replace them with loam; take away the salt meat from the patient's table, and replace it with fresh meat and vegetables, and the cells of the tree or the man return to their duty.

I do not know that we ever apply to a plant any element which is not a natural constituent of the vegetable structure, except perhaps externally, for the accidental purpose of killing parasites. The whole art of cultivation consists in learning the proper food and conditions of plants, and supplying them. We give them water, earths, salts of various kinds such as they are made of, with a chance to help themselves to air and light. The farmer would be laughed at who undertook to manure his fields or his trees with a salt of lead or of arsenic. These elements are not constituents of healthy plants. The gardener uses the waste of the arsenic furnaces to kill the weeds in his walks.

If the law of the animal cell, and of the animal organism, which is built up of such cells, is like that of the vegetable, we might expect that we should treat all morbid conditions of any of the vital unities belonging to an animal in the same way, by increasing, diminishing, or changing its natural food or stimuli.

That is an aliment which nourishes; whatever we find in the organism, as a constant and integral element, either forming part of its structure, or one of the conditions of vital processes, that and that only deserves the name of aliment. I see no reason, therefore, why iron, phosphate of lime, sulphur, should not be considered food for man, as much as guano or poudrette for vegetables. Whether one or another of them is best in any given case,--whether they shall be taken alone or in combination, in large or small quantities, are separate questions. But they are elements belonging to the body, and even in moderate excess will produce little disturbance. There is no presumption against any of this class of substances, any more than against water or salt, provided they are used in fitting combinations, proportions, and forms.

But when it comes to substances alien to the healthy system, which never belong to it as normal constituents, the case is very different. There is a presumption against putting lead or arsenic into the human body, as against putting them into plants, because they do not belong there, any more than pounded glass, which, it is said, used to be given as a poison. The same thing is true of mercury and silver. What becomes of these alien substances after they get into the system we cannot always tell. But in the case of silver, from the accident of its changing color under the influence of light, we do know what happens. It is thrown out, in part at least, under the epidermis, and there it remains to the patient's dying day. This is a striking illustration of the difficulty which the system finds

in dealing with non-assimilable elements, and justifies in some measure the vulgar prejudice against mineral poisons.

I trust the youngest student on these benches will not commit the childish error of confounding a presumption against a particular class of agents with a condemnation of them. Mercury, for instance, is alien to the system, and eminently disturbing in its influence. Yet its efficacy in certain forms of specific disease is acknowledged by all but the most sceptical theorists. Even the esprit moqueur of Ricord, the Voltaire of pelvic literature, submits to the time-honored constitutional authority of this great panacea in the class of cases to which he has devoted his brilliant intelligence. Still, there is no telling what evils have arisen from the abuse of this mineral. Dr. Armstrong long ago pointed out some of them, and they have become matters of common notoriety. I am pleased, therefore, when I find so able and experienced a practitioner as Dr. Williams of this city proving that iritis is best treated without mercury, and Dr. Vanderpoel showing the same thing to be true for pericarditis.

Whatever elements nature does not introduce into vegetables, the natural food of all animal life,--directly of herbivorous, indirectly of carnivorous animals,--are to be regarded with suspicion. Arsenic-eating may seem to improve the condition of horses for a time,--and even of human beings, if Tschudi's stories can be trusted,--but it soon appears that its alien qualities are at war with the animal organization. So of copper, antimony, and other non-alimentary simple substances; everyone of them is an intruder in the living system, as much as a constable would be, quartered in our household. This does not mean that they may not, any of them, be called in for a special need, as we send for the constable when we have good

reason to think we have a thief under our roof; but a man's body is his castle, as well as his house, and the presumption is that we are to keep our alimentary doors bolted against these perturbing agents.

Now the feeling is very apt to be just contrary to this. The habit has been very general with well-taught practitioners, to have recourse to the introduction of these alien elements into the system on the occasion of any slight disturbance. The tongue was a little coated, and mercury must be given; the skin was a little dry, and the patient must take antimony. It was like sending for the constable and the posse comitatus when there is only a carpet to shake or a refuse-barrel to empty. [Dr. James Johnson advises persons not ailing to take five grains of blue pill with one or two of aloes twice a week for three or four months in the year, with half a pint of compound decoction of sarsaparilla every day for the same period, to preserve health and prolong life. *Pract. Treatise on Dis. of Liver, etc.* p. 272.] The constitution bears slow poisoning a great deal better than might be expected; yet the most intelligent men in the profession have gradually got out of the habit of prescribing these powerful alien substances in the old routine way. Mr. Metcalf will tell you how much more sparingly they are given by our practitioners at the present time, than when he first inaugurated the new era of pharmacy among us. Still, the presumption in favor of poisoning out every spontaneous reaction of outraged nature is not extinct in those who are trusted with the lives of their fellow-citizens. "On examining the file of prescriptions at the hospital, I discovered that they were rudely written, and indicated a treatment, as they consisted chiefly of tartar emetic, ipecacuanha, and epsom salts, hardly favorable to the cure of the prevailing diarrhoea and dysenteries." In a report of a poisoning case now on trial, where we are told that arsenic enough was found in the stomach to produce death in twenty-four

hours, the patient is said to have been treated by arsenic, phosphorus, bryonia, aconite, nux vomica, and muriatic acid,--by a practitioner of what school it may be imagined.

The traditional idea of always poisoning out disease, as we smoke out vermin, is now seeking its last refuge behind the wooden cannon and painted port-holes of that unblushing system of false scientific pretences which I do not care to name in a discourse addressed to an audience devoted to the study of the laws of nature in the light of the laws of evidence. It is extraordinary to observe that the system which, by its reducing medicine to a name and a farce, has accustomed all who have sense enough to see through its thin artifices to the idea that diseases get well without being "cured," should now be the main support of the tottering poison-cure doctrine. It has unquestionably helped to teach wise people that nature heals most diseases without help from pharmaceutic art, but it continues to persuade fools that art can arrest them all with its specifics.

It is worse than useless to attempt in any way to check the freest expression of opinion as to the efficacy of any or all of the "heroic" means of treatment employed by practitioners of different schools and periods. Medical experience is a great thing, but we must not forget that there is a higher experience, which tries its results in a court of a still larger jurisdiction; that, namely, in which the laws of human belief are summoned to the witness-box, and obliged to testify to the sources of error which beset the medical practitioner. The verdict is as old as the father of medicine, who announces it in the words, "judgment is difficult." Physicians differed so in his time, that some denied that there was any such thing as an art of medicine.

One man's best remedies were held as mischievous by another. The art of healing was like soothsaying, so the common people said; "the same bird was lucky or unlucky, according as he flew to the right or left."

The practice of medicine has undergone great changes within the period of my own observation. Venesection, for instance, has so far gone out of fashion, that, as I am told by residents of the New York Bellevue and the Massachusetts General Hospitals, it is almost obsolete in these institutions, at least in medical practice. The old Brunonian stimulating treatment has come into vogue again in the practice of Dr. Todd and his followers. The compounds of mercury have yielded their place as drugs of all work, and specifics for that very frequent subjective complaint, *nescio quid faciam*,--to compounds of iodine. [Sir Astley Cooper has the boldness,--or honesty,--to speak of medicines which "are given as much to assist the medical man as his patient." Lectures (London, 1832), p. 14.] Opium is believed in, and quinine, and "rum," using that expressive monosyllable to mean all alcoholic cordials. If Moliere were writing now, instead of *saignare*, *purgare*, and the other, he would be more like to say, *Stimulare*, *opium dare* et *potassio-iodizare*.

I have been in relation successively with the English and American evacuant and alterative practice, in which calomel and antimony figured so largely that, as you may see in Dr. Jackson's last "Letter," Dr. Holyoke, a good representative of sterling old-fashioned medical art, counted them with opium and Peruvian bark as his chief remedies; with the moderately expectant practice of Louis; the blood-letting "*coup sur coup*" of Bouillaud; the contra-stimulant method of Rasori and his followers; the anti-irritant system of Broussais, with its leeching and gum-water; I have heard from our own students of the simple opium practice of the renowned German teacher, Oppolzer; and now I find the medical community

brought round by the revolving cycle of opinion to that same old plan of treatment which John Brown taught in Edinburgh in the last quarter of the last century, and Miner and Tully fiercely advocated among ourselves in the early years of the present. The worthy physicians last mentioned, and their antagonist Dr. Gallup, used stronger language than we of these degenerate days permit ourselves. "The lancet is a weapon which annually slays more than the sword," says Dr. Tully. "It is probable that, for forty years past, opium and its preparations have done seven times the injury they have rendered benefit, on the great scale of the world," says Dr. Gallup.

What is the meaning of these perpetual changes and conflicts of medical opinion and practice, from an early antiquity to our own time? Simply this: all "methods" of treatment end in disappointment of those extravagant expectations which men are wont to entertain of medical art. The bills of mortality are more obviously affected by drainage, than by this or that method of practice. The insurance companies do not commonly charge a different percentage on the lives of the patients of this or that physician. In the course of a generation, more or less, physicians themselves are liable to get tired of a practice which has so little effect upon the average movement of vital decomposition. Then they are ready for a change, even if it were back again to a method which has already been tried, and found wanting.

Our practitioners, or many of them, have got back to the ways of old Dr. Samuel Danforth, who, as it is well known, had strong objections to the use of the lancet. By and by a new reputation will be made by some discontented practitioner, who, tired of seeing patients die with their skins full of whiskey and their brains muddied with opium, returns to a bold antiphlogistic treatment, and has the luck to see a few patients of note

get well under it. So of the remedies which have gone out of fashion and been superseded by others. It can hardly be doubted that they will come into vogue again, more or less extensively, under the influence of that irresistible demand for change just referred to.

Then will come the usual talk about a change in the character of disease, which has about as much meaning as that concerning "old-fashioned snow-storms." "Epidemic constitutions" of disease mean something, no doubt; a great deal as applied to malarious affections; but that the whole type of diseases undergoes such changes that the practice must be reversed from depleting to stimulating, and vice versa, is much less likely than that methods of treatment go out of fashion and come in again. If there is any disease which claims its percentage with reasonable uniformity, it is phthisis. Yet I remember that the reverend and venerable Dr. Prince of Salem told me one Commencement day, as I was jogging along towards Cambridge with him, that he recollected the time when that disease was hardly hardly known; and in confirmation of his statement mentioned a case in which it was told as a great event, that somebody down on "the Cape" had died of "a consumption." This story does not sound probable to myself, as I repeat it, yet I assure you it is true, and it shows how cautiously we must receive all popular stories of great changes in the habits of disease.

Is there no progress, then, but do we return to the same beliefs and practices which our forefathers wore out and threw away? I trust and believe that there is a real progress. We may, for instance, return in a measure to the Brunonian stimulating system, but it must be in a modified way, for we cannot go back to the simple Brunonian pathology, since we have learned too much of diseased action to accept its convenient dualism. So of other doctrines, each new Avatar strips them of some of their old pre-

tensions, until they take their fitting place at last, if they have any truth in them, or disappear, if they were mere phantasms of the imagination.

In the mean time, while medical theories are coming in and going out, there is a set of sensible men who are never run away with by them, but practise their art sagaciously and faithfully in much the same way from generation to generation. From the time of Hippocrates to that of our own medical patriarch, there has been an apostolic succession of wise and good practitioners. If you will look at the first aphorism of the ancient Master you will see that before all remedies he places the proper conduct of the patient and his attendants, and the fit ordering of all the conditions surrounding him. The class of practitioners I have referred to have always been the most faithful in attending to these points. No doubt they have sometimes prescribed unwisely, in compliance with the prejudices of their time, but they have grown wiser as they have grown older, and learned to trust more in nature and less in their plans of interference. I believe common opinion confirms Sir James Clark's observation to this effect.

The experience of the profession must, I think, run parallel with that of the wisest of its individual members. Each time a plan of treatment or a particular remedy comes up for trial, it is submitted to a sharper scrutiny. When Cullen wrote his *Materia Medica*, he had seriously to assail the practice of giving burnt toad, which was still countenanced by at least one medical authority of note. I have read recently in some medical journal, that an American practitioner, whose name is known to the country, is prescribing the hoof of a horse for epilepsy. It was doubtless suggested by that old fancy of wearing a portion of elk's hoof hung round the neck

or in a ring, for this disease. But it is hard to persuade reasonable people to swallow the abominations of a former period. The evidence which satisfied Fernelius will not serve one of our hospital physicians.

In this way those articles of the *Materia Medica* which had nothing but loathsomeness to recommend them have been gradually dropped, and are not like to obtain any general favor again with civilized communities. The next culprits to be tried are the poisons. I have never been in the least sceptical as to the utility of some of them, when properly employed. Though I believe that at present, taking the world at large, and leaving out a few powerful agents of such immense value that they rank next to food in importance, the poisons prescribed for disease do more hurt than good, I have no doubt, and never professed to have any, that they do much good in prudent and instructed hands. But I am very willing to confess a great jealousy of many agents, and I could almost wish to see the *Materia Medica* so classed as to call suspicion upon certain ones among them.

Thus the alien elements, those which do not properly enter into the composition of any living tissue, are the most to be suspected, mercury, lead, antimony, silver, and the rest, for the reasons I have before mentioned. Even iodine, which, as it is found in certain plants, seems less remote from the animal tissues, gives unequivocal proofs from time to time that it is hostile to some portions of the glandular system.

There is, of course, less *prima facie* objection to those agents which consist of assimilable elements, such as are found making a part of healthy tissues. These are divisible into three classes,--foods, poisons, and inert, mostly because insoluble, substances. The food of one animal or of one human being is sometimes poison to another, and vice versa; inert sub-

stances may act mechanically, so as to produce the effect of poisons; but this division holds exactly enough for our purpose.

Strictly speaking, every poison consisting of assimilable elements may be considered as unwholesome food. It is rejected by the stomach, or it produces diarrhoea, or it causes vertigo or disturbance of the heart's action, or some other symptom for which the subject of it would consult the physician, if it came on from any other cause than taking it under the name of medicine. Yet portions of this unwholesome food which we call medicine, we have reason to believe, are assimilated; thus, castor-oil appears to be partially digested by infants, so that they require large doses to affect them medicinally. Even that deadliest of poisons, hydrocyanic acid, is probably assimilated, and helps to make living tissue, if it do not kill the patient, for the assimilable elements which it contains, given in the separate forms of amygdalin and emulsin, produce no disturbance, unless, as in Bernard's experiments, they are suffered to meet in the digestive organs. A medicine consisting of assimilable substances being then simply unwholesome food, we understand what is meant by those cumulative effects of such remedies often observed, as in the case of digitalis and strychnia. They are precisely similar to the cumulative effects of a salt diet in producing scurvy, or of spurred rye in producing dry gangrene. As the effects of such substances are a violence to the organs, we should exercise the same caution with regard to their use that we would exercise about any other kind of poisonous food,--partridges at certain seasons, for instance. Even where these poisonous kinds of food seem to be useful, we should still regard them with great jealousy. Digitalis lowers the pulse in febrile conditions. Veratrum viride does the same thing. How do we know that a rapid pulse is not a normal adjustment of nature to the condition it accompanies? Digitalis has gone out of

favor; how sure are we that *Veratrum viride* will not be found to do more harm than good in a case of internal inflammation, taking the whole course of the disease into consideration? Think of the change of opinion with regard to the use of opium in delirium tremens (which you remember is sometimes called delirium vigilans), where it seemed so obviously indicated, since the publication of Dr. Ware's admirable essay. I respect the evidence of my contemporaries, but I cannot forget the sayings of the Father of medicine,--*Ars longa, judicium difficile*.

I am not presuming to express an opinion concerning *Veratrum viride*, which was little heard of when I was still practising medicine. I am only appealing to that higher court of experience which sits in judgment on all decisions of the lower medical tribunals, and which requires more than one generation for its final verdict.

Once change the habit of mind so long prevalent among practitioners of medicine; once let it be everywhere understood that the presumption is in favor of food, and not of alien substances, of innocuous, and not of unwholesome food, for the sick; that this presumption requires very strong evidence in each particular case to overcome it; but that, when such evidence is afforded, the alien substance or the unwholesome food should be given boldly, in sufficient quantities, in the same spirit as that with which the surgeon lifts his knife against a patient,--that is, with the same reluctance and the same determination,--and I think we shall have and hear much less of charlatanism in and out of the profession. The disgrace of medicine has been that colossal system of self-deception, in obedience to which mines have been emptied of their cankering minerals, the vegetable kingdom robbed of all its noxious growths, the entrails of animals taxed for their impurities, the poison-bags of reptiles drained of their venom, and all the inconceivable abominations thus obtained

thrust down the throats of human beings suffering from some fault of organization, nourishment, or vital stimulation.

Much as we have gained, we have not yet thoroughly shaken off the notion that poison is the natural food of disease, as wholesome aliment is the support of health. Cowper's lines, in "The Task," show the matter-of-course practice of his time:

"He does not scorn it, who has long endured A fever's agonies, and fed on drugs."

Dr. Kimball of Lowell, who has been in the habit of seeing a great deal more of typhoid fever than most practitioners, and whose surgical exploits show him not to be wanting in boldness or enterprise, can tell you whether he finds it necessary to feed his patients on drugs or not. His experience is, I believe, that of the most enlightened and advanced portion of the profession; yet I think that even in typhoid fever, and certainly in many other complaints, the effects of ancient habits and prejudices may still be seen in the practice of some educated physicians.

To you, young men, it belongs to judge all that has gone before you. You come nearer to the great fathers of modern medicine than some of you imagine. Three of my own instructors attended Dr. Rush's Lectures. The illustrious Haller mentions Rush's inaugural thesis in his "Bibliotheca Anatomica;" and this same Haller, brought so close to us, tells us he remembers Ruysch, then an old man, and used to carry letters between him and Boerhaave. Look through the history of medicine from Boerhaave to this present day. You will see at once that medical doctrine and practice have undergone a long series of changes. You will see that the doctrine and practice of our own time must probably change in their turn, and that, if we can trust at all to the indications of their course, it

will be in the direction of an improved hygiene and a simplified treatment. Especially will the old habit of violating the instincts of the sick give place to a judicious study of these same instincts. It will be found that bodily, like mental insanity, is best managed, for the most part, by natural soothing agencies. Two centuries ago there was a prescription for scurvy containing “stercoris taurini et anserini par, quantitas trium magnarum nucum,” of the hell-broth containing which “guoties-cumque sitit oeger, large bibit.” When I have recalled the humane common-sense of Captain Cook in the matter of preventing this disease; when I have heard my friend, Mr. Dana, describing the avidity with which the scurvy-stricken sailors snuffed up the earthy fragrance of fresh raw potatoes, the food which was to supply the elements wanting to their spongy tissues, I have recognized that the perfection of art is often a return to nature, and seen in this single instance the germ of innumerable beneficent future medical reforms.

I cannot help believing that medical curative treatment will by and by resolve itself in great measure into modifications of the food, swallowed and breathed, and of the natural stimuli, and that less will be expected from specifics and noxious disturbing agents, either alien or assimilable. The noted mineral-waters containing iron, sulphur, carbonic acid, supply nutritious or stimulating materials to the body as much as phosphate of lime and ammoniacal compounds do to the cereal plants. The effects of a milk and vegetable diet, of gluten bread in diabetes, of cod-liver oil in phthisis, even of such audacious innovations as the water-cure and the grape-cure, are only hints of what will be accomplished when we have learned to discover what organic elements are deficient or in excess in a case of chronic disease, and the best way of correcting the abnormal condition, just as an agriculturist ascertains the wants of his crops and

modifies the composition of his soil. In acute febrile diseases we have long ago discovered that far above all drug-medication is the use of mild liquid diet in the period of excitement, and of stimulant and nutritious food in that of exhaustion. Hippocrates himself was as particular about his barley-ptisan as any Florence Nightingale of our time could be.

The generation to which you, who are just entering the profession, belong, will make a vast stride forward, as I believe, in the direction of treatment by natural rather than violent agencies. What is it that makes the reputation of Sydenham, as the chief of English physicians? His prescriptions consisted principally of simples. An aperient or an opiate, a “cardiac” or a tonic, may be commonly found in the midst of a somewhat fantastic miscellany of garden herbs. It was not by his pharmaceutic prescriptions that he gained his great name. It was by daring to order fresh air for small-pox patients, and riding on horseback for consumptives, in place of the smothering system, and the noxious and often loathsome rubbish of the established schools. Of course Sydenham was much abused by his contemporaries, as he frequently takes occasion to remind his reader. “I must needs conclude,” he says, “either that I am void of merit, or that the candid and ingenuous part of mankind, who are formed with so excellent a temper of mind as to be no strangers to gratitude, make a very small part of the whole.” If in the fearless pursuit of truth you should find the world as ungracious in the nineteenth century as he found it in the seventeenth, you may learn a lesson of self-reliance from another utterance of the same illustrious physician: “’T is none of my business to inquire what other persons think, but to establish my own observations; in order to which, I ask no favor of the reader but to peruse my writings with temper.”

The physician has learned a great deal from the surgeon, who is naturally in advance of him, because he has a better opportunity of seeing the effects of his remedies. Let me shorten one of Ambroise Pare's stories for you. There had been a great victory at the pass of Susa, and they were riding into the city. The wounded cried out as the horses trampled them under their hoofs, which caused good Ambroise great pity, and made him wish himself back in Paris. Going into a stable he saw four dead soldiers, and three desperately wounded, placed with their backs against the wall. An old campaigner came up.—“Can these fellows get well?” he said. “No!” answered the surgeon. Thereupon, the old soldier walked up to them and cut all their throats, sweetly, and without wrath (*doulcement et sans cholere*). Ambroise told him he was a bad man to do such a thing. “I hope to God;” he said, “somebody will do as much for me if I ever get into such a scrape” (*accoustre de telle facon*). “I was not much salted in those days” (*bien doux de sel*), says Ambroise, “and little acquainted with the treatment of wounds.” However, as he tells us, he proceeded to apply boiling oil of Sambuc (elder) after the approved fashion of the time,—with what torture to the patient may be guessed. At last his precious oil gave out, and he used instead an insignificant mixture of his own contrivance. He could not sleep that night for fear his patients who had not been scalded with the boiling oil would be poisoned by the gunpowder conveyed into their wounds by the balls. To his surprise, he found them much better than the others the next morning, and resolved never again to burn his patients with hot oil for gun-shot wounds.

This was the beginning, as nearly as we can fix it, of that reform which has introduced plain water-dressings in the place of the farrago of external applications which had been a source of profit to apothecaries and disgrace to art from, and before, the time when Pliny complained of

them. A young surgeon who was at Sudley Church, laboring among the wounded of Bull Run, tells me they had nothing but water for dressing, and he (being also *doux de sel*) was astonished to see how well the wounds did under that simple treatment.

Let me here mention a fact or two which may be of use to some of you who mean to enter the public service. You will, as it seems, have gunshot wounds almost exclusively to deal with. Three different surgeons, the one just mentioned and two who saw the wounded of Big Bethel, assured me that they found no *sabre-cuts* or bayonet wounds. It is the rifle-bullet from a safe distance which pierces the breasts of our soldiers, and not the gallant charge of broad platoons and sweeping squadrons, such as we have been in the habit of considering the chosen mode of warfare of ancient and modern chivalry. [Sir Charles James Napier had the same experience in Virginia in 1813. "Potomac. We have nasty sort of fighting here, amongst creeks and bushes, and lose men without show." "Yankee never shows himself, he keeps in the thickest wood, fires and runs off."—"These five thousand in the open field might be attacked, but behind works it would be throwing away lives." He calls it "an inglorious warfare,"—says one of the leaders is "a little deficient in gumption,-but—still my opinion is, that if we tuck up our sleeves and lay our ears back we might thrash them; that is, if we caught them out of their trees, so as to slap at them with the bayonet."—Life, etc. vol. i. p. 218 et seq.]

Another fact parallels the story of the old campaigner, and may teach some of you caution in selecting your assistants. A chaplain told it to two of our officers personally known to myself. He overheard the examination of a man who wished to drive one of the "avalanche" wagons, as they

call them. The man was asked if he knew how to deal with wounded men. "Oh yes," he answered; "if they're hit here," pointing to the abdomen, "knock 'em on the head,--they can't get well."

In art and outside of it you will meet the same barbarisms that Ambroise Pare met with,--for men differ less from century to century than we are apt to suppose; you will encounter the same opposition, if you attack any prevailing opinion, that Sydenham complained of. So far as possible, let not such experiences breed in you a contempt for those who are the subjects of folly or prejudice, or foster any love of dispute for its own sake. Should you become authors, express your opinions freely; defend them rarely. It is not often that an opinion is worth expressing, which cannot take care of itself. Opposition is the best mordant to fix the color of your thought in the general belief.

It is time to bring these crowded remarks to a close. The day has been when at the beginning of a course of Lectures I should have thought it fitting to exhort you to diligence and entire devotion to your tasks as students. It is not so now. The young man who has not heard the clarion-voices of honor and of duty now sounding throughout the land, will heed no word of mine. In the camp or the city, in the field or the hospital, under sheltering roof, or half-protecting canvas, or open sky, shedding our own blood or stanching that of our wounded defenders, students or teachers, whatever our calling and our ability, we belong, not to ourselves, but to our imperilled country, whose danger is our calamity, whose ruin would be our enslavement, whose rescue shall be our earthly salvation!

ABOUT THE EDITOR

Mark Stinson is “The Brand Innovator” – a persuasive writer, dynamic presenter, and skilled facilitator.

His brand consultancy, STINSON Brand Innovation, serves clients in all sectors of health, science, and technology. Mark conducts branding workshops, training classes, new product development initiatives, consultant panels, business development presentations, brand reviews, and teleseminars.

Mark’s career in marketing, communications, and branding spans some 30 years. Previously he served as president & chief creative officer of a major independent healthcare communications firm. His experience also includes positions as managing partner of an Omnicom medical ad agency and creative director of a national business-to-business ad agency.

Mark received a communications degree from Louisiana State University. He and his wife, Jenny, have five children and a golden retriever. They divide their time between homes in the Chicago neighborhood of Roscoe Village and in Boise, Idaho.

Visit Mark’s company website at <http://www.stinsonbrandinnovation.com>

For more information on Mark’s other books or to have him speak to your organization, visit <http://www.forward-fast.com>