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DE QUIBUS

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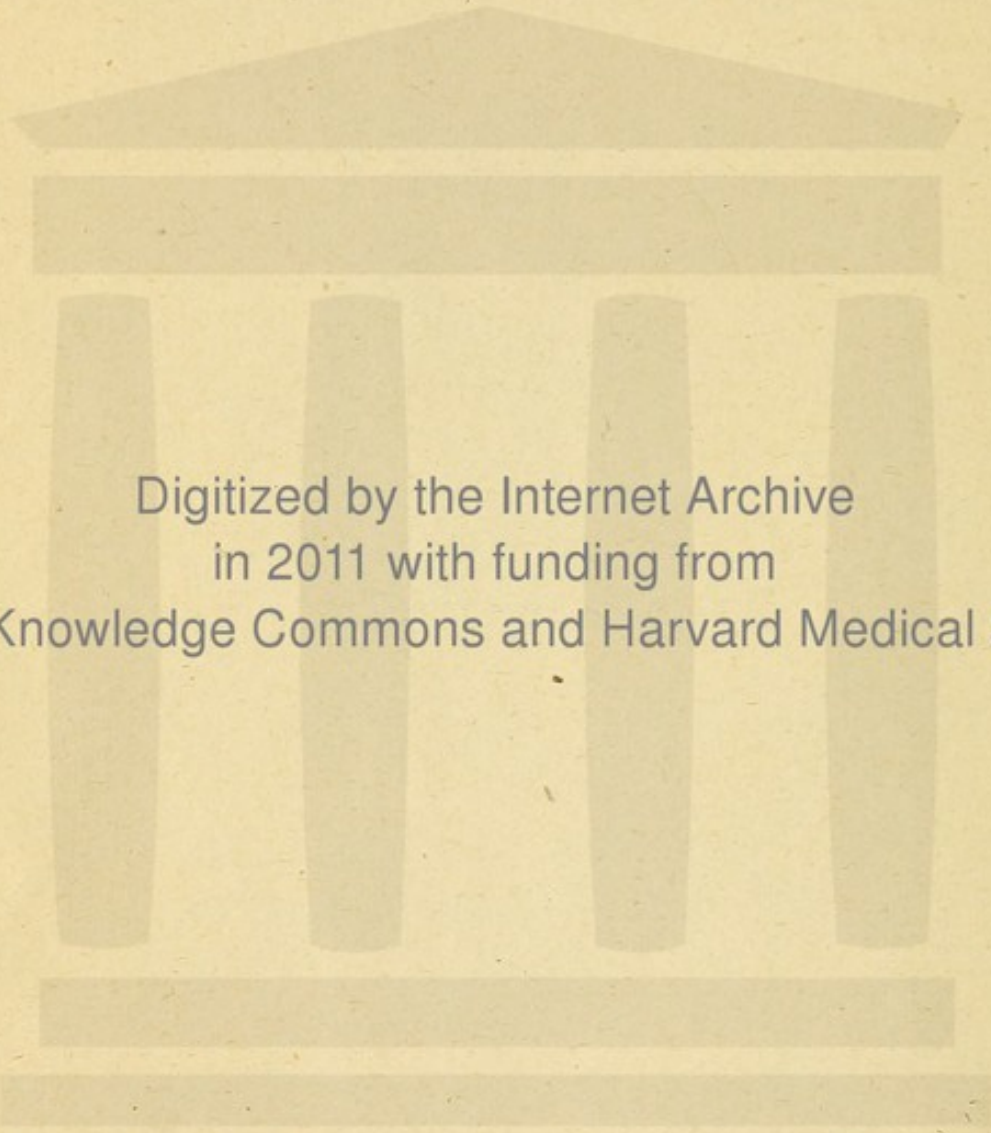


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De Quibus

Discourses and Essays

BY

WILLIAM H. TAYLOR, M. D.

Professor of Chemistry, Toxicology and Medical Juris-
prudence in the Medical College of Virginia

Author of "Travels of a Doctor of Physic," Etc.

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By W. H. TAYLOR, M. D.

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O the Students of the Medical
College of Virginia and the
Men and Women whom I
taught when they were
children, who have ever been kind to me
and whose friendship has brightened my
life, I affectionately inscribe this volume.

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PREFACE

The largest and most important part of this book consists of discourses addressed by me, from time to time, to the classes of the Medical College of Virginia. The very kind reception they met with from the students leads me to believe that my pupils will value them in a permanent form, and this is one of my reasons for collecting and printing them. In these discourses frequent notice is taken of the relations of science with theology. My attitude in this matter, often incorrectly apprehended, has excited against me much misrepresentation, vituperation and anger, and a desire that the fair-minded among my critics may accurately know what I said, how I said it, and why I said it, is another and a weighty reason for this publication.

The assaults upon me were originated by the lecture styled Science and the Soul. I think that every candid reader of this discourse will admit that where it touches current religious beliefs it is singularly temperate and conciliatory. Yet it aroused attacks of remarkable virulence. Naturally, I rebelled against this rude response to my civility, and I felt justified in subsequent discourses in expressing my opinions with plainness and decision, and, on occasion, with emphasis, and even with aggressiveness.

The accusations which I regard as best entitled to notice are that I have taught that science is in conflict with religion and is incompatible with it, and that science impugns the existence of God. All these accusations are unjust. I have taught none of these things. There is indeed a conflict, not between science and re-

ligion, but between science and ecclesiasticism. This I have recognized, and I have aligned myself with science in the conflict. It is a prevalent fallacy to consider that the current religious belief is religion itself, and the only religion—an idea I have always opposed, for I maintain that a man with no formal creed at all may yet be as truly religious as an adherent of any of the multitudinous religious faiths. Nor have I taught that science impugns the existence of God. Whether it does or does not may be a question—a very intricate question, and one greatly complicated by the immense diversity of views as to what God is. At any rate, I have never broached the question in my teaching. And, so far from thinking science and religion incompatible, I have earnestly taught their perfect compatibility, not only by precept, but, in my humble way, by example also.

As a teacher in a medical school I have the choice of only one of two courses. I can conciliate the overwhelmingly predominant religious sentiment of this ostensibly Christian city and State by teaching medical science as it is set forth in the recognized authority, the Bible; and teach from it—to indicate but a few items—that man originated as a dust image into which life was blown, and that woman was developed from one of his ribs; that insanity is possession by devils; and that a witch is a noxious creature to be killed. It is true that neither I nor any one else knows who is the author of these sayings, nor when they were said, and that the statements, many of which are extraordinary to the last degree, are assertions only, without an iota of confirmatory evidence of their truth—though it must be admitted that none but men of my habit of thought re-

gard these seeming defects as of any importance. My alternative is to teach the science of our own time, which is utterly at variance with the other, but which is displayed by men and in writings thoroughly well known, and confirmed in the amplest and most intelligible manner; and, besides, which to me, the teacher, is a matter of the highest moment—it is what I and the vast majority of scientific men of this age believe to be the legitimate outcome of observation and experiment. The two courses are forced upon me for choice, and, rightly or wrongly, I have felt obliged to choose the latter.

A student who had heard me state the scientific opinion of the evolution of man from inferior animal forms came to me, saying he had never before heard of this, but that he had been taught to believe the biblical account, and desired me to resolve the case for him. Here, then, was the situation—a believing pupil appealing to his teacher to answer a question whose correct answer it was his right and his duty to know. The answers that could have been given were irreconcilably antagonistic. What was I to do? Should I have told him what I believed was the truth, and so established his scientific knowledge, or should I have told him what I believed was an untruth, and so saved for him his religious creed? Or should I have acted the coward and deceiver and paltered with this young seeker after knowledge?

It has been said that there are parents who would resent scientific instruction which is at variance with their own religious creeds. In reference to this let me point out that a medical college is not a place to which an ultra-orthodox father should entrust a dedicated

child. Unless his son has a firm and open mind ready to receive and consider new ideas, however foreign they may be to his traditions and preconceptions, he will never make a creditable physician; and in fabricating a bad doctor material will be wasted that would construct an excellent ecclesiastic.

It must not, however, be supposed that this is altogether a polemical work, and that the relations between science and ecclesiasticism are its controlling theme. It is far from possessing this character. There is in it very much else which appertains to secular matters, wherein readers who are indifferent to disputation, or who are hostile to the side I have espoused, will, I trust, find enough that is consonant with their own feelings and sentiments to repay them for the perusal.

In preparing these papers for publication I have realized that here and there the language, the arrangement, or the manner of treatment, would be the better for a revision. But generally, this could not have been done satisfactorily without remodeling to an extent which I thought to be inadvisable. A few omissions and changes have been made, but these are slight and unimportant, so that the papers are essentially in their original form. For any palpable faults which may be found I bespeak the kind indulgence of the finder.

So far as I know there is not a sentiment nor a line in this book antagonistic to virtue, and in sending it forth I permit myself to hope that the perusal of it may make some of its readers wiser, that it may make many of them happier, and that it may make all of them better.

SCIENCE AND THE SOUL

A Lecture to the Class in Medical Jurisprudence

In the introductory lecture to the course on medical jurisprudence I mentioned, as one of the functions you might be called on to exercise, that of social scientific expert. This name I applied, for want of a better, to one who, judging from what had been my own experience, might be looked to by his fellow townsmen to elucidate the mysteries of traveling shows, spiritualism, mind reading, electric girls, petrified women, hypnotic frauds, ghosts and miscellaneous signs and wonders—all of which, on account of their real or supposed connection with one or another of the medical sciences, fall naturally enough within a medical man's province. I told you, too, that, generally, it would be best to have as little as possible to do publicly with such things because of the great risk you would incur of cutting a ridiculous and even a foolish figure. But this advice did not imply that these things are unworthy of your notice. On the contrary, several of them not only deserve to be, but ought to be, studied by medical men, for they are related in various direct and indirect ways to the normal and abnormal functions of that transcendently important part of the animal economy, the nervous system.

Medical schools, our own among them, for the most part, are singularly remiss in the consideration they

bestow on these matters. All around us we see, as a striking feature of our time, the cultured laity intensely absorbed in them, under thrall of conceptions sufficiently glossed with science to render them dangerously beguiling. But, notwithstanding, we complacently send forth our students unprepared to discriminate between the true and false and liable at any time to encounter some one who is manifestly a conscious or unconscious deceiver, but who is more learned in their own province than they are themselves. While it is true that these subjects have a relation with medical jurisprudence, the relation is not close enough to require the teacher of this branch to treat them profoundly, for whatever scientific facts are fundamental in them are in the domain of other departments of medicine. Therefore my point of view will be such as takes in only the general and superficial aspects.

Of the several manifestations of the many-sided occultism of modern times the one that we can most advantageously consider is spiritualism—not only on its own account, but because of the close relation which many forms of superstition, mysticism and pseudoscience have to it. Its primary and necessary proposition is that man possesses an immaterial principle which is capable of actively existing in a state separate from his material body, which principle is what is commonly understood as the soul. If this proposition is true, it is not impossible that living men may get into communication with the dead. If it is not true, the suggestion of such communication carries its absurdity on its face, and a great mass of parasitic superstitions will be at once swept away. It is by no means my purpose to attempt a conclusive solution of the problem, but it may be

profitable, and I hope you will not think I have invaded an inappropriate field, if I offer some observations pertinent to the subject, such as a medical man placing himself in the purely scientific attitude of the anatomist, the physiologist, the psychologist, and the chemist might legitimately present to other medical men.

It is a famous saying of a long time ago that "Where are three doctors, there are two atheists." With disputants over questions of religion and morals this word atheist has been for ages the favorite objurgatory term for expressing the extreme of human depravity. In the days when the mind had set for it a prescribed path from which it could not swerve without imperiling the body, the word was a formidable weapon. It has shown itself to be a word of great elasticity, and in the heat of controversy has been applied very promiscuously and impartially—to eminent saints and vile sinners, to astronomers in a lump, and, now and then, to a detached sheep-stealer. Sixty years ago, in Richmond, during a memorable conflict, in which the first dean of our college bore a conspicuous part, it was hurled at the heads of the mesmerizers or hypnotizers of the period; and, more recently, Professor Huxley, when he was constrained to invoke the power of the police to ameliorate his too alcoholized and exuberant cook, was stigmatized by this orthodox female as "a dom'd old afisht." Nowadays, however, if it has not altogether lost its opprobriousness, it is much shorn of its virulence. The freedom of thought which is now almost universally acknowledged as our right may in these days lead a man into atheism without necessarily bringing upon him the reproach of being *ipso facto* a villain, though there still are a great many good people who would call him a fool.

As a descriptive term for the two doctors, atheist probably meant only that they were what is commonly known as materialists, or disbelievers in the soul as a self-existing entity. In this sense of the word its application was plausible, and even, in some degree, justifiable. On those who see many dead bodies, as your teachers now do and as you, too, will when you are in practice, the impression is irresistibly made that, in the matter of soul, there is no apparent difference between a dead man and a dead dog. On occasion we doctors cut up our subjects as the butcher cuts up his; the materiality of all we are dealing with is forced upon our minds as it is upon his, and the idea of an associated spirit is no more imposed upon our conceptions than upon his, or, perhaps, it is as rigorously repelled from them. I believe that I state a fact when I say that, in general, a doctor's credence in the existence of the conventional soul, which was a religious proposition implanted in his infancy when his mother taught him the prayer which the English-speaking Christian mother the world over teaches her little child to say as he lays him down to sleep—tenderly remembered through all changes to his dying day—that this credence is terribly strained by familiarity with the dead.

I have spoken of this disbelief as the result of an impression. But impressions are, in scientific inquiries, the most unsafe of all means for attaining to the truth, and the two atheistic doctors would gain but little respect for their opinions if these had no more substantial basis than what is afforded by impressions. In fact, it is possible that if they would strive for a deeper, a wider, a higher view the two materialists might be converted into two idealists or spiritualists. By this higher view

I mean enlightenment from sources apart from science, from what in the ordinary sense—which is, however, a narrow one—is called religion. All of you know what are its teachings on this and related subjects. Every man is at liberty, in this age of the world, to accept or reject these teachings as his judgment directs him. They have no connection with medical science, as it is taught in our schools, and you cannot expect me to discuss them or to take them into consideration in the treatment of my topic. We may grant through courtesy, if not by right, that the higher view is the peculiar reward of spiritual effort, but, since this is outside the scope of medical investigation, where only physical methods can be applied, we must content ourselves with seeking after a view, if not high, yet deep and wide.

This deep and wide view we may hope to attain through the instrumentality of the scalpel, the microscope, the test-tube, and other appliances of our art. All these have been assiduously, skilfully and thoughtfully used, and their results are embodied in the sciences of anatomy, physiology, histology, embryology, chemistry, and other departments of medicine, and in other sciences more or less closely affiliated with it. Let us try to find out what these can tell us in answer to the momentous question: "Is the human soul an independent, superphysical entity, or is it a physiological function of the brain?" Evidently, a topic of this magnitude is not one to be treated adequately in a lecture. The facts bearing upon it which have been collected by physicians, zoologists and other men of science are in number and kind such as would need a volume, or volumes, to set forth, and systematize, and elucidate. Of course, then, my consideration of it can be only most cursory and superficial.

The humblest exhibition we are able to recognize of what we conventionally designate life is that of a cell without a nucleus, without organs, and without structure—a mere driblet of albuminous or proteid stuff, that we name protoplasm, or briefly, plasm. All it does is languidly to get hold of one or another inorganic substance, notably carbon, and assimilate it. It is apparently nothing but a dull, slowly continuing embodied chemical reaction, immensely inferior in animation and impressiveness to many of the simplest chemical reactions which take place in a test-tube. Dull as this thing is we say it has life, but we can hardly help asking ourselves, If this manifestation is life, why may not the growth of a crystal be life also? And, as we thoughtfully ponder this question, some of us may be led to believe that we may justifiably go beyond the lowest organic forms into the domain of the inorganic world and seek the beginning of life there.

When our driblet of plasm, or of chemically reacting elements and compounds—for, really, this is all it seems to be—reaches a certain size it quietly breaks in two, and this is its lazy way of reproducing itself. The parent waxing fat gets too big to hold together, a piece splits off and a child is born. This faculty for paternity is almost its only exhibition of animation, but in this it must be allowed that, in some instances, it is astonishingly endowed—furnishing a very happy exemplification of the proverb, “a poor man for children.” Extending our observations, we presently come upon cells which have developed sufficiently to possess a rude sort of feeling for one another, whereby they are drawn together, and thus begins the formation of tissue. Under the stimulating influence of co-operation develop-

ment becomes more varied, more complex, and more exalted, and, among the rest, are slowly but steadily evolved those wondrous functions of the nervous system which are to culminate in the human mind.

Whatever we may conceive the nature of the soul to be it is evident that this principle must have become embodied at some stage of this long march—at the first, or at the last, or at an intervening one. Theology has spoken very dogmatically on the point, and so has metaphysics. Science, however, is averse to dogmatism, and when it utters its pronouncements must plant itself on a substantial base of observation and experiment. Theology—and let me caution you that theology is very far from being synonymous with religion, and that you would be doing grave injustice were you to deem one who could not see his way to accept a theological dogma as being on that account irreligious—theology appeals to faith to secure reception for some of its most important teachings in respect to the soul. A celebrated and venerable theologian has said that man can make no nobler sacrifice than the sacrifice of his reason to his faith. Multitudes of intelligent people have been able to make this sacrifice, and I have no quarrel with them therefor, though I myself am not able to do it. A medical man, no less than another, may do this, but it would be most unbecoming were he to falsify his science in doing it. Let him confront the facts as they are, and reason upon them and interpret them as the capacities of his mind may impel him to do—then, however opposed his conclusions may be to those of others, he is blameless, for he is an honest man.

What is the soul? Or, what meaning are we to attach to the word? If we are to regard it as the incon-

ceivable, shadowy phantasm which it is commonly held to be, reasoning and argument concerning it are futile. If it is this it may be, or do, or suffer anything whatever that may be affirmed of it or claimed for it, and we are estopped from offering any valid objection, for it is vain to grapple shadows. Before we can proceed it is absolutely necessary to have some sort of intelligible material to work upon. I suppose that every man, whatever he may have been taught to believe, or whatever he may actually believe of it, is irresistibly obliged to regard his soul as a part of his bodily identity, and as in some way associated with his mental operations, with his consciousness, his intellect, and with all that goes to make up the complex phenomena of mind. For me, at any rate, this is the only intelligible idea of the soul that can be formed. It may be an inadequate idea; it may be an entirely erroneous one. If so, my discussion of the topic, which is grounded on this idea, is baseless, and any lesson it may teach should be rejected.

Assuming that my conception is correct, I ask myself: "At what stage of the development of life did the soul become embodied?" We all agree that it exists in the adult man—in full vigor in the normal man, in beauty and power in the virtuous and gifted man. But all men are not normal. We have high medical authority for the statement that in all men, with few exceptions, it begins to deteriorate after forty years of age and goes into eclipse at sixty. In the idiot and the demented so imperfect are its manifestations that we may not be able to recognize its existence at all. If as medical men, occupying a purely medical point of view, we seek to explain these variations and changes we do not hesitate to assign their cause to some correlated variation or change

in the bodily conditions, and we feel amply authorized to assign the controlling conditions to a specific portion of the body, namely, to the brain. The physician finds that this control is exercised over the spiritual state of his patient as fully as over any other, and innumerable experiences teach him that the favorite test of the truth of some particular creed—the manner of confronting death—so much vaunted and flaunted by its enthusiastic apostles, is altogether fallacious. The immoral Voltaire, the bitter contemner of the Christian religion, repels the priest from the side of his death-bed, and dies with a soul content; the virtuous and reverent Wesley despairs as his end draws nigh. It was the saying of one of the earlier American physicians that no man dies a triumphant death whose malady is below the diaphragm, and, whether absolutely true or not, the saying is a truthful recognition of the fact that body and soul are so related that the functions of the one influence the operations of the other.

The anthropologist agrees with the poet that the child is father of the man. We must believe, therefore, that we had some kind of soul when we were children if we believe we have one now. We are able to observe the growth of this soul—for we cannot, save by some unintelligible formula of words, differentiate the child's soul from his mental manifestations—from the time when it is at zero, or below. We perceive that the child's soul, or intelligence, or consciousness—whatever we may conceive as soul—corresponds in its development with the physical development of the body. Notably it is related to the development of the brain, and so closely dependent on the condition of this organ that any disturbance of its functions, as by an alteration of the quantity or

quality of its blood supply, such as is produced by disease or the administration of drugs, is accompanied with a corresponding alteration of soul manifestations. Even a mere mechanical interference, as by pressure, for instance, may affect these manifestations to the extent even of their obliteration. And just as muscle, after the chemical processes incident to its action have exhausted its physical material, requires rest and sleep for the recuperation of its activities, so do the activities of the brain which show themselves as soul, when they are exhausted, require the same.

The child, and therefore the man, originates from a speck of matter so small that it would take about one hundred and twenty-five of these little specks to fill the length of an inch. This speck, diminutive as it is, has marvelous potentialities, and among them the potentiality of a soul. But of this soul, unless the power to carry out the series of changes which we call life is soul, there is in this speck we name the ovum not the faintest intelligible sign. Nor when by growth and development the ovum has become a fetus, nor indeed till some time after it has become by the act of birth an independent entity, does it give any indications of an active soul—not, in fact, till there has come a certain degree of brain development, that is, not till certain anatomical material structures have been built up from the material substances constituting food—substances to which we never think of assigning any attribute of spirituality.

We have thus noted the psychic development of man, starting with its completed display in the adult, and proceeding backwards till every trace of it evaded us in the ovum. Have we solved the puzzling question as to the stage of our own bodily development when the soul

was implanted in us? Clearly, by our methods, we have not. These methods may be faulty, but exactly wherein that fault consists is, to me at least, not plain. Such as they are they have failed us, and the most we have learned from them is that there is somewhat in the human ovum which ultimately develops into the brain, an organ whose functions, while of so exalted a character that we speak of a certain phase of them as soul, are yet dependent on the same physical and chemical actions as occasion the contractility of muscle.

We might now be inclined to feel that the matter, so far as we are able to handle it, is disposed of, had we not been taught by the results of the extraordinary outburst of scientific effort during the nineteenth century that man is not an isolated being; that, so far from occupying the exalted position of a unique creation, he is connected with all Nature, animate and inanimate, in a manner and to an extent which was not dreamed of by our not very remote predecessors, and which, indeed, they would not have been permitted to dream of could the dominant authority have prevented it. Zoological science, in our day, boldly proclaims, and effectively maintains, the proposition that man is the lineal descendant of the apes, and that, if a little lower than the angels, he is, nevertheless, in structure and function not surpassingly higher than the monkeys.

Were you to assert that a monkey has a soul pretty much everybody in this town would promptly set you down as a pagan. In the present temper of the public mind I do not advise you to make the assertion seriously. Should you care to do it in a jocular spirit you might jokingly quote this statement of the zoologist Ernst Hæckel: "Comparative anatomy proves to the satisfac-

tion of every unprejudiced and critical student the significant fact that the body of man and that of the anthropoid ape are not only peculiarly similar, but they are practically one and the same in every important respect. The same two hundred bones, in the same order and structure, make up our inner skeleton; the same three hundred muscles effect our movements; the same hair clothes our skin; the same groups of ganglionic cells build up the marvelous structure of our brain; the same four-chambered heart is the central pulsometer in our circulation; the same thirty-two teeth are set in the same order in our jaws; the same salivary, hepatic and gastric glands compass our digestive process; the same reproductive organs insure the maintenance of our race." All this you would say jokingly, but many true words are spoken in jest, and these words are true. Forty-odd years ago Professor Huxley, in all seriousness, addressed his countrymen along this line, pointing out to them the striking parallelism between the hand and foot of the higher apes and man, and especially demonstrating that certain structures of the brain—notably the posterior lobe, the posterior cornu of the lateral ventricle, and the hippocampus minor—which, it was strenuously contended, differentiated man and ape, were present in both. Particularly, he showed that the differences between man and the higher apes were no greater than those between the higher and lower apes themselves. But his countrymen—twenty-seven millions, mostly fools, according to Carlyle—were deeply scandalized by his doctrine, and deluged him with vituperation, treating him with scorn, extending, in some instances, to social ostracism—Carlyle himself rejecting his kindly approach with the sneering words, "You're Huxley, aren't you?"

The man who says we are all descended from monkeys." I cannot promise that the majority of the citizens of Richmond are, in this direction, more advanced in 1905 than most of the citizens of Britain were in 1860. It is true we have here a collection of gentlemen who call themselves the "Committee on Progress," but, judging from its composition, it is safe to say that it will not soon progress to the point of tolerating anyone who shall venture the surmise that, maybe, a monkey has a soul.

The higher apes are tailless, and in their grosser external appearances are so obviously manlike that the fact is universally admitted. So near to man in looks and actions are some of them that travelers in their habitat tell us of the horror that has come over them when they have shot a gorilla—a horror as if they had killed a human being. Their development from an ovum is in all essential particulars identical with our own. The human embryo, at one period, like the embryo of the ape, has a tail, and in all other respects the embryos are so similar as to make it impossible during a considerable portion of fetal life to distinguish one from the other. And in their further growth, through infancy, youth and age, not only do they proceed parallel with us in physical characters, but they partake our psychic nature, too. That supreme attribute of the soul on its earthly side, the affection of the mother for her child, that ineffable, that undying love, the highest and holiest emotion that humanity can feel, which has driven many a pious woman in the agony of bereavement to defy the unpitying power of Heaven itself, is not less intense in the poor mother of an ape than it was in mine, than it is in yours. However it may be with others, the observant physician who investigates can find by his anatomi-

cal, physiological, or psychic study no substantial difference between the ape and man.

The sciences of comparative anatomy, physiology, and the others which have proved the near relationship of the ape with man, have been applied to animals lower in the scale, and with corresponding results. Below the ape are animal forms akin to his. A repetition of these investigations continuously made all along the descending line brings a repetition of these analogies and kinships—showing, indeed, a vast dissimilarity in salient characters between the first and last terms, but, despite many and great gaps which we cannot bridge by direct observation, compelling us to conclude that there is a systematically graduated relation, not only of physical structure, but of some sort of psychic power from first to last among them all. The lowest term of organic life which opportunity and means of observation enable us to reach, even the primal drop of protoplasm, has some glimmer of a soul—an aspiration after something, if it is only a molecule or two of carbon.

I said in the beginning of the lecture that there seems to be no difference between a dead man and a dead dog, and the expression, no doubt, sounded rudely on your ears. But by this time, I fancy, it has lost some of its roughness, and perhaps, now that we realize our inseparable connection with our fellow vertebrate and mammal, the idea is not altogether a repulsive one. Early training, indeed, forbids us to believe that our loving canine friends possess souls, but later training in the histological and physiological laboratories may perchance put a somewhat different face upon the matter. However it really is, very many of us would be glad if we could

think, with the poor Indian, that, "if there be a land of souls beyond the sable shore,"

"That there, admitted to that equal sky,
Our faithful dog shall bear us company."

The affinity of man to the lower animals was recognized and utilized at a very early period. At various times in the history of medicine the dissection of a human body was forbidden. It was an offense punishable with death in Christian Europe as late even as the fifteenth century. Hence the dissection of the inferior animals was, in those times, the sole source of systematic anatomical knowledge. The ape was especially used, and its nearness to man made it well suited for the purpose. Galen, the only great anatomist among the ancients, instructed himself by this means. It may be said, also, that this similarity of structure and function is our authority and justification for the mutilation and slaughter of inferior animals which have so greatly enriched our knowledge of the science and practice of medicine.

Since then, as it seems, the brain of man, and therefore the phenomena of the brain which we regard as soul, has been developed or evolved from preceding more and more inferior brains, we cannot avoid the inference that it has no quality now that did not exist in a less developed or rudimentary state in the brain of his nearest brute progenitors; and hence, zoologically speaking, that the independent existence of these phenomena, and consequently their existence after the death of the body, is apparently no more man's perquisite than it is that of his immediate ancestors.

It is most true that these phenomena as they are ex-

hibited by man are immensely more exalted than those which are exhibited by any extant ape, or which could be exhibited by any ape we can readily imagine, and hence it might be conjectured that, in his case, there is some kind of transcendental quality putting him above and beyond ordinary physical restrictions. Yet it is with almost insuperable difficulty that we can conceive of this exhibition unless there was present some of the substance of the cerebral cortex as a material apparatus for the production of the display.

Having found, as it appears to us, a most intimate relation between the soul and the phenomena of life, it is but natural that we should continue our inquiry into these phenomena also. If the soul is to be considered as the product of life, of what is life itself the product? That the body is a kind of machine is an idea we accept as soon as it is presented to us. Certain bodily operations are as plainly mechanical as any mechanical operations that we witness in daily experience, and much of the bodily apparatus we see duplicated in the commonest machinery—the long bones of the extremities, for instance, are as truly levers as are the rods and beams of an engine, and the heart and blood vessels have their counterparts in the pumps and pipes of a water-works. Every machine, before it can perform, must be supplied with power, and this must come from an external source. No machine can create its own power, and this incapacity is as inexorable for the human machine as it is for all others. There are many and various sources of power, but the one which particularly concerns us now is chemical action. This ranks with the most important; the steam engine, the most generally useful of all our engines, derives its

power primarily from chemical action—the combustion of coal.

It takes very little study of the processes going on in the body to discover that they are pre-eminently chemical in their nature, and that it is by no means amiss to speak of the body as a chemical laboratory. So true is this conception of these processes that it has developed a branch of science—physiological chemistry—most fruitful of results, which encourage us to expect the solution of some of the fundamental enigmas of life.

While it is generally and freely allowed that chemical action is intimately concerned in the process of digestion and other processes of so-called vegetative life, there has been, and still is, a most emphatic hostility to the opinion that chemical changes going on in the brain are similarly concerned in the higher psychic manifestations. Nevertheless, every one of these manifestations which is within the scope of our comprehension—from nothing at all observable in the ovum, to next to nothing in the new-born infant, and on to the dawn and increase by slow degrees through childhood up to its full display in the adult man—grows with the physical growth and strengthens with the physical strength of that minor chemical laboratory, the brain; and this increase, and the maintenance of the physical equilibrium at length attained, are directly connected with the chemical reactions following the ingestion of food. Consciousness, the acme of the cerebral activities, whereby we obtain our perceptions of time and space, and matter and force, and of all that is, is so dependent upon the interaction of such commonplace substances as carbon, hydrogen, oxygen, nitrogen, and the like components of food, and so well known to be dependent upon them, that it is within our

own puny power to altogether change the order in which this marvelous mechanism does its work by introducing into the machine these very elements in some different form of combination; as, for instance, that combination of carbon, hydrogen, oxygen, and nitrogen called morphine, which can transform perceptions recognized by us as horror into other perceptions recognized as happiness, and these again into horror more appalling than before. In whatever way, and to whatever degree, therefore, the soul may be allied with consciousness, to that extent we are justified, I think, in saying that it is the outcome of chemical reactions going on in the brain.

As I pointed out to you in one of my earlier lectures, chemical action does not terminate with the fulfillment of the processes whose operations in particular directions we designate life. It still proceeds after normal life has ceased to manifest its phenomena, for death, as it displays itself in decay, is only the same chemical action in another phase. In fact, it seems that we shall enunciate no paradox if we say that life and death in their essence are one—as the log cheerfully blazing on the genial hearth, or solemnly wasting away in the gloomy forest, is alike an example of oxidation.

When the process of decay of the body, that is, of chemical action in a special phase, has completed itself by the production, chiefly, of carbon dioxide, water and ammonia, the power of chemical action itself is not destroyed. These compounds are still capable of forming other combinations. Their vitality, so to name it, still persists, and each of their component elements, carbon, hydrogen, oxygen, nitrogen, is, in its degree, possessed of this vitality also. In this they are not singular—all elements share this vitality. It is a property of each

and every atom, and, as the various atoms are the components of inorganic no less than of organic matter, their life, such as it is, is inherent in the one as well as in the other. We feel emboldened, then, nay, authorized, to pass beyond our dribble of protoplasm, that humblest example of undisputed life, itself but an embodied chemical reaction, into the inorganic world—saying, Here, too, is life.

It is a bold assertion, and one which, in the present state of our knowledge, we must utter with modesty. When life is mentioned we ought not to fall, as many do, into the error of supposing that only a well developed form of life is meant, such as is seen in the higher animals. Life is of every grade, and by no means necessarily implies consciousness. It is not as absurd as to most persons it will seem to be, to imagine that a crystal of salt, for instance, altogether inorganic though it is, has life; for it exhibits phenomena parallel with some phenomena of undoubted life, such as compel us to infer that it possesses something that we cannot easily distinguish from sensation—which, remember, is not the same as consciousness. The crystal feeds itself and grows according to a plan prescribed for it, which is as systematic as that on which man himself is built up. No one who thoughtfully watches a crystal as it grows into its appointed form can help feeling that the something at work here, which guides each molecule unerringly into its proper place, is marvelously lifelike. The march of these molecules has been aptly compared to the march of individual soldiers into the lines composing symmetrical military formations, and surely no soldier's movements illustrate more accurately than do theirs a predetermined plan, and an

indwelling purpose and power to consummate it. Why, then, may we not be allowed to surmise that it is possible, or even probable, that organic life is at its beginning no more than a development of properties pre-existent in inorganic matter?

When you were engaged with the study of chemistry one of my favorite devices, as you can probably recall, for enforcing its principles upon your attention was a comparison of the behavior of our laboratory substances chemically to the behavior of human beings socially—how they alike had their loves and hates, their selfishness, their covetousness, and other moral and immoral qualities. These traits were abundantly demonstrated—every test-tube reaction showed more or less of them. Not long since I had occasion to tell you of the sight I once had of a seething mass of larvæ ravenously contending for the last shreds and tatters of a decaying corpse. I do not present this as a close analogy, yet it was wonderfully suggestive of the violent reactions we witness in the laboratory—when, for instance, an acid acts upon a metal; when one inorganic thing furiously attacks another and seems to devour it. Could it do differently if it actually had life? How can it do as it does unless it has in itself some principle for which we with difficulty find any name to express it that does not involve the idea of life?

As a final illustration, consider the case of a burning match applied to a jet of coal gas. The most obvious result is the bright light and the illumination which ensues. But we know that this light has arisen under the influence of the heat of the burning match, and that it is sustained by some principle in the surrounding atmosphere—conditions of existence, we may remind our-

selves, not altogether unlike those surrounding the germinating seed and the growing plant. We know, too, that the continuous life of the flame is accompanied with the formation of carbon dioxide and water—products which, curiously, are the same we living men are evolving now. These products, both as to the burning gas and as to our breathing selves, are the results of chemical reactions. Simple in the gas flame, their outcome is light; complex in us, their outcome is consciousness. If our consciousness is allied to our soul, is it a stretch of fancy intolerably far to imagine that the gas light is the soul of the burning gas? Or, if we are not prepared for this, have not our researches led us to a point where we may venture to conjecture that at least life in some vague form obscurely hides in matter which we, in our imperfect sense of its nature, are wont to stigmatize as dead?

While it is perfectly true that we have not yet been able to originate life from inorganic matter, nor from organic either, by chemical reactions, we are more and more encouraged to believe that this is not an impossibility. It would be a great mistake to infer that the possibility is disproved by the negative result of the elaborate experiments which have been made on so-called spontaneous generation, for in all those experiments the conditions were highly artificial and totally unlike those provided by Nature. Almost all physiological chemists are assured that life processes are essentially chemical, and the materials employed in these processes are the inorganic constituents of the air and the soil; so that we are not without warrant for the belief that, could we supply Nature's physical and chemical conditions, we might perform Nature's miracle and with inorganic matter

originate a living entity. In fact, we may say that we have already gone half the way to it, for Professor Loeb has fertilized certain eggs by means of acetic acid—a substance which can be made from inorganic matter entirely—and now, having procured a chemical father, we have only to hunt up a chemical mother, put the two together, and the thing is done.

Shall we take another step, further onward yet—a final and portentous step—which the pioneers of science of our time, urging us forward, tell us will place us where matter and electricity are one? Taking this step, if our path has led us true, we shall face in electricity the great first parent of the soul.

This, then, is the lesson we have learned: That the phenomena to which we give the name of soul are inextricably connected with the physiological functions of the brain, and that they had their origin in the far-off inorganic world, and were inherent, actually or potentially, in inorganic matter. Thus, as we read the record, has begun and proceeded through untold ages the majestic march, which, starting from the dust of the earth, at length presents the vertebrate, the mammal, the ape, the body and the soul of man. All along our instructor has been Nature herself. We feel that we have been docile and earnestly attentive pupils, and yet, in presence of the stupendous outcome confronting us, we are daunted by a misgiving that, inapt and incapable, we may not, after all, have understood her teaching aright.

Against the results we have attained, or seem to have attained, what is to be opposed? The obstacles they must encounter, if not many, are, nevertheless, formidable. The most formidable of all is their apparent variance with the teachings of every systematized re-

ligion which is founded on sacred writings or the doctrines of venerated men. It is clearly out of place for me to discuss the weight of this evidence before an audience such as this, whose religious views, various as they probably are, I am anxious to treat with the utmost respect. Metaphysical reasoning or speculation also has formulated theories leading to conclusions very different from any we can reach by our methods. But metaphysics contents itself with exercising the mind alone, and dawdles on in self-satisfied contempt of observation and experiment, the foundations of all scientific knowledge. And then there is the current opinion of all ages of the world, implanted at home and at school, maintained by social surroundings and passed on as matters of course, accepted without troubling to bestow upon them critical reflection.

While it would be uncandid, and even foolish, for me to try to conceal the fact that the results of scientific investigation I have presented seem to show that the theological conception of the soul is untenable, I must ask you to bear in mind that I am not here and now discussing this aspect of the question, nor expressing my own definitive opinion on the subject. To do so would lead into offensive disputation, and this aspect of it is not one directly connected with what is taught in medical schools. The question is not to be answered offhand by the implements we use. When we regard the mysteries of Nature through the medium of a test-tube and a microscope we, no doubt, very literally look through a glass darkly, and it becomes us to be circumspect lest we be overwise in interpreting what we see. Very possibly all the elements necessary for the conclusive solution of this stupendous problem are not to be had in the labora-

tory, and dogmatism is far less excusable and far more misplaced in science than it is in theology.

In what has now been presented to you it has been my sincere desire to be as considerate towards cherished opinions and beliefs as the nature of the subject allowed. I cannot be sure that all even of you will approve what I have done, but it is very certain that when it becomes known many outside of our school will censure me. For, unfortunately, it is true that a large proportion of the citizens of Virginia, inclusive of not a few of the citizens of her metropolitan city of Richmond, are, in spiritual matters, mentally existing somewhere in the fifteenth century instead of in the twentieth. There are public positions in Richmond to which should you aspire, being a Roman Catholic, you would be defeated; being a Baptist, you would be elected. All hands would combine against an avowed agnostic, and, as for me, after what I have said here to-night, I should be rejected as keeper of the dog-pound, lest, infected by my teachings, the dogs should rise in insurrection and demand liberty, equality and fraternity. I have no doubt that there are people in Richmond, and many of them, who, when they hear of my discourse and recall your more or less beardless faces, will reproach me as a corrupter of youth. To such persons it is an offense to publicly speak of the conceptions I have been considering unless they are at the same time denounced as immoral, unscientific and ridiculous. I shall not thus denounce them, even though I should reject them; for they are not immoral, though they may be untheological; they are not unscientific, for they are grounded on observation and experiment; they are not ridiculous, for they

are the grave results of the earnest studies of learned philosophers.

While I endeavor to have the courage of my own opinions I have always held that it is unwise and no sign of manliness to needlessly run counter to the opinions or the prejudices of the community with which my lot is cast, and so, as far as I conscientiously can, I shall always avoid exciting the hostility of my medieval contemporaries. But I occupy the honorable and profoundly responsible position of teacher, and teacher of medical science. It cannot be wrong for me to teach the facts of the science, even though these facts shock the inherited and traditional notions of persons who either do not know, or knowing will not heed them. On the contrary, it would be something of a crime for me to withhold these facts from you, my pupils, who by the very nature of your studies have the right to know them, and, indeed, have the knowledge of them imposed upon you as a duty. You may connect any system of philosophy you choose with them and interpret them as well as you can to make them fit it. In this it is not my business to guide you. Having bestowed your best thought upon the matter you may at last find yourselves ranged with the large majority of the cultured people of our age as believers in the dual existence of body and soul; or, else, with the small minority as believers with that most pronounced atheist, Professor Hæckel, that the soul of man is a physiological function of that part of the cortex of the brain which contains the thought-cells. Here I leave you to your reflections, cautioning you not to allow your preconceptions or prejudices to exert an undue influence, and to remember that, while it is always safer to be with the majority, it is not al-

ways saner, and not to forget that, in this instance, the minority, abhorrent as their view may appear to most of those who have been brought up under English, American, and especially Virginian, ideals, are, nevertheless, entitled to respect for their scientific learning, their intellectual ability, and their honesty of purpose—in all which they are in no wise inferior to the majority.

For my own part, I strive to cultivate the utmost toleration and respect for the religious beliefs of other people, and, should I ever be able to formulate a creed for myself, I shall be glad to have equal consideration accorded to me. At present my sentiments are very much those expressed by the Roman Catholic, Alexander Pope, in his memorable lines—

“For modes of faith, let graceless zealots fight;
His can’t be wrong whose life is in the right.”

REPLY TO CRITICISMS

OF THE

LECTURE ON SCIENCE AND THE SOUL

(Originally published October, 1905.)

"I awoke one morning and found myself infamous."

Dr. Johnson, in his life of Butler, the author of *Hudibras*, noting Butler's verses ridiculing the Royal Society, remarks that the enemies of this institution were for some time very numerous and very acrimonious, but for what reason it was hard to conceive, since the philosophers professed not to advance doctrines, but to produce facts. This display of animosity was an event of considerably more than two hundred years ago, but a like spirit, equally sharp and as unreasonably hostile towards unobtrusive science, is manifested by numbers of individuals in some of the enlightened communities of our own time. The fact has been made very evident to me by the outburst of unjust and vituperative criticism directed against certain utterances of mine wherein I, too, professed not to advance doctrines, but to produce facts. These utterances occurred in a lecture entitled "Science and the Soul," which was delivered to the class in medical jurisprudence of the Medical College of Virginia as the introductory discourse of a series in which I purposed to treat of spiritualism and kindred subjects. It was intended for my students only,

and not addressed to the public, but a report of it appeared, very inadequate and much perverted, which elicited far more notice and of a more malignant quality than I could have anticipated. It seemed to be universally assumed that I had dogmatically pronounced against the doctrine of the immortality of the soul. I attempted in a short communication to one of the city newspapers to define my position, but my explanations were not generally accepted. While I was altogether willing for every one to know what I had said, and fully prepared to bear whatever obloquy might come upon me therefor, one or two circumstances, not related to my personal responsibilities, made it inexpedient to publish the lecture, though I was importuned to do this. These circumstances now no longer obtain, and, at the same time, justice to myself requires that I should as soon as possible withdraw from under the cloud in which silence has enveloped me. I therefore herewith print the lecture, and thus enable fair-minded persons to ascertain the facts I have used and understand the deductions I have drawn from them, so that, should they feel constrained to take issue with me, they may qualify themselves to do it in a rational and candid manner.

I wish it to be distinctly known that I have no desire to alter the substance of this lecture except in so far as I may have, by inadvertence, misstated any fact. The views I have advanced, and those which may be found in the lecture by implication rightly applied to it, I still maintain. I could indeed wish to make some changes in its literary form, for while, in this respect, it answered its original design as a mere college discourse to students sufficiently well, now that it is submitted to a larger and

more exacting audience I should be glad to bestow upon it the improvements of which it is manifestly susceptible. But, under the circumstances, it is clearly inadmissible for me to make the least alteration of it. In the delivery I adhered strictly to my copy, except only that I added a sentence or two to the notice of Carlyle's sneering remark to Huxley, which, however, was merely explanatory of the incident and in no wise concerned with the theme. With this single exception the lecture, as now printed, is word for word as it was spoken.

As will be seen by referring to the concluding portion of the lecture, I foresaw that objection would be taken to my presentation of the subject. In making this prediction I lay no claim to the possession of prophetic inspiration. The forecast was based on nothing more recondite than a long familiarity with the innate conservatism of my fellow citizens in respect to traditional ideals, particularly theological ideals. If I deprecate this conservatism, it is in sorrow, not in anger. Assuredly piety is most commendable and deserving of the respect and esteem of all men, but this does not forbid reasonable persons from regarding unenlightened piety as a hindrance and a nuisance. I cannot help lamenting the ingrain prejudice that is startled at the mention of conceptions which are commonplaces in other communities, and that burns with desire to forcibly stop the mouth of the man who ventures to propound them. Undoubtedly if we Virginians would employ the energy we waste in combating abstractions we imagine to be harmful in developing and furthering the realities we know to be beneficial we should soon put ourselves out of reach of the reproach of indifference and backward-

ness to which, as all thoughtful men among us are regretfully obliged to admit, we are justly amenable. Of all profitless undertakings the attempt to curb science in this pre-eminently scientific age is one of the most unprofitable. At the same time, to a community such as ours, the success of the attempt would be most disastrous.

Ecclesiasticism has always been a determined and malignant foe to science, and, naturally, the most violent and unscrupulous of the attacks made upon me, and upon what were asserted to be my doctrines, came from ecclesiastics. I had publicly and cordially offered my manuscript for the perusal of any clergyman who might think that even an imputed heretic ought to be heard before he was condemned. But not one of the clergy accepted the offer, and instead of ascertaining what I had said, as could so easily have been done, and as any respectable polemical layman would have felt it to be his duty to do, they preferred to prejudge me. And some of them, in yellow-journal fashion, advertising sermons under alluring and disgustingly coarse titles, collected audiences to hearken to intemperate denunciations of unauthenticated statements they attributed to me. All history shows that the self-styled ambassadors of the Prince of Peace are an exceedingly pugnacious race and that their warfare is carried on with exceptional ferocity; and, usually, the higher their ecclesiastical station the lower the plane on which they descend to fight. There is no saving grace in the titular D. D. capable of preventing the possessor of these symbols from developing, on occasion, into a scurrilous traducer, and I was not surprised to find that the most rancorous dealers of personal abuse were doctors of

divinity. To them I owe the information that I am ignorant of such facts as children are taught in their first lessons in physics and chemistry, that I am a fool, a dratted idiot, and, of course, an atheist. It was not without some feeling of satisfaction that I received the last epithet, which put me in the glorious company of worthies whose line extends from Socrates to Herbert Spencer. Where is the self-respecting man who, finding himself involuntarily thrust into even the humblest place among these kings and prophets of his race, would not feel infinitely more ennobled than he could ever feel though towering the most conspicuous among the spiteful horde of pygmies squeaking "atheist" at them? And it may not be amiss to ask the vituperating doctors of divinity of these days to consider the fact that Jesus of Nazareth himself was called by the titled clerics of his time "blasphemer," which most likely was Caiaphas the high priest's equivalent for atheist.

It was inevitable that the epithet atheist should be cast at me, for I was charged with the denial of a prime theological dogma—whether rightly or wrongly charged not being thought worth determining. It was inevitable, for this word always has been and always will be the most valued missile in the armory of clerical brawlers of the baser sort. With them it implies the last extremity of moral and intellectual depravity, and has, in their estimation, an innate virtue of such power as of itself to be able to overwhelm all the arguments and demonstrations of the man they hate. But the word, which once had in fact an actual meaning, has been so perverted, so misapplied, and made so debased and ridiculous by combined zeal and folly that now its use as a term of reproach excites in intelligent minds contemptuous scorn

of the impoverished intellect that can continue to harbor it. To religionists of this species an atheist is one who does not accept the god of their own making, a something they have fashioned after the pitiless promptings of their own hard hearts, in the semblance of a monstrous man, possessing in the most exaggerated degree the feelings, the emotions and the malignant passions of humanity, and clothed with attributes so irrational and so irreverent that a devout man of sense may well choose rather to be called atheist than see in such an impious personification the majestic power he acknowledges.

The religious status of an individual is unquestionably determined primarily by his birthplace and his environment. The clergymen who have so intemperately assailed me are Christians not because Christianity is of divine origin, nor from unbiased conviction of its truths, but solely because circumstances have ordained their birth in a Christian land. Had they been born in Turkey they would be Mohammedans, and probably howling dervishes. Happening to have been born among Christians they are more or less Christians themselves. This being the case, what assurance have they that theirs is the true faith, and what is their authority for stigmatizing as infidels those who are not satisfied that their unsupported assertion is conclusive proof? And particularly as to me, how can it be expected that I shall be convinced by the abstruse propositions propounded to me by preachers whose fundamental assumption, blatantly proclaimed to all people, is that I am a fool?

My own beliefs, whatever they may be, have been honestly acquired and are honestly held. Their foundations have been laid by the noble studies with which

I have been in lifelong communion. They afford me far more satisfaction here, and hold out a far more consolatory promise of the hereafter, than could the creed of these supercilious religionists, which has nothing better to offer to the troubled soul than doleful forebodings of never-ending woe, faintly tintured with a scarcely discernible glimpse of dubious hope.

It was amusing to discover that one of the main reasons for classing me with the atheists was my citation of the saying, "Where are three doctors, there are two atheists." It was supposed that I was the author of this statement, and that it was the expression of my own conviction. Had my accusers read my lecture, as they could and should have done before assailing me, they would have known that I was not responsible for the assertion, and a little inquiry would have shown them that it had its origin in the evil times when the men of their order denounced the study of medicine as atheistic. In justice, however, it must be said that it was an exhibition of unwonted magnanimity to class only two-thirds of the physicians as atheists, for there were periods when the Church condemned the whole body of doctors to this category, and leaving carnal drugs to unbelieving Mohammedans and Jews put its trust in the curative powers of saints, shrines and relics.

It would be very unjust were I to convey the impression that all the clergy exhibited the malevolent spirit so unbecomingly displayed by those to whom I have been referring. On the contrary, though the subject was widely discussed in the pulpit, most of the sermons, perhaps a large majority of them, I am assured, were in all respects worthy of the dignity of the theme, and free from coarse denunciations of opposing opinions,

and from personal abuse of those who had exercised their right to set forth and explain these opinions. In the strictures I am compelled to make in my defense and vindication I trust that it will be clearly understood that I do not assail the clergy indiscriminately. They are a body of gentlemen for whom, as moral teachers, I have the greatest respect, and among whom I have several highly valued friends. Intelligent and candid clergymen, like other intelligent and candid men, are influenced by the thought of the age, and it is a most hopeful circumstance that among them are many with receptive minds, ready to consider exoteric conceptions which others of their brethren will not even hear stated, and who, whether they accept or reject them, exercise honest thinking and show good manners.

While doctors of divinity eagerly carried on the fray, scarce any doctors of medicine participated in it, and of the few who did none struck in behalf of science, but all in behalf of theology. In doing this they took the course which, while it is the safer, is also the politic one for the thrifty medical man who keeps an eye, or both eyes, to the business side of his profession. The great body of doctors of medicine said nothing publicly either on one side of the question or the other. As far as I am concerned, I commend them for their silence, for it is plain that at present they cannot actively defend the phase of science I have presented without serious injury to themselves, while, at the same time, science in this its day of triumph, though it still venerates the sacrifices which may be made in its behalf, is no longer in need of them. Two of my medical friends, indeed, were not only willing but anxious to publicly defend me and the truths of our common science. I admired their fidelity

to principle and their courage, but dissuaded them from making what I considered as an unnecessary display of these dangerous virtues.

The laity also, while, in general, much more courteous, were not less earnest than the doctors of divinity in repelling what they regarded as an attack upon their religion. And, just as we constantly see that the stoutest champions of hell-fire are those who are the most promising candidates for it, so among the most strenuous advocates of the doctrine of the immortality of the soul I have particularly noted a number of persons to whom I am certain, from my knowledge of them, it will prove of the utmost advantage that the doctrine shall eventually turn out to be false.

I cannot regard the adverse discourses and disquisitions directed against my lecture as replies to it, though many of these were specifically so named. For I do not understand how a reply can be made when the intending respondent does not know even so much as what the question is. No objector so far has made himself acquainted with what I actually said, and the clergy especially, as I have stated, have steadfastly refused the information which was cordially proffered to them. Under such circumstances the attempts made to overthrow established facts of science whose nature and relations were imperfectly comprehended by their assailants were, as was to have been expected, little more than displays of misconceptions, misrepresentations, fallacies, puerilities, spurious knowledge and genuine ignorance. To undertake to refute such a presentation as this would be as absurd on the part of a medical scientist as it would have been for an astronomer to engage in a controversy with the Reverend John Jasper. It is a suffi-

cient satisfaction to me to believe that I have done an important service to the community with which I am identified by breaking through the densely impacted crust which has long shut in and suppressed liberal thought. Hereafter, should some other Virginian seek to discuss the interdependence of psychic and physical phenomena, or investigate a problem of science the sole right to the solution whereof theology has usurped, he can do so without bringing down upon his head the storm I evoked by the bare mention of such matters. They are now no longer novel. They have been talked of and thought of, and put in condition to be considered and discussed with the freedom, candor and decency which their importance and dignity require.

It is noticeable that the battleground was speedily transferred from the field of science to that of theology itself. Here the teaching of the Bible as to the immortality of the soul was brought forward by opposing champions and warmly debated. A large number of students of the Bible upheld the view which it was supposed I had taught, claiming that science and the Bible were agreed in the doctrine that the soul died with the body. On the strength of this agreement I had the satisfaction of finding myself described by one ecclesiastical authority as "a sound theologian"—a character which I certainly have never ventured to think I possessed, and which if I am really entitled to assume I promise to sustain in all modesty. I, in fact, had not introduced the Bible into my consideration of the subject. I did not feel that it was at all necessary to do so, for what it may teach or may not teach respecting the soul can in no rightful way control the teaching of science, while, at the same time, I could hardly have

hoped to handle the topic in a manner that would not offend the religious feelings of some sect or person—an offense which I was particularly anxious not to give. Still, should I choose to discuss Biblical statements, I maintain that I have the same right to judge and criticise the sayings of the Bible as I have to judge and criticise what is said in any other book. I demur to the assumption that the Bible is the criterion of scientific truth. The proposition is altogether untenable, and it is not made stronger by the claim of a divine origin for the book. Nothing can be more repulsive to a rational and truly reverent man than the smug assurance that presumes to dogmatically determine what is “the word of God.” Is there a rational creature in the whole world who would not at once most submissively accept His word could it be known what it is, or who ought not to look with disdain upon the embodiment of ignorance and conceit which, as it deals damnation round the land, impudently fulminates its words as His?

Undoubtedly medical men act decorously in abstaining from wantonly assailing Biblical statements. But this becoming regard for the sentiments of a large and generally estimable section of the community by no means requires that they should hold themselves subservient to medical science as this is exhibited in the Bible. He who can seriously maintain that they should do so must be a Bibliolater indeed, and even something which is much less respectable. For my own part, if there is anything in my discourse at variance with prevalent religious opinions I emphatically disclaim that it is there from either the purpose or the wish to disturb any man’s belief. Whatever fault is to be found

is in the facts themselves, and is inherent in them and must be attributed to them. I am blameless, for I have done no more than present them in their nakedness as they are. I am not an apostle nor a propagandist of any creed or doctrine, and I should regret it if I had shaken the faith of any one in a doctrine that was consoling to him—even in the doctrine of the eternal damnation of all mankind except himself and a few other specially exempted individuals, which some people find very comforting. Still, with all this liberality and considerateness for the beliefs of others, I do not see that I am called upon to withhold facts from men whose business it is to know them because these facts appear to be, or really are, subversive of the opinions of some one else. If we are to be governed in our teaching by this principle we shall be at once back in the Middle Ages, and if we are to forbear because there is a possibility of resulting harm not a little of medical science becomes forbidden knowledge. For while the topic I have considered can, at its worst, affect only the creed of the student of medicine, there is very much in the science the inculcation of which is capable, it must be admitted, of gravely affecting his morals.

It must be kept in mind, too, that science cannot measure the truth of its conceptions by an esthetic standard. Whether they conflict with current notions of beauty, or fitness, or dignity is of no moment to it. Its governing consideration is their accordance with the facts elicited from observation and experiment. Thus, the cardinal conception of the descent of man from the ape, which has been denounced as degrading, and contrasted with the alleged nobility of man's origin as it is described in Genesis, is unhesitatingly received by the

great majority of scientific men. To them, indeed, the evolutionary theory, which regards man as the culminating term of a long and stately series of orderly development, conveys a far nobler idea of the Deity than is given by the statement that He modeled a dirt image and blew His breath into its nostrils. To them this is the conception which is the degrading one, and it is made immeasurably more degrading by the appended puerility of His fabrication of woman out of one of the ribs of the man.

Science appeals only to the intelligence of mankind. It cannot take into its account any dogma or tradition, the emotions, the aspirations, the longings, the hopes or fears of man, nor the suffrages of any majority, however great. It has its venerated men, but it does not believe them to be infallible. It has its highly valued writings, but it knows that not one of them is exempt from error. It does not seek to attain truth by merely speculating about it and meditating upon it. It works for it, it delves for it, earnestly, skilfully, patiently employing every one of its implements, which in this age have come to be a magnificent and efficient armory. And though the unwelcome results it has reached have been stigmatized as foolishness and its votaries branded as fools, yet every candid mind will concede at least that the methods pursued are far more sensible than the methods of those who merely announce the outcome of their cogitations upon the enigmatical statements of a book written in a semi-civilized age, at uncertain periods, by unascertainable authors, in tongues unintelligible to the vast majority of living men and whose interpretation by the few who can claim to understand them is often, in the most vital parts, irreconcilably dis-

cordant and contradictory—a book of which the very custodians and authorized expounders are busying themselves in discrediting.

Scientific men are most irrationally sneered at for the importance they attach to weighing and measuring and the use of the implements they have devised for investigating Nature. But what means can be conceived of which is better than this practical interrogation for obtaining exact knowledge? The alternative is speculation, but this has never yet afforded any solid advancement of whose solidity we could feel assured. The man of science goes as far as his approved means can take him and there he stops, not impressing his imagination into service to help him further on, and then presumptuously exploiting the airy fancies he may have conjured up as embodied facts. No prophet, priest or king is so sacred or so powerful as that he can make a lie into a truth by any utterance of his. While Galileo, driven under dire compulsion of the mitred enemies of human knowledge to become their mouthpiece, was saying for them, “the earth stands still,” it was moving on, and had whirled a thousand miles before his hands could be lifted from the Holy Scriptures on which ecclesiastical arrogance and ignorance had forcibly imposed them.

Contentious babblers and sophists do no more than obscure and confuse, having no higher aim than to obtain some verbal triumph, but earnest and candid inquirers wish the truth, however opposed it may be either to their preconceptions or their longings. But what is truth? This was the question asked of Him who, as Christians believe, was the best qualified of all created beings to answer it. No answer was given to the question, and

we are left to solve it by the only implement bestowed upon us which is at all suitable for the purpose, human reason. It is by no means a worthless implement, though it is admittedly an imperfect one. At any rate, it is the best we have, and its intelligent employment is far more likely to bring forth trustworthy results than mere rhapsodizing ever can. And yet, after all, the discouraging fact remains that, with multitudes of people, one rhapsodical word from the pulpit outweighs all the substantial facts that can be gathered from the wide and deeply cultivated fields of science.

I shall not undertake to maintain the thesis of the unity of the soul and body. Nor do I care to add to the very condensed presentation of the subject I have given in the lecture. Enough is there stated to render the nature of the problem intelligible to the beginner in science, to whom I was addressing myself, and I prefer to leave the discussion of it to controversialists. Neither the truth nor falsity of the proposition that the soul dies with the body is susceptible of conclusive demonstration by any physical or mental processes at our command. Yet it is certain that science can say very much, and this of a tangible sort, for the affirmative. Theology, on the other hand, can, as is its wont in controversy, say very much more in denial, but with the defect that of all it may say there is very little that is not intangible.

A succinct and easily apprehended statement of the relation between soul and body as I have sought to present it in the lecture may be made in the form of an illustration which, while it is not an exact parallel at every point, is, as a whole, not inapt. We may liken an animal, such as man, to a mill by the river side, whose

motive wheel is as the brain and the ever-flowing water is as the eternal stream of energy. The water passing over the wheel puts the machinery in motion, and having done this sweeps on. Neither it nor its power has been destroyed, but, on the contrary, under the influence of the sun's heat it may rise in vapor and descend as rain and feed other rivers. Nay, it is possible that some of it may become part of this very river again. But, if in the meanwhile the wheel has broken up, the indestructible energy of the flowing water counts as nothing for it. The water may turn some other wheel, but this wheel it can turn no more.

The fierce criticism of my discourse and of me has arisen because, as a medical man, I undertook to present to other medical men a medical subject which theology, with presumptuous arrogance, had long claimed to be exclusively its own. Acting through ecclesiasticism, its constant policy has been to retain whatever pertains to the soul in its own clutch, and it will not learn, in spite of repeated rebuffs, that others besides theologians have the right and the disposition, and, in these days, the power to investigate psychic problems. Medical men certainly will not allow themselves to be restrained at the behest of speculators and sophists from the freest and fullest inquiry into any and every thing connected with the bodily functions, and they are too well assured of the inextricable association of the soul with these functions to deprive themselves of the increment of useful knowledge the study of it affords.

Of the animadversions made upon my treatment of the subject of science and the soul some of the most severe, as well as most unreasonable, were based upon the

asserted impropriety of discussing such a subject at all, which, it was declared, was not a proper matter to be brought to the attention of my pupils. It can hardly require argument to persuade enlightened physicians that my proceeding was one entirely within my province of medical teacher. The doctor, no less than the clergyman, is concerned with the psychic nature of man. For he does not treat his patient by installment, but as a whole, both body and soul, and often must regard, for his purposes, the soul as the more important of the two. Moreover, if I am not to be allowed to acquaint my pupils with modern conceptions of the physiology of the brain lest they seem at variance with some theological dogma, why am I not forbidden to teach that insanity is a disease, as I habitually do, since in doing this I am plainly "flying in the face of Scripture," where the doctrine that insanity is possession by devils is as unequivocally taught as any doctrine whatever, and more unequivocally than immortality of the soul itself? And if my topics, which, as I have already urged, could, at their worst, influence only creeds, are to be condemned, why should not the teaching of obstetrics to young men be denounced also, since this is notoriously capable of corrupting ill-regulated minds, and actually, for the furtherance of some of its ends, enjoins the commission of murder itself?

The fact is, that, if any censure can be rightfully applied, it should not be to me for my slight and imperfect touch, but to medical schools for their great neglect of the profoundly important department of psychic medicine. For the doctor, since he has to deal with the whole human organization, mind as well as body, should be instructed in the one no less than in the other. The

peculiarities of the mind are of immense practical importance to him, yet most of our medical schools accord to them only a very superficial consideration. He must oftentimes minister to a mind diseased, but he is taught too little about its origin and its relations to its environment to qualify him for adequately prescribing for its disorders. And he never will be able adequately to do this till his teachers cease to fear the unreasoning malice of ecclesiasticism. Astronomy and geology have freed themselves, but medicine is still in thrall. It has, it is true, contrived to assert its independence in some directions, as in its views concerning the pathology and treatment of insanity and epilepsy, but in some of the most vital parts of biology, physiology and psychology it still allows itself to be shackled, and while admitting, very properly, that religion may be based on the Bible, hesitates to affirm in any but a shuffling way that medical science is absolutely independent of it.

No doubt, for it has been demonstrated, there are narrow-minded bigots who would denounce a medical school which taught established facts that are opposed to certain ecclesiastical tenets or opinions as an unorthodox and atheistic institution to be shunned by Christians and virtuous men generally. Such denunciation is mere foolish abuse, and a school which yields to it dishonors itself, for it is lowered to the level of the benighted educational establishments of the dark ages, where the facts of Nature did not pass current till they had been countersigned by the Church; and a young man so weak as by preference to seek its incomplete, defective and sophisticated instruction has mistaken his calling, and would do better to enter a monastery instead of a medical college.

For my part, I cannot conceive of a more degrading compliment to a medical school than the commendation of it by a bigoted religionist as an orthodox institution. There are, of course, degrees of orthodoxy, but if such a school is orthodox to the extent of conforming to all Biblical standards it must teach that man originated as a figure molded into human form from dust, into whose nostrils life was blown, and that woman was constructed from one of his ribs; that men dead and buried may come out of their graves and walk among the living; that the laws of physics and chemistry, on whose fixity and uniformity the unorthodox or atheistic schools rely, are susceptible of dislocation, reversal and abrogation upon due solicitation made by certain privileged persons; that insanity and epilepsy are the work of indwelling demons who are to be expelled by conjurations, for which the pharmacopœia must provide a formulary; that the laying on of hands is an all-sufficient therapeutics; that Christian faith is an antidote to poison; that ghosts are agencies to be utilized for diagnosis, prognosis and for medical purposes in general; that, as unorthodox sanitary science seeks the extirpation of the malignant mosquito, so the orthodox must strive to extirpate the yet more malignant witch, compelled by that explicit and authoritative injunction, "Thou shalt not suffer a witch to live." All this, and much else in the same category, the strictly orthodox school must teach, and unless its teaching were conducted in full recognition of these principles it is certain that it would be an unbiblical institution, and, in so far as nonconformity with Scriptural medical science implies infidelity and atheism, it would be no less infidel and atheistic than are all medi-

cal schools which are conducted in accordance with nineteenth and twentieth century ideas.

May we not hope that the spread of enlightenment will, within some reasonable period, induce or compel ecclesiasticism to keep in its own province and leave medical science to medical men? Assuredly that faith is very weak and tottering that to sustain itself grasps hold of a spurious anatomy, physiology or psychology. It would give me sincere sorrow to believe that religion is so poor a thing as to stand in need of false science for its development and support. For the man of science can deeply feel for himself not only, but for his fellow man as well, though it is sometimes strangely said that he regards nothing that he cannot weigh or measure, or somehow test in his laboratory. If this description of him were true he would be a monster. But it is not true. He is of like fashion with others, sharing their strength and their weakness, their virtues and their vices. He feels, as they do, the inspiration of music, of art, of poetry, and is equally with them responsive to all forms of beauty. His interests are the common interests of all mankind. His religion, if it be not in subjection to conventional formulas, yet is as pure and practical as any that is set forth in creeds, and his system of morals is as exalted and as faithfully observed as that of any other man. He has his joys and sorrows as the rest of the world have theirs. He partakes the happiness of social and domestic communion, and he, too, weeps bitter tears when he sees his loved ones sink into the grave. Nor is he, in that dark hour, without hope—hope, it may be, that is as consoling as is the hope of some who superciliously condemn, or of others who generously pity him for what they think is his

error. He is altogether human, and makes his pilgrimage to the ultimate goal of human kind guided on his way, as each of his companions is, by such light as has been vouchsafed him.

THE OCCULT

A Lecture to the Class in Medical Jurisprudence

Some time since I formed the purpose of delivering, in connection with my lectures on medical jurisprudence, a series of discourses on subjects which collectively may be called the occult. In pursuance of this purpose, I selected for my first discourse the subject of spiritualism because of its intimate connection with the whole class. Obviously, this subject involved some consideration of the relation of the soul with the body. I had thought that all I needed to say concerning this relation might be embraced in a paragraph, but, to my surprise, it developed till it became an entire discourse of itself. This was the origin of my lecture on "Science and the Soul." You are aware of the commotion the lecture excited in this community and elsewhere. The essence of the lecture was a medical topic treated from a medical point of view, but innumerable people chose to regard it as an attack on some of their religious beliefs. It was taken for the theme of sermons in nearly every church here, and, while many clergymen discussed it with dignity and decency, others conducted themselves in a manner which has made the Sunday following the delivery of the discourse memorable in the intellectual history of Richmond as an occasion when, with approbation and applause well-nigh unanimous,

twentieth-century science was dragged to judgment and put on trial by fifteenth-century ecclesiasticism. But the earth continued to move, and this community has had perforce to move with it. The full outcome is not yet apparent, but one result of this conflict, wantonly precipitated by ecclesiasticism, is that there is to-day far more liberality of thought, determined spirit of inquiry and scorn of censorship than I have ever known or could hope ever to see in the medieval village we call the city of Richmond.

At that time, as, indeed, is always the case, there were in our classes men representing almost every variety of religious belief and disbelief, and it was most significant and gratifying to find that all the students, I believe without an exception, resented the insolent attempt of ecclesiasticism to revive its defunct authority over science and force our school to keep within the restricted, jealously guarded and stifling circle of so-called orthodoxy. Those students said in language and in acts not to be misunderstood—to the ecclesiastics: "Keep in your own domain and out of ours." And they said to me: "Teach us the science of our time, whatever it may be. We will settle our religion for ourselves."

The stand taken by our students was a rebellion against an arrogant resumption of repudiated authority—a rebellion which was righteous; and, as respects the freedom of our teachers to teach in accord with the thought of the age, and the desire of students to attend a real medical college rather than a divinity school daubed over with medicated varnish, it was, as events have proved, a successful rebellion. Robert E. Lee has said that the sublimest word in the English language is

duty; and for doing what he believed was a duty he has been called a rebel. Along with this noble word, duty, I would place the word rebellion—in my opinion, one among the noblest. Rebellion has been the soul of all the progress the world has made on its road from savagery to civilization, from slavery to freedom. Recall the history of mankind and name the men who have most profoundly shaped human destiny for good, and you will find that they were rebels, and that the safety, the transcendent civil and religious liberty we to-day enjoy have been slowly and agonizingly wrought out for us by the infinite oblation of rebel blood. Our own—the English-speaking—race has always been of all races the most rebellious. “Resistance to tyrants is obedience to God” has been its animating principle from the days when our rude progenitors in Central Europe and in Britain checked, beat back and overthrew the haughty power of Rome till the latter days, wherein it has produced its masterpieces embodied in two Virginian rebels, the greatest and the best, Washington and Lee. We of the South have been regarded as pre-eminently rebels, and the term has been cast at us by our Northern countrymen as a reproach, but I will not insult them by doubting that they are rebels too, and still possess the lofty spirit of their forefathers. Rebelliousness is a part of the fiber of Englishmen, Americans and all others who have become imbued with their modes of thought. We get it from our women. Woman is innately rebellious. She is the counterpart in this respect of that sublime rebel, Milton’s Satan. The trait is troublesome sometimes, yet it is the conservator of all that is manly in our race, for the English-bred child sucks in rebellion with his mother’s milk. I thank heaven that it is so,

for it is our salvation from the two tyrannies, the most accursed which have afflicted mankind—the tyranny of the State and the tyranny of the Church. Great poets have grandly sung of patriotism and other splendid virtues. Is it too much to hope that at some not distant day there may arise a Southern bard who, taking one of his own incomparable countrymen for the exemplar, and with the noble tongue which the illustrious rebel, Milton, knew to build into immortal numbers for his instrument, shall create for his land and for the world the Apotheosis of Rebellion?

In the presentation of the supplementary discourses which I am in the habit of delivering I do not bind myself in any way. I am governed by circumstances. It has, therefore, happened that there is a considerable interval between the first and second lecture on the occult. I entered upon the discussion of the subject with something of a light heart, thinking I could dispose of it in a comparatively small compass, but, to my surprise and dismay, I have found that I can barely touch upon it in one or two lectures, and I have every reason to fear that in attempting to compress what I might say, and ought to say, I have most seriously impaired its inherent interest, and that my treatment of it will be even less satisfactory to you than it has proved to be to myself.

Our unreasonable awe and dread of the unknown and the unexplained which has developed into what we name superstition is an inheritance through savage and ignorant primeval man from our apish ancestors. This imperfection long since became inherent in the texture of the human mind, and, though we have been able to variously modify its influence, yet, in spite of all we

can do, it is for a mighty length of time to come no more to be thoroughly eradicated than anxiety, or fear, or the sense of pain itself—against which, and the distressful vicissitudes of human life, the most earnest efforts have in every age been put forth. Such attempts have met with but indifferent success, and, when a measure of success has been attained, it has most often been with the sacrifice more or less complete of some noble quality of mind or heart.

Specific superstitions, like other beliefs, are matters of early instruction and environment. Ingrain certain ideas in a child's mind, and it is doubtful if he can by his utmost exertion ever completely free himself of them. Let the young son of Christian parents be taken from them and reared by Mohammedans—a villainy often perpetrated in former days—and let him return when a man and he would revile the religion of his parents to their faces. So far as I myself am concerned, I do not pretend to have altogether freed my mind from the superstitious feelings bequeathed to me by my arboreal ancestors, and which were fostered by my nurses and the companions of my childhood. Nor do I expect ever to be completely rid of them till I shall have lost the sensation of awe, which, in the present stage of our development, is a part of the outfit of every normal mind, and my emotions are overwhelmed by the clogging dulness which spreads itself at length over and through the sensitive and mobile mechanism which works out thought.

I would not willingly undertake to pass a night in a bedroom reputed to be haunted. Nor do I desire to needlessly prowl through a graveyard in the dark. For, though I thoroughly disbelieve in supernatural visitations, I regard it as a most dangerous folly to perform

foolhardy experiments with so delicate an apparatus as the nervous system. So far as I know, I have never gone to bed in a haunted chamber, but once in the depths of the night, in trying to make a short cut by way of Hollywood Cemetery, I became entangled in it and lost. I neither saw nor heard anything abnormal during my wayfaring, which was very prolonged, but I was sufficiently well pleased when I got out of the place and away from it. While, therefore, most, perhaps all, of us, if we are candid, must confess to some lingering shade of superstition, we have no more call to be ashamed of this than of the many other infirmities and disagreeable attributes inseparable from the nature of our organization. All we should be expected to do is to bring our reasoning powers to our aid and guide ourselves by them to the utmost of our helplessly limited ability.

In the operations of the intellect and the resulting influence on conduct there are, in many directions, obvious differences between the people of the Northern and of the Southern States. I shall not flatter my own people by saying that these differences are all in their favor, for in some cases they are plainly not. In unsusceptibility to mental and moral delusions, we unquestionably are much superior. We are very free of the follies that degrade the higher intellectual faculties, for we have, so far, retained the sound and stable fiber which characterizes the unpuritan English mind. Our superstitions are of the grosser sort and such as we are apt to be ashamed of, and they are, therefore, more readily expelled or kept in abeyance by reason. They are certainly widespread, but chiefly among our ignorant classes. On the other hand, the superstitions of the North are largely of a more refined, recondite and

specious character; hence, while equally foolish with ours, they are more difficult to reason away; for while a successful combat may be waged against the vision of a horned and caudate devil, it is almost in vain to contend against conceptions associated with a disembodied soul. Moreover, the superstitions of the North are as rife among their most intelligent people as ours are among our most ignorant. No pretentious and commanding superstition has ever originated in the South, while very many of this class have originated in the North. The reason seems to be that education steadies the Southern mind, and holds it to the straight and well defined path, while, on the contrary, education renders the Northern mind unstable, erratic and eager to push headlong into unknown and unknowable regions. Of course, it will be understood that my meaning is general, and that I admit a great many exceptions on one side and on the other. The causes of these differences it is not the province of this discourse to undertake to determine. That the differences exist is indubitable. What is popularly considered to be education, namely, a superficial acquaintance with many and various books, has made much greater progress in the North than in the South. That a most discreditable debasement of the intellect should have developed step by step along with it excites in those who esteem education a feeling of doubt not free from despair.

In the days of slavery in the Southern States the white children were under the special patronage of the domesticated negroes. It was a characteristic of that amiable race, now forever gone, particularly of the women, to feel most tenderly towards their little masters and mistresses, and one of the cares in which they most

delighted was instructing them in all the thaumaturgic wisdom of the Africans. It would be an interesting and instructive study to consider the reactive influence of the negroes upon the white Southerners—partly good, but no doubt partly evil also, yet, I believe, predominantly beneficial; though this effect is not commonly allowed to slavery as it existed in the South by those who have known it only from a distance and not intimately. At least our colored companions exercised in many ways an ameliorating influence, as, for instance, appears quite obviously in the modifications which association with them of the white children from birth through infancy and youth effected in the tone of the rather clanking Anglo-American voice, giving it a characteristic smoothness, which in the Southern woman particularly is commonly very pleasant to hear and often is very sweet indeed. But we also caught their superstitions, their belief in signs and warnings, their trust in talismanic roots, hare feet and like amulets, specimens of which I have often found on the bodies of negroes and sometimes of white men, who, the charm failing, have been suddenly cut off and brought under the purview of the coroner. These and many others of their numerous and varied mysticisms have infected us to a considerable extent. We have readily taken to these gross kinds of superstition, but it is remarkable how unerringly we have estimated and rejected superstition presented in an intellectual guise.

But while the white people are very complacently deriding the colored folks for their superstitions, they might profitably take heed of and amend some of their own. It is little less than presumptuous impudence for a white believer in what is called Christian Science to

sneer at the degraded beliefs of anybody else. The Christian Scientist and the African sorcerer both are votaries of a conjuring cult pure and simple, while the depravity of intellect evidenced by such a cult is necessarily much more discreditable in the educated white man than in the ignorant black. All of us, however, are liable to be victimized by follies of this sort. Our preconceptions and prejudices blind us to our own stupidities, while we clearly recognize identical stupidities when they afflict those whose opinions are adverse to ours. It is, for instance, curious to observe Christians of every variety discovering great danger in the Mohammedan ablutions in the holy well of Mecca, and a large proportion of them seeing no danger in the equally filthy ceremonies at Lourdes, strangely satisfied that their filth is made innocuous by the antiseptic qualities of their faith.

I may remind you that the lecture on Science and the Soul presented the conception that the soul might be a physiological function of the brain, and that if this were so it would require the brain in order to manifest itself; and, consequently, that when the brain ceased to perform its functions—that is, when it died—the soul necessarily ceased also. The conception was treated exclusively as a scientific topic, and in summing up it was distinctly stated to be my own opinion that our implements of investigation do not enable us to say conclusively whether or not the soul dies with the body. Let us assume, then, that science leaves the answer to the question in doubt, or, if it is preferred, let us admit that there is a principle which is what is generally regarded as the soul associated with the body and which exists independently of it for an indefinite or an infinite period after its death. We must

then also admit that intelligible communication with this principle through the medium of sight or hearing or some other of our senses is at least a possibility. It is strongly alleged that such communication has, in fact, occurred—not once or twice only, but myriads of times. If this is really so, surely there should be some unquestionable instances of it. Are there any? I say at once that, in my opinion, there is not one.

By far the most numerous, most notable and most insistent asserters of the practicability of communication with disembodied souls are the adherents of the belief called spiritualism. This is much the most pretentious phase of the occult. Spiritualism may, in fact, be considered as connected in a direct or indirect association with nearly every other form of the occult. Widespread and imposing in the number, and, as to some of them, the station of its adherents, as it now is, its origin is very modern; and though there are among believers in it many men who are admittedly of high mental endowment, its birth and its growth were under circumstances singularly petty and ridiculous. It was started in 1848 by two girls, Kate and Margaret Fox, aged nine and twelve years, respectively, with a knocking on the floor. This was not the first time that supposedly supernatural beings had employed this primitive, clumsy and unsentimental means of communicating with mortals—which, I may parenthetically remark, has now become rather antiquated, and been superseded by the much more elegant and effective devices which the simple-minded spirits have learned under the tuition of the superior men and women of our time. A notable forerunner of the two little girls was the Cock Lane ghost, which, by the help also of a girl, made in 1762 by means

of knocks a great but temporary impression on London. A similar performance, in which still another girl was implicated, took place in the house of the Rev. John Wesley, and there have been others. It does not escape your notice that in all these uncanny to-dos our female fellow creatures are constantly turning up. Why this is so we medical men very well know, but the tender affection we all feel for women and children, and innocents in general, forbids us from proclaiming.

As the story runs, Kate, with the engaging trustfulness of childhood, imitated the knocks by snapping her fingers. An acquaintance was thus struck up, a code of signals was devised, and presently quite a nice little talk was entered into between the family and the knocker, during which, among other things, it showed its interest in the domestic affairs of the Foxes by rapping out the ages of all the children. After a time the knocker informed them that it was the spirit of a peddler who had been murdered and buried in the cellar. His name was given, and it was then recollected that five years before the peddler had come to this house, had suddenly vanished and had never been heard of more. And on digging in the cellar some bones were found. A critical person might readily make difficulties if asked to credit this narrative, but I am not now criticising it. The family subsequently moved to Rochester, N. Y. Peddlers are notoriously a pertinacious race, hard to shake off, and it is not surprising that this particular peddler accompanied them to their new home. In fact, he, or some of his tribe, went with them ever after wherever they themselves went, and they went to many places, for they quickly realized that many a good penny could be

made by inducing the kindly peddler to do his knocking for them on the public stage.

These knockings created an extraordinary sensation, which I myself well remember, and soon became the engrossing theme all over the country under the name of "the Rochester knockings." The period was one of those which have so frequently marked the mental history of mankind, when the minds of great numbers of people become affected by a strange instability and an abnormal receptivity to such a degree that an idea, often a most preposterous idea, overruns a community like an epidemic. Accordingly, multitudes now promptly accepted the idea that at last the barriers between the physical and the spiritual worlds had been effectually broken through. The Southern States, protected by their innate conservatism of thought, practically escaped the invasion, but the new beliefs spread through the Northern States and Canada, and gained a large following in England and Scotland and on the continent of Europe. Nor was it only the ignorant, the uncultivated and the unsophisticated who were infected. Among the earliest and most assured believers were men rigorous in their demand for proof when ordinary transactions were in question and eminently skilled in estimating the value of evidence—like John W. Edmonds, a learned judge of the Supreme Court of New York; and men who spent their days in the investigation of Nature and all whose investigations demonstrated the absolute permanence and inflexible regularity of Nature's laws—like Professor Robert Hare, the ablest chemist which America had up to that time produced.

In the fashion I have described, from knocks, or, to

use the statelier appellation of Sir William Crookes, himself a devoted believer, from percussive noises, in the production of which two female children were in some way the agency, has arisen the extraordinary fabric of modern spiritualism. The manifestations were investigated by committees of the most respectable citizens. An investigation by the most respectable citizens of a stage performer's wonders can be confidently set down as absolutely worthless. It is clear that if the secret of the performance was detectible by the respectable citizen the respectable citizen would not be invited upon the stage. The committees reported that if the knockings were made by any human knocker it passed their comprehension how he or she could do it—as, of course, it did. More capable investigators, however, discovered that sounds closely simulating the knocks associated with the Misses Fox could be produced by partially dislocating and restoring the joints, particularly the knee joint, a power which is possessed by certain persons. In the year 1888 Margaret Fox confessed that the knocks were actually caused in this way. It may have been so, but it is almost incredible that even a committee of the most respectable citizens could have failed to detect a trick of this sort. Margaret was, I regret to say, not unimpeachably trustworthy, for she afterwards retracted her confession. We may adopt this or any other explanation of the knockings we may regard as the most probable, but the fact is that their actual origin is to this day not certainly known. If the paltry method of their production which Margaret Fox confessed was the real one, we cannot but be forcibly impressed by the astonishing obtuseness of observers who, under seemingly most favorable conditions, yet failed

to detect it. Still, obtuseness even to this extreme degree in witnesses to what is considered as miraculous is by no means uncommon. I myself offer no explanation of the performance, for I am not a prestidigitator. It has been duplicated over and over again by those who are prestidigitators and who professed themselves to be nothing else, and I have no doubt whatever that it was mere trickery.

The development of what may be termed the mechanics of spiritualism was not only exceedingly rapid, but it was also exceedingly various. The spirits did not only everything which had been done by our old indigenous ghosts, but they did it much better than these could do it, and, besides, introduced numerous elegant novelties. To the percussive noises were speedily super-added—to name a few of the marvels done by the new order of ghosts—bell-ringing, horn-blowing, fiddle-playing, spirit voices, jack-o'-lanterns, portraits of the disembodied taken on photographic plates, writing on slates, untying of ropes, snatching of spoons from the supper table, twisting them in knots and returning them as good as new, table-tipping, the passing of solids through solids and other demonstrations of the possibility of two things occupying the same space at the same time, the ascension and sailing around of heavy furniture and very fat women, reading of sealed letters and seeing into closed boxes, descriptions of contemporaneous events in the uttermost parts of the earth and in the planet Mars, mind-reading, prophesying; and, finally, certain manifestations in which the human form is concerned—elongation of the body, the materialization of parts of it, especially of the hands and face, and, at length, what is justly regarded by spiritualists as

their crowning achievement, the materialization of the complete human figure, attired not in the repulsive sheet and shroud of rude times, but in the accustomed costume of a lady or gentleman of this refined age. It is indeed well within the ability of a medium of our time to materialize the spirits of Adam and Eve, and show them to us decently dressed in the stovepipe beaver and jockey hat and feathers of the present epoch. Luther P. Marsh, the eminent lawyer of New York, if not favored to the full extent of this, was at least put into communication with our two first parents, and was told by them much about life in and out of Eden, and, particularly, received from Eve a large amount of entertaining and valuable information bearing on her relations with the other animals. That all the things I have named have actually been done, and by agencies unknown in Nature, is certified by testimony which is in quantity and quality not merely better than that which supports the miracles recorded in any of the world's sacred books, but which is as good as the testimony which assures us of such a fact as that President McKinley was assassinated and that President Roosevelt was inaugurated. You will note that I say testimony, and you should also note that very often indeed testimony is far from being the equivalent of proof.

It is my wish to discuss my topic in a temperate spirit, and, while I do not feel bound to study forbearance towards convicted cheats and rogues, I shall carefully abstain from applying vile names to reputable upholders of ideas which seem to me to be demonstrably erroneous and even absurd. I shall not retort on them epithets which have been cast at me—ignoramus, fool, dratted idiot, atheist, for example. This would avail

nothing as argument, and has the capital demerit of imitating the manner of the angry theologian. It is also my intention to use, so far as I can, material provided by persons of character and ability.

As the type of a high-class spiritualist I may cite Robert Dale Owen, a man eminently respectable for talent, for culture, and for integrity. Unfortunately, he was also extraordinarily credulous. He was a most earnest and, at the same time, a most honest, but by no means a most judicious student of the occult. He wrote books on this subject, and one of them, "Footfalls on the Boundary of Another World," I have read with interest and with profit, though not profit of the sort he designed to impart. In this book he has collected a large number of what he considers as the most trustworthy and convincing of those narratives we call ghost stories; but among the whole collection I had no difficulty in discerning that there was only one which did not contain in the narrative itself something fatally subversive of its credibility. With the one exception, and I am far from intending to convey the idea that this one was unimpeachable, each lacked what a doubter might reasonably demand as a voucher for its authenticity. Moreover, in order to maintain his proposition that miraculous phenomena can occur without producing what men of science would regard as a dislocation of the established order of nature, he resorts to the specious, but oftentimes delusive, argument of analogies. Thus, he lays great stress on the fact, as though the case were a parallel one, that the Babbage calculating machine, after long dealing out numbers in an order whose regularity will seemingly persist to infinity, suddenly and apparently unaccountably whips over to another order,

and presently changes again in a fashion which is startling to one who is not prepared for it. He does not realize that, after all, this is, as is perfectly well known, the consistent and inevitable result of the operation of a mathematical law, and that it is entirely different from the reversals, suppressions, and annihilations demanded for the production of a miracle. Besides, he is not disturbed by the fact that not only are alleged miraculous phenomena subject to the utmost capriciousness as to their appearance, but that they are commonly presented on exceedingly unimportant occasions, and for purposes of very little dignity or consequence. Taking for an example what is regarded as one of the best authenticated instances of a supernatural interposition, the warning of his death, which is said to have been given to Lord Lyttelton by a ghost, it is, as has been suggested by Sir Walter Scott, tasking common sense too heavily to ask us to believe that Nature would upset the universe to let a playedout old rake know that his worthless existence is to terminate at a specified hour. The predominant effect of Owen's book is, in fact, to convince any reasoning reader of it that, whatever else its author may have been, he was one of the most credulous of men. Mr. Owen devoted himself to the active defense of the delusions which had enthralled him, and finally became their victim. A set of scoundrel mediums made him their dupe, and among other manifestations exhibited to him some of their confederates and induced him to receive them as the materialized spirits of the most tenderly beloved of his departed relatives. At length, in the midst of one of these displays, the cheat was so ruthlessly and thoroughly ex-

posed that even he was undeceived. The shock overwhelmed his mind, and not long after he died.

Among men eminent for learning and abilities in various directions who are living in the twentieth century and are either deeply tinctured or fully saturated with spiritualistic beliefs, I may name Sir William Crookes, the chemist; Sir Oliver J. Lodge, the physicist; Dr. Alfred R. Wallace, the naturalist; Camille Flammarion, the astronomer, and James H. Hyslop, the logician, or at least the professor of logic in Columbia University. Flammarion has never been able to divest himself of his early theological bias, and lets it influence his scientific speculations. Hyslop's specialty is a Mrs. Piper, a lady who appears to pass a migratory existence between the earth and the planet Mars. Lodge has in his study of the subject ascended so high, or descended so low, as to have pretty well convinced himself that a doll reciprocates the affection lavished on it, and thus aligns himself with the innocent little girl who thinks the same when she kisses her rag baby. Crookes relates that Miss Florence Cook, a medium, often materialized the spirit of a lady called Katie under the full blaze of the electric light in his laboratory, and that he took several photographs of Katie. It appears, however, that Miss Cook conjured with the aid of a cabinet. Later he saw many marvelous things done by another medium, named Daniel Dunglas Home, a descendant from the second-sight seers of the Scotch highlands. Wallace tells of some of the ordinary visions in which a tall and stately East Indian, arrayed in white robes and snowy turban, appeared and made himself very agreeable, allowing the beholders to feel him and even to measure

his somewhat ponderous foot with a shoemaker's rule—all done, however, in a curtained room lighted only enough to just permit the occupants to see each other. But he goes on to tell of an extraordinary vision. All connected with this, he says, happened on a bright summer afternoon in the full light of day. The medium was the Rev. Mr. Monk. He went into a trance, and presently, pointing to his side, said to Wallace and his companions, "Look." A faint white patch appeared on the left side of his coat which grew brighter and developed itself into a cloudy pillar, extending from his shoulders to his feet and close to his body. He moved a little away from the pillar, which, however, remained attached to him by a cloudy band. In a few minutes Mr. Monk again said, "Look," and severed the connecting band by passing his hand through it. He and the cloudy pillar moved away from each other till they were about five or six feet apart. And now—behold again the eternal feminine!—the pillar became a thickly draped female form with hands and arms just visible. Again Mr. Monk said, "Look," and clapped his hands. The figure responded with a clap of its hands, faint, but distinctly audible. The figure then moved slowly back to him, grew fainter and shorter, and was apparently absorbed into the body of Mr. Monk as it had grown out of it. This is Wallace's narrative essentially in his own words.

What are we to say to such narratives as this? When a distinguished hypnotist of this city, after telling a most astounding story of some hypnotic exploit he had performed, asked his awestruck auditor, "What do you say to that?" the awestruck auditor replied, "I say it is a lie." We could not think of applying language so

uncouth as this to any statement made by such a man as Dr. Wallace, yet unless we are prepared to sacrifice our good sense to our politeness we must either be silent or say something seriously derogatory, if not to his moral, at least to his intellectual character.

Of the eminent men I have mentioned, four are men of science of the highest repute among their scientific brethren, and their names are triumphantly flaunted by spiritualists before the faces of unbelievers. It is constantly urged that certain opinions must be correct because they are held by men of the most distinguished intellectual ability. Very little reflection ought to convince that this contention is worthless. Nothing whatever, no supremacy of station, of intellect, or of morals, is a specific against human folly. The most eminent, the most learned, the most virtuous may be deceived by puerilities which ought not to mislead a child. It is a cardinal injunction to all students of science to accept no proposition merely on account of the personality of the propounder, whatever his eminence. Men of corresponding mental powers have held diametrically opposite opinions on the same subject. Of this fact multitudes of instances could be produced. The illustrious Newton was a believer in one God, monotheism being the religion of his day. Archimedes, his parallel, if he believed at all, believed in many gods, polytheism being the religion of his day. In our own time we have found Gladstone believing and Huxley, Darwin and Spencer disbelieving in the divine inspiration of the Scriptures. Amid the contradictory views of these great intellects the rational thinker discards the men themselves and pays attention solely to the proofs or disproofs they present.

In the earlier days of spiritualism, when the land was all agog over the Rochester knockings, the phenomena were investigated by a multitude of inquirers of reputations ranging from notorious to honorably distinguished. I have already had occasion to speak of one or two of them. Among the others were Frederick Douglass, Horace Greeley, J. Fenimore Cooper, William Cullen Bryant, Nathaniel Parker Willis, Theodore Parker, James Freeman Clarke, Alice Cary, and Harriet Beecher Stowe—representative visionaries, transcendental theologians, novelists, poets, dudes, and fanatics—persons unfit for any serious inquiry, but just the sort to boost any fraud that exploited the occult. Several members of our own profession, puffed up with pride of superior wisdom, were vain enough to think they were a match for the little Fox girls, and had the humiliation of being completely bamboozled by them and ignominiously defeated in a contest which the commonest stage prestidigitator could have conducted far better than they. In truth, the thing was unworthy of the notice of science, and the slaps in the face which were administered to it, while very humbling, were well deserved. On the other hand, it was the appropriate field for such persons as Horace Greeley and Mrs. Beecher Stowe, and they got exactly the results which were to be expected and which a knowledge of their intellectual structure would have qualified us to confidently predict.

We have seen that Robert Dale Owen impressed the calculating machine into the service of the miraculous. In a similar spirit every striking scientific discovery has been seized upon as soon as it fairly came to light by mystics and supernaturalists to bolster up their no-

tions. This was so as to the frog-twitching discovered by Madame Galvani, and it has been pre-eminently so as to the X-rays and wireless telegraphy of the present day. The phenomena of the X-rays and wireless telegraphy, which it is thus sought to ally with the phenomena of the occult, are, of course, by no means analogous. Looking into a closed box is not like looking into futurity, and a message received by electrical pulses is quite different in its mechanism from tidings coming from the spirit land. Our wonders, imperfect as our understanding of the processes involved may be, we nevertheless know are based on very commonplace material things—the electricity by which we educe the X-rays and the signals which constitute the wireless message arises from chemical or physical changes familiar to us and absolutely under our own control.

It is a most significant fact in relation to the marvels of spiritualism that no man of credit or note in whom all of us would have confidence, Sir William Crookes, for example, has ever done or can do them. He and others of equally high character tell of the most astonishing displays, but these invariably require a so-called medium for their manifestation, and it is only the obvious truth to say that mediums as a class do not stand supremely fair in the general estimation. Sir William and his respectable confreres are merely spectators, or, at the most, occupy the position of investigators, as they would regard it—though, in truth, considering the restrictions imposed on them and the meekness with which they submit to these restrictions, skeptics would regard it as closely resembling the position of dupes. Crookes cannot rehabilitate a dead woman—it took Miss Cook to do this. He cannot make a table lift itself up and

float in the air—it took Mr. Home to do this. Sir William, all admit, is deeply versed in chemistry and physics, but he has no standing in prestidigitation. Home may have been, for anything we know to the contrary, as great a prestidigitator as Robert Houdin. If he was, what chance would Sir William have had in dealing with him? Mr. Maskelyn, an unpretending London conjurer, has duplicated all Home's wonders, and even surpassed them in mystery.

I witnessed the cabinet and dark-seance performances as originally done by the Davenport Brothers. They were astonishing and mystifying beyond expression. Houdin, prince of prestidigitators, who has published an exposition of the methods of the brothers, states that the impression made on his own seasoned soul was startling. They did just such wonderful things as spiritualists claim that spirits do to authenticate their presence, and there is no question that the things done were well calculated to convince anyone with a bias towards the supernatural that supernatural agencies were at work. But all these exploits, once so astounding, have since been so often reproduced by ordinary jugglers that they have become the dull commonplaces of third-rate shows.

In making up our estimate as to the genuineness of alleged occult phenomena we have to regard the circumstance that we must depend for our knowledge of them chiefly on a very inferior class of people, inferior intellectually, and often scandalously inferior morally. Such persons, who are generally abnormally cunning, naturally indulge in obscurity and mystery, the approved defense of ignorance and imposture. It must be constantly kept in mind that these manifestations are sur-

rounded, hedged in, buttressed, honeycombed, and saturated through and through with fraud, deceit and lies, and that the exhibitor is exceedingly apt to be a master-cheat and knave. This is notoriously so, for innumerable instances have shown it. I am acquainted with a gentleman now residing in this city, who has made pictures of ghostly forms, with chambers, furniture and other appropriate accessories for the use of a celebrated spiritualist of Washington in his productions of spirit photographs. Do not flatter yourself that you could expose the deceits of these people, contemptuous as may be your opinion of them. Doctors, chemists, physicists, psychologists and similar experts, vain with conceit of their science, have again and again matched themselves with these shrewd swindlers and been gulled, bamboozled and flabbergasted into talking and acting like innocents. The fact is that no self-respecting man of science, if he is also a man of sense, will consent to abide by the outcome of an experiment beset with obscurities, caprices, and unreasonable limitations, and whose conditions are besides controlled by persons whom all sensible men are obliged to regard with the deepest distrust.

The conditions imposed by mediums and the exactions they make when performing are, many of them, most remarkable. For the most mystical of their displays they demand a place dark or dimly lighted, a cabinet and other appurtenances of the stage-conjurer, and to operate within precincts sacred from intrusion. They claim that unquestioning faith is necessary to insure success, that spirits are beings dignified beyond expression, supersensitive to any reflection on their good faith or doubt of their stainless honor, and readily demoralized by skeptics. They insist, too, that their

procedures are religious observances, and, like other religious observances, must be respected, revered and let alone. Here, then, is our situation: We distrust the claims of the medium, and are told that child-like trustfulness is indispensable; we would investigate, and are told that we must not suggest, but leave the performer to work under his own preposterous conditions. It is, therefore, with perfect propriety that the great majority of men of science refuse to have anything to do with so-called demonstrations, when the demonstrator will not submit to safeguards which would thoroughly exclude the possibility of imposture and insists on interposing some obstructive procedure.

One of the most curious claims gravely put forth by mediums, when they make glaring and ridiculous failures, is that they have a right to fail because, they say, while spirits as a whole are an eminently high-toned caste, there are among them light-headed and depraved characters, some of whom are practical jokers and others downright liars and unprincipled fellows. These reprobate spirits contrive to get irresistible control of the virtuous medium and compel him or her to tell lies to the inquirer and to play tricks on him. Any rascality which the medium is caught in perpetrating he thus very blandly shifts from himself upon the naughty spirits. And there are crowds of people, many of whom have had far greater educational advantages than you or I, who think this explanation is perfectly satisfactory.

It should seem, too, that a serious investigator would be repelled by the very paltriness of the devices employed by mediums in their dealings with the spirits. Many of these devices are shockingly at variance with

the solemn dignity which even the most commonplace mind instinctively associates with the idea of communication with the dead. Our departed ones are brought into relation with us through such uncouth agencies as thumps on the walls, raps on the furniture, table-tipping, scribblings on slates, not only in the regular way, by pencils, but fantastically by white, red and blue crayons, photographic portraits and portraits done in earthly water-colors and pastels. Even the higher class exhibits as shown to higher class witnesses are, as described by them, melodramatic and stagy in the extreme. In this fashion believers have been enabled to communicate with the spirits of their kindred, with the spirit of Shakespeare, of Plato, of Adam, of Eve, and the spirits of mythical characters which, like Chaos and Old Night, never had any bodily existence at all.

It is to be noted that the revelations of the spiritualists and, indeed, all professedly supernatural revelations by whomsoever made, have revealed to us nothing whatever that is novel of the economies of the spirit world. Everything is told in terms of our own world. Sights, sounds, figures and their garniture, hats, coats, bonnets, skirts—all are earthly. In short, the seer knows nothing he had not already learned; and however he may combine and recombine the well-known elements, they alone are there. The celestial vision, glorious as it may appear to the rapt gaze, has its glory fatally humanized by the limitations of the human mind.

When we consider how frivolous and futile the revelations vouchsafed by the spirits commonly are we wonder that any man of sense and feeling could be beguiled by them. Nothing surely can be more disgusting and repulsive than the incongruity between the pathos of the

act of invocation and the bathos of the response. Instead of bringing to us information which they presumably could impart, which would be of priceless value to us, information relating to the other world to serve for our guidance in this, what the spirits profess to tell is, for the most part, commonplace, puerile, altogether unsatisfying and worthless. To take a recent instance—what are we to think of the spirit of Henry Ward Beecher, a clergyman, communicating with another clergyman who is still in the flesh, and telling him, not of heaven or hell, nor saying one word of matters which both of them by reason of their calling must have felt were of the most transcendent importance to living men; but, instead, as it were, buttonholing his brother minister, and, taking him aside, fraternally whispering in his ear that he had made an error in the dictionary of which he is editor, concerning an old-time coin, which coin, moreover, had been misplaced, and that he would tell him where to find it? The editor, a gentleman of high character and attainments, an astute man of business also, but hopelessly credulous in extra-mundane things, has actually published a book to exploit the miraculous nature of the petty trick of which he has been made the dupe.

I will add the instance of a gentleman of this city, with leanings towards spiritualism, who has related to me that the spirit of his father, who was an eminent clergyman and exemplary Christian, had at a spiritual seance communicated to him that he had discovered his error in having preached Christ crucified (I give his exact words), and had learned a better faith. What a message for a father in the unseen and obscure world, able to converse with a son in this, to deliver! Can we

believe that he could think of nothing worthier to be known here where there are obscurities as profound and far more portentous, or of nothing more serviceable to the struggling ones he had left behind?

Opportunities have over and over again been offered to adepts in the occult to substantiate their claims under conditions which, while perfectly fair to them, would be satisfactory to skeptics. They have either rejected these offers, or, when they have accepted them, they have, so far as I have been able to ascertain, invariably failed in their attempts. One of their most vaunted specialties is seeing into closed receptacles. Mr. W. I. Bishop was famous for the facility with which he could do this. But when Mr. Labouchere tested him with the offer of a large bank note in a box if he would tell its number, he was unable to do it—his supersensitive subconsciousness, it was explained, having been abashed and dismayed by the presence of doubters. Miss Mollie Fancher, even more famous as an all-round seer, had agreed to submit to a similar test, but when the time came she recalcitrated, pleading that the exertion would injure her health. They profess to have the faculty of visiting distant regions and bringing back intelligence therefrom, and do not hesitate in the least to tell us what goes on in Mars, a section of the universe with which we have no pressing concern, and about whose goings-on we can obtain no confirmatory knowledge of ourselves. But when, a few years ago, the Boxer uprising in China put the foreign ambassadors out of reach of all mundane modes of communication, and one of the noblest opportunities was presented for vindicating their pretension, they were utterly unable to tell us what was going on in Peking, a place about which the external world felt the

most anxious interest, and dared not venture to attempt to tell, lest the facts, which we were sure to know in a short time, should contradict them. There is no need to enumerate other instances of their impotence and default—such instances are indeed innumerable. If, then, they cannot see into a shut box, or tell what is now going on in China, things which we may regard as rather difficult to do, but which they speak of as very ordinary performances, we may with some show of reason doubt that they can evoke phantoms having intelligence and power, capable of being photographed, and seeable and touchable by any one who chooses to pay twenty-five cents for the privilege.

One of the most widely disseminated forms of superstition is the belief in signs and warnings—a belief which, in various degrees of assuredness, pervades all grades of society from the lowest to the highest. On many persons the impression signs and warnings make is very profound, and we could compile a long list of eminent men who have been greatly influenced by them. They are of infinite variety and of very diverse dignity, some being irredeemably ignoble, while there are others of them to which we can allow something of respectability. It would be quite impossible merely to name all of them, and I can do no more than notice two or three. The instances I select are from my own personal stock, for it is my aim throughout this discourse, so far as I can, to draw on my own experience, as well as, as I have already said, to take for my examples and illustrations the cases of persons thoroughly well known and, if so it may be, of good repute. Mystical material is of overwhelming abundance, but, as all know who have had much to do with it, nearly all of it is utterly worthless for the pur-

poses of the serious investigator, who realizes that authenticity is of the very first importance, and, in fact, is absolutely indispensable for the formation of sound conclusions.

Clocks have cut a great figure as warners, especially by means of abnormal stoppages and strokes. For example, many a one would think it very ominous if his clock, when he rose on New Year's morning and stood looking at it, should all at once and without any necessity whatsoever, so far as he could judge, throw up its job right in his face. Now this happened to me some years since. I was rather astonished at it, as much by the impudence of the thing as by its sinister import. If you are superstitious yourselves you are expecting to hear me add that I died before the end of that year; but I assure you that I did not, nor was the year to me in any way peculiar in calamity. I gave the clock a shake and it went to work again and worked for a long time afterwards uninterruptedly. Quite recently in this city a suicide by shooting into the brain occurred, in connection with which it is said that the watch of a near relative of the deceased unaccountably stopped at 4:40 P. M. The dead body was discovered about 5:30 P. M. As the deceased person had been seen and conversed with on the street at about 4:30 P. M. and the suicide had been committed at the home of the person, it is at least presumable that the watch was unduly hasty and stopped some little time before the exact moment of the death, and thus violated a cardinal canon of all such transactions.

I suppose that most of the company assembled in a church to witness a marriage would feel a foreboding thrill pass through them if the lights should in the midst of the ceremony slowly sink till all was shrouded

in funereal gloom, particularly if they were gaslights, which are not afflicted with the eccentricities of electric lights. More than forty years ago I was present at a scene of this kind. Yet man and wife are still living, and their marriage has been one of extraordinary and of really most exceptional felicity.

The sounds emitted by articles of furniture and house fixtures under the influence of changing weather conditions and other physical causes are sources of great distress to the superstitious. They are certainly very disagreeable, particularly at night when one is just dropping into sleep, as I can testify, having been much bothered by them. One morning, while conversing with a gentleman in my laboratory, we were arrested by an exceedingly pronounced and equivocal noise, which startled us by its unexpectedness. Automatically I exclaimed, "What is that?" The gentleman's face paled as he replied: "That is death! Some one of your family will soon die." It is the fact that the death of one of the family quickly followed upon the sound. But I do not think that the death and the sound were in any way whatever related, for long afterwards, in the same place, I again heard that identical sound, but no death followed which the most liberal construer of omens could possibly connect with it. The cause of the sound in both instances doubtless was the splitting of the large top of a table formed by gluing boards together, which could not stand the strain incident to the process of seasoning.

Among the most formidable of all warnings is the howling of a dog in the neighborhood of a house where a person is seriously ill. It is a fearful sound when it rises in the solemn watches of the night, and has often-

times struck terror into very stout hearts. An appropriate exorcism would seem to be one up to a dozen brickbats; but this has never worked well for me. It has only exasperated the howler to redouble and intensify his howls, and brought every other howler within the sound of his voice to co-operate with him. I apprehend that it is best to let him howl on, and hopefully trust that his exertions and the night air will bring upon him a fatal attack of the galloping laryngitis.

I have personal knowledge of two dog-howling scenes in which relatives and intimate associates of mine were the individuals concerned. One instance was while one of my nieces was desperately ill with typhoid fever and her death was anticipated. On this occasion the family dog walked solemnly into the sick room, and, lifting up his voice, uttered forth a most lugubrious and portentous howl. My niece herself was too far gone to be cognizant of it, but it carried dismay to everybody else. Nevertheless, she recovered. But suppose she had died. Undoubtedly then the howl would have been regarded and reported far and wide as an indubitable warning. It was really a toss-up whether she would live or die, and therefore whether a venerable superstition should be confirmed or discredited. In the other instance the howl was actually followed by the death of the person warned. One morning a great black strange dog deliberately ascended to the third story, entered the room where the lady of the house was alone, paused before her, looked up into her face, howled three times, seven times, nine times—some mystical number of times—turned and slowly departed with an awful patter as he descended the stairs. The lady was innately superstitious, and the performance filled her with consternation

and agonizing forebodings—with how much reason you will judge when I tell you that she died within little more than fifty-five years thereafter—namely, during last year, of old age.

But the predominant feature of the occult is the ghost. Belief in ghosts has existed from time immemorial, and instead of retreating before advancing knowledge it to-day, owing to the recent astonishing renaissance of mysticism, presents an extended, bold and even aggressive front. With the growth of modern spiritualism visible ghosts have multiplied exceedingly, but with increase in quantity there has come a sad deterioration in quality. The belief, in its ancient form, that our loved ones dead and gone can visit us in the semblance of themselves, with solemn circumstance, in fitting time and place, if illusory, is an illusion which is at least not unworthy of reception, and one which, though I cannot share it, I can respect for its dignity. But it is inexpressibly revolting to me to suppose that my departed father, or mother, or sister, or the children of my kindred, who are as dear to me as if they were my own, would distress and mock me with vain noises, or commune with me through the instrumentality of an untaught and vulgar creature who demands a paltry price to be the intermediary; or that they could be summoned from their shadowy abodes and made to flit and caper before the eyes of curious strangers gathered in some obscure chamber to see a show. Yet that such a degraded state of ulterior existence as these performances imply is an actuality, and that, in fact, these performances are proof of it, is believed by some men whose mental and moral qualities rank so high that my admira-

tion of them makes me unwilling to think of them in a connection so humiliating.

In the immense collection of ghost stories the number which bears the stamp of recognized names is remarkably small. From these few I will take the story related by Lord Brougham, who was a man conspicuous for station and abilities. It is not practicable for me to treat this branch of my subject with even an approach to fulness, and I select for my slight commentary Lord Brougham's story because it is sufficiently typical and is apparently as well authenticated as any, and, indeed, better authenticated than most.

Brougham says that when a youth at the university he had a friend whom he calls G. The friends often discussed the problem of a future state, and at last became so absorbed in it that they made a compact written in their blood that the one who died first would, if he could, return and visit the other. Many years passed. G. had gone to India, and Brougham had almost ceased to think of him. In the year 1799 Brougham was traveling in Sweden, and at about 1 o'clock on the night of the 19th of December he arrived at Kongelf. He determined to take a warm bath before retiring, and while lying in it and enjoying it he turned his head and saw G. sitting on a chair on which Brougham had deposited his clothing, and looking calmly at him. Brougham lost consciousness, and when he recovered found himself sprawling on the floor and the apparition gone. He was impressed with the belief that G. had died, and was so shocked by the occurrence that he could not bear to speak of it to anyone. He, however, recorded it in his journal. He appears to have been shocked indeed, for he failed to record the real gist of the matter, and not

till October, 1862, nearly sixty-three years afterwards, does he give us this in the statement that soon after his return to Edinburgh a letter came from India announcing that G. had actually died on the date of the vision, the 19th of December.

Brougham was, as I have said, a man of note. He figured as a jurist, a statesman, a man of science and a scholar, and was one of the founders of the Edinburgh Review. In his own opinion, and that of some others, he was a sort of universal genius. Apparently, a tale of wonder could have no better endorsement than his. He himself explained the vision as a dream and the concurrent death of its subject as a coincidence. If this explanation of it is correct it will still remain a very wonderful occurrence. Perhaps the wonder may be materially diminished by a closer consideration of the circumstances.

It is evident to any psychologist that the vision of G. is entirely credible. Such hallucinations are common enough. The coincident death is the strange part of the story. The intention of the narrator is undoubtedly to convey the idea that the vision and the death were contemporaneous events—a circumstance which is an essential in all this class of stories, else they would miss their point. But the particulars given in the narrative itself show that this could not have been so. Brougham arrived at the inn at Kongelf at about 1 o'clock on the night of the 19th, and some additional time must be allowed for the preparation of his bath. The place in India where G. died is not named, but, wherever it was, its corresponding time ranged from 4:30, at the least, to 6 o'clock, and even much later, removing G.'s death, in any case, if it coincided with the appearance

of his ghost, from the 19th and putting it on the 20th. Brougham has overlooked the difference in longitude—an inadvertence highly characteristic of tales of coincidence, indicating that the relators are sadly forgetful of such facts as that 1 o'clock at night at Kongelf is 6 o'clock in the mornig at Calcutta, and that December the 19th in Sweden may be December the 20th in India.

But the greatest objection to the story arises out of Brougham himself. His reputation for ability to tell the exact truth was far from high, and those who knew him well speak of him as a pronounced exaggerator—which is a Latinized and softened variant of a harsher Anglo-Saxon word. Besides, it is not very uncharitable to surmise that the truthfulness of a narrative may suffer somewhat serious impairment by an intermission of sixty-odd years between the telling of its exordium and the telling of its climax. At all events, the apparition was a failure. It did not convince Brougham, and all G. accomplished by honorably fulfilling his part of the contract was to scare the other contracting party out of his senses.

I myself have had some relation with a ghost, though a distant relation. When I was a very little child there was an excellent elderly lady living with our family who cared for us children, and whom we loved almost as well as we loved our mother. She claimed to have seen a ghost, and though she was exceedingly chary in talking to us about it, she once, at our earnest solicitation, gave us a much abridged and emasculated version of it. I have, however, more than once heard her, while I feigned to be asleep, detail it with great circumstantiality to my mother and visitors at the house. Before she came to us she resided in the family of a lady who perished in

the burning of the Richmond Theater, a catastrophe which occurred, as all of you probably know, almost on the spot where we now are. Shortly after this event one night, while she was in bed with the deceased lady's little child, she saw the spirit of the lady appear in the chamber, approach the bed, look tenderly at the child, and presently pass its hand over the child's face. Then the spirit spoke and said: "They say I am lost; I am not lost, but burnt." It then disappeared. This is a very concise account of a scene, which, when told by the witness of it in her solemn and reverential manner, deeply impressed my boyish mind and the minds of all others who heard the relation. All of us believed it. The words of the spirit were especially awe-inspiring. They were very enigmatical to me, and are enigmatical still; for the dead lady was a Jewess, while the conception indicated by the expression "lost" seems to be that of a Christian. That my dear nurse was absolutely honest in her narration I have not a shadow of a doubt, but my acquaintance with mental phenomena makes me equally assured that the apparition she saw and heard was an illusion.

It is often thoughtlessly said that the reality of ghostly apparitions is proved, or at least strongly corroborated, by the greater or less universality of the belief in these appearances which has been held from the most ancient times. Such argument proves too much. If a belief is true because it is ancient and was universally held, then the belief that the earth is not globular, but flat, and that we have no antipodes, is true; and so is the belief that demons or devils roam maliciously over the earth and enter into and take possession of men, women, children and beasts, which is as venerable as the belief in

ghosts itself. It should seem that, by this time, the problem of ghosts ought to have been definitely settled, for it has been under inquiry for centuries and is a question not of opinion, but merely of fact, and, during this long period, if a ghostly visitation is a fact there should be at least one unimpeachable instance of it. Yet the immense majority of competent investigators aver that they have not been able to find a single one whose genuineness can be unreservedly admitted.

It is a singular and exceedingly suspicious circumstance that the persons who, above all others, ought to see ghosts do not see them; nor do they appear in places where, above all others, they ought to appear. If there is any arena on earth where a ghost could display itself with propriety it is in a medical college. But, for myself, I can say that when I was a resident student here I wandered all over the building at night and slept in various parts of it, yet was never molested by any supernatural sight or sound. And if there is a man on earth who ought to see ghosts it is my esteemed confrere, Christopher Baker, the lord of the dissecting hall; but his testimony is unreservedly in favor of the negative. Moreover, I and other soldiers have slept among the slain on battlefields where ghosts by thousands had been made, yet of the innumerable host not one appeared. Many years ago, at a meeting of our faculty of that time, of which all the active members except me are now behind the veil, I introduced the subject of supernatural phenomena, and asked each one of my colleagues to say if any incident of the kind was within his personal knowledge. All were men of large and varied experience, profoundly associated with the most solemn mysteries of life and death. Not one could name a single

instance that indicated a departure from the normal course of Nature. Some of them could relate strange tales told to them by persons whom they believed meant to speak truly, and I could do this myself. It was the old, old way. These marvelous things happen always to somebody else; they never happen to ourselves.

The idea of some of the most respectable believers in ghosts of the present day is that they are embodied thoughts, existing for greater or less periods, and finally disintegrating. If this is so, if a ghost is really an embodied thought, it is, to me at least, a greater mystery than ever, and I prefer the simpler idea based on the supposed existence of the soul after death. To admit that the soul exists after death does not, however, by any means, commit us to the proposition that living persons can see it or otherwise get in communication with the dead. It may be that they can, but whether they have ever done so is to be decided in the ordinary way, by evidence. But, putting aside all religious doctrines on the subject, which should not influence us in a scientific inquiry, does the knowledge of Nature we have been able to gather require us to admit that the soul exists after death? Theology has not hesitated to speculate boldly and pronounce authoritatively on this question. Perhaps, therefore, science may venture to speculate on it cautiously and pronounce on it deferentially.

We may reason that the body is made up of atoms, each with a share of energy inherent in it and belonging to it, and as the aggregations of atoms form the anatomical structures of the body, so the co-operation of their individual energies gives rise to the physiological functions, including those manifestations of consciousness which, medically speaking, we may consider ourselves

justified in regarding as the soul. We all agree that when the body dies and decays the atoms are dispersed, much as a handful of ashes thrown up into the air is blown hither and thither and is scattered never to come together in one identical form again. We seem compelled to believe that the individual energy of each atom accompanies it, and, if this be so, and if the assembled energies produced the soul, the dispersion of the atoms implies the dispersion of the soul itself. Unless, therefore, the original atoms of the particular body can be reunited in their original forms of combination there can be no reproduction of its particular soul. But is this reunion possible? If our science teaches us truly it is not. The atoms and their energies which now constitute our bodies are ours only as long as our bodies, alive and dead, hold together. Each and every atom I now own as my share of the common stock has at one time and another during the ages been the property of some mineral, some plant, some other animal, some other man. "'Tis mine, 'twas his, and has been (and will be) slave to thousands."

There is an old story which relates that an apple tree grew up at the grave of Roger Williams, adjusting its roots about his corpse and thus nourishing itself with his body, and, if our idea is tenable, also with his soul. Apples were produced and eaten year after year. Whoever ate one of these apples must, then, have eaten and assimilated a fragment of Roger Williams' soul. From the point of view I have indicated it is, therefore, a stupendous problem to determine what has become of his soul and how he is ever to get it together again. And yet, as countless hosts have believed, man may be en-

dowed with some other than a physiological soul, though science can offer no fact to sanction the belief.

There are vast numbers of persons to whom the idea of annihilation at death is intolerably disheartening and repulsive. They feel that they are entitled to be recompensed for the sufferings endured and the sacrifices made in this troublous state of existence, and to think that they will be recompensed is consolatory to them. The feeling is natural, and, judged by human standards, is reasonable, but whether it is justifiable I have no means of deciding, and shall not take issue with them upon the question. Men equal in sincerity and singleness of purpose to discern the truth we constantly find differing upon questions far simpler than this, and it is the part of sense and candor to regard such differences with charity. Let me say for myself that death has smitten those who were dear to me as he has smitten those who were dear to others, and I, too, bereaved, have had to seek for comfort. I have had to look upon the departure of more than one surpassingly dear to me, who, if the religious belief in which I was reared is true, had passed from a life where evil was mitigated by good into another life where, because of frailties inseparable from their transitory mortal state, they were to endure woe interminable and immitigable. Are you surprised to hear, do I need to make it clear to you, that it was comfort to me to put aside the belief which had been taught me and turn to what I had myself learned, and trustfully hope that pain and sorrow could come no more to that stilled heart; that tears were wiped forever from those impassive eyes, since the mechanism whose working wrought out all that misery was utterly disarranged, broken, scattered, beyond the power of restoration; that

it was comfort to me to take deep to heart those touching words we are accustomed to place upon the bier, so often vaguely put and inadequately understood—"At Rest"—words which spoke to me with their full consolatory meaning, telling of rest needed, rest welcome, rest perfect, rest never to be disquieted?

To many persons a most convincing assurance of a supernatural world is furnished by what are spoken of as death-bed scenes, especially by the beatific visions at times beheld by the dying and the rhapsodies they utter. Yet our physiology and pathology tell us that all this is but phenomena of an overwrought brain. But, while we know it is a delusion, it is an eminently pleasing delusion, and we sympathize with the sorrowing hearts it gratifies and rejoices. It seems ungracious to say anything in derogation of what is so comforting. But, unhappily, there is an opposite to it which is utilized ostensibly for good, yet, undesignedly no doubt, works evil. You, perhaps, are not so familiar as we older people were made to be with the appalling pictures vividly painted by vehement preachers when describing the deaths of those they adjudged to be lost sinners. They professed to have been witnesses of these scenes, but it is a singular fact that few doctors know of such. I myself have never seen anything of the kind. Perhaps the reason we doctors do not see them is because our ministrations soothe and console, while the ministrations of a too zealous religious enthusiast agitate and frighten. I very much fear that most of those horrible exhibitions were in reality originated and wrought out by the preacher himself. I have seen a sick little child worked up to almost fatal terror by a glowing description of heaven and her dead mother waiting there to

receive her, imaged for her by her well meaning but untactful pastor. It is not difficult to conceive of the probable effect of an exposition of the mediæval hell, with nineteenth century additions and improvements, made by a fervidly eloquent revivalist to a dying wretch who, with faculties all unhinged, is terror-stricken by the recollection that, at some period of his life, he had committed the deadliest sin known to the arbiters of the morals of Richmond by taking a drink of whiskey surreptitiously on a Sunday.

The narrow-minded believer despises as irreligious whoever will not contentedly gulp down the sapless hodgepodge of inanities, unintelligibilities and absurdities he calls his creed. What fanatical upholders of a personal creed regard as their most conclusive argument in its behalf, and the one they are sure to bring triumphantly forward when hard pressed, is the effect on the unbeliever's opinions which, as they gleefully anticipate, the fear of approaching death will have—when, they are certain, he will abjectly recant and impetuously accept their own religious views. This may happen; for it has happened, doubtless, many times. The manly ideas we may have formed in our maturity, when the mind possesses its highest capacity and ability, may readily enough give place to the ideas of childhood when disease or decay has shaken the intellect and rendered us childish. But what confidence can be placed in a belief the verity of which has no stancher buttress than ascriptions wrung from the despair of a crushed and helpless victim? No one but an imbecile would esteem the product of a decrepit and harassed mind to be equal to its product when it was in its full health and vigor. No one less stupid than a bigoted religionist would es-

teem its product when at its worst to be superior to its product when at its best.

It will very probably be objected that in thus noticing this matter I have transgressed my privileges as a medical teacher and made an unwarranted incursion into the domains of theology. The objection is not valid, for it is a matter inextricably related to the practice of our art. The death of his patient is as much the object of a physician's solicitude as is any other feature of the case, and unquestionably he should employ every proper resource at his command to secure a peaceful ending. I hold, therefore, that I am justified in giving my pupils warning and advice which tend to the accomplishment of this surpassingly beneficent result. Not for any consideration would I counsel interference with any rational religious procedures. Under the circumstances prevailing in the sick room these procedures are of a peculiarly sacred nature, and it would be an offense of the gravest kind did we allow our personal beliefs or unbeliefs to influence our conduct in the slightest degree. Physicians undoubtedly have the right to their beliefs, whatever they may be and however divergent from current beliefs, but it is equally as certain that they have no right to obtrude them on their patients.

Many physicians and other educated and intelligent persons entertain opinions which upholders of the dominant faiths denounce as destructive of the happiness of those they represent. "Why," they exclaim, "take away from the believer his greatest comfort and solace?" or, quoting an illustration said to have originated with that splendid exemplar of true religion, Henry Ward Beecher, "Why deprive a lame man of his crutch, poor support though it be, when it is all he has?" More-

over, "Why strive to revolutionize the order of things long accepted by the majority and approved as satisfactory?" This reasoning has a specious look, yet it can be readily and conclusively shown to be utterly fallacious—but this is not the place nor the occasion to show it. Let it suffice to say to the objector that you are entitled to no monopoly of spiritual comfort, and it is discreditable selfishness for you, while enjoying your supply, to begrudge me mine; that what is comfort to you may be discomfort to me; that though it may soothe you to believe that your father, or mother, or child is in hell, and unless you are unattainably correct in your walk and conversation that you yourself will get there, too, such a belief does not soothe me; that if you feel constrained to walk with a crutch this is but a poor reason why I, who have sound legs, should walk with a crutch, too, or that I should be so complaisant as to carefully and continually hide my legs, or limp whenever I see you, lest the sight of my legs make you doubt the stability of your crutch. And as to what you say of the folly and crime of unsettling accepted religious beliefs, this is but a present-day repetition of a cry which innovators throughout all the ages have had sounded in their ears. Methodists have heard it along with sneers and jeers and ignominious missiles; Baptists have heard it from their jails; Presbyterians have heard it on fields of slaughter; all Protestantism, in the most memorable of all revolts against a thoroughly rooted and universally accepted system, heard it for thirty years bellowed from the mouths of cannons. Christianity itself has heard it. And what would Christianity be now were it not the triumphant outcome of centuries of effort, made often against fire and sword, to overthrow beliefs accepted everywhere and by every

one?—effort which, through its missionaries, it is making even at this day and hour. In truth, it is a cry which every man has heard, who, impelled by thoughts freer, bolder, nobler than the thoughts of the multitude, has dared to advance out of the beaten track. Where, we may well ask, would the world be to-day had this ever-recurring cry against a forward step, or even a step aside, been heeded?

The overmastering eagerness of mankind to gain some insight into the mysteries of the unseen world has led to the adoption of what seems a very promising scheme for accomplishing this object. This is an arrangement between two persons involving the return, if possible, of the one who dies first, or in any other practicable way, to communicate with the survivor. We have seen that such an arrangement was made by Lord Brougham and his friend G. Of all who would be qualified for an enterprise of this kind spiritual mediums, we should suppose, would be the best. Yet it is very notable that several conspicuous spiritualists who had been in the closest intimacy with living mediums have expressed their sorrowful disappointment at the unaccountable failure of these mediums, after they had in due course become spirits themselves, to communicate further. In fact, the scheme has not been crowned with striking success.

Among those who have entered into such compacts are two celebrated countrymen of ours, Benjamin Franklin and Washington Irving, and both have recorded the outcome. Franklin made what he calls a serious agreement with his friend Osborn, an eminent lawyer, that the one who died first would, if possible, return and acquaint the other how he found things in

that separate state. Osborn died first, but never fulfilled the agreement. Irving had a highly esteemed companion named Hall, who was dying of consumption, and who was skeptical about the reality of a future life. One day Hall seriously asked Irving if he would be willing to receive a visit from him after his death, and expressed the wish that Irving would consent. With equal seriousness Irving consented. "Then," said Hall, "it is a compact; and if I can solve the mystery for you I engage to do it." After Hall's death Irving went one evening to the house where they had lived together and there made a solemn appeal to the spirit of his friend to come. It did not come. "And, though," says Irving, "I have made similar invocations before and since they were never answered."

An invocation of the dead may be, in my opinion, a legitimate scientific experiment, akin to the much derided, but, if scientifically viewed, not irrational prayer-test proposed by Tyndall. Holding this opinion, and having fallen in with an opportune occasion, I myself made this experiment. On the 14th of March, 1885, the body of a young woman named Lillian Madison was found floating in the city reservoir. Her case became one of great celebrity, and it is a case full of obscurities. Whether she had been murdered or had committed suicide was a problem of the greatest difficulty, and, though a man was executed for killing her, the problem has never been definitely solved. In the performance of my official duty as coroner I was required to make a complete autopsy of her. Every part and organ of poor Lillian's body I handled—her brain, her heart, her lungs, everything that had wrought for her the solemn mystery of life—and so had come into far closer touch

with her than any other human being, than even her own self, had ever done. Might not I reasonably fancy that this had put me into relationship with her which would entitle me to be the recipient of aught she might be able to transmit from her sphere of existence to that of ours which would help me in my earnest efforts to convict the guilty or vindicate the innocent? Impressed with this view, and believing that the circumstances were propitious for an experimental test of the actuality of communication with a disembodied spirit, I made the experiment, observing, as a man of science should, the conditions which in all ages of the world have been regarded as appropriate. Alone in my bedchamber, in the darkness and stillness of midnight, I reverently invoked the spirit of Lillian Madison.

Well!—with what result? Like Benjamin Franklin and Washington Irving, or any man, “I can call spirits from the vasty deep. But will they come?” My answer is: They will not—not to me. This invocation I repeated again and again, night after night, but not only was there not the slightest manifestation to my waking senses, but, though my thoughts were for months constantly and deeply occupied with this most mysterious tragedy, I did not in all that time even so much as dream of her.

I myself have made scarcely any personal inquiry into the deeper mysteries of the occult. I have never attended a spiritualistic seance. I have never experimented with a medium, except in one small instance to be spoken of presently. I have never gone on a ghost hunt. I have done no more than made a few investigations in what seemed rational and promising directions. Of course these admissions will be used by the believers

in the supernatural to disparage my objections to their beliefs. They will say, very plausibly, if you would go where we have been, and see what we have seen, and hear what we have heard, you would be a believer, too. But the fact is, I have an unconquerable distrust of the whole thing. It would be impossible for a wonder-worker, a stranger to me, of whose honesty I was not absolutely assured, to convince me that his wonders were genuine, for the honest ones who have tried to show me their wonders have completely failed. Besides, there are things so preposterously foolish that a man with a properly balanced mind will not insult his common sense by countenancing them, and most of the claims and pretensions of professors of the occult are of this class.

In the course of my investigations, which, as I have admitted, have been few and of a very humble order, I have made two experiments in table-tipping—one by the help of a young gentleman and the other by the help of two young ladies. These persons claimed to be able to move tables with ease by merely placing their hands upon them. They said that they had done this repeatedly, a statement which was vouched for by eye-witnesses, and willingly offered to demonstrate their powers to me. They were entirely trustworthy, and could be relied upon to conform to the only condition imposed, which was that they should vigilantly watch for and strenuously repress any irregular muscular movement. As there was no wish to make the experiments difficult, very light objects were selected to be moved. The gentleman was asked to manipulate a small and trivial table, and to the ladies a little stool was assigned. With something of contempt for such

paltry tasks they went to work eagerly and confidently, took all the time they wanted, faithfully observed the caution as to the muscles, and up to this present speaking the young gentleman has not moved the small table, nor have the young ladies moved the little stool. In fact, not so much as a quiver passed through either of the objects. When the experiment with the stool was ended under each hand of the ladies was a pool of perspiration, showing that great disturbance of the nervous energies may accompany such experiments as these, and warning excitable persons to let them alone.

One Sunday afternoon there came into my office a gentleman perfectly well known to me, but whom I had not seen for a great many years. In the course of the conversation which ensued he told me that he was a spiritual medium whose specialty was clairvoyance, and that he had been making his living by practicing this art. He gave me such amazing accounts of what he had done and could do that I was moved to request him to favor me with a sample of his powers, which, I suggested, he might do by describing the person whose case I had been called on to investigate shortly before his visit. He readily, and, indeed, gladly, consented, for he was undoubtedly a sincere believer in his occult powers, and forthwith passed himself into what I suppose he took to be a trance. Now I am well persuaded that much of the astonishing revelations made by soothsayers is no more than a return of what has been given. The incautious consultant talks; the ingenious oracle gathers in the words, develops them, and presently astounds his auditor by telling him what he has already told himself. I therefore kept profoundly quiet and left this oracle to his own resources. After a while he

said, "It is a male." I did not reply. A considerable interval followed, when he said, "It is a female." I remained silent. He now became quite fidgety and at length ventured the assertion that it was either a male or a female. I steadfastly refused either to admit or to deny the proposition. At this stage of his wobbly prophesying his agitation became very great. "By the twitching in my left leg," said he, "it is a female. But—but—" and he drew up his leg and scratched it nervously. He was now so worked up that it was unpleasant to look at him, and I was relieved when he suddenly rose, saying: "I am out of sorts. I will go away and think it out and come back in the morning, and you shall see that I can describe it all accurately. I can and will do it." He went away, and though this seance occurred many years ago—ten or a dozen, perhaps—I have not seen nor heard of him since.

The bodily and mental agitation which possessed my visitor were, on a smaller scale, that which we are told possessed the pythoness of the ancient oracles. It was an exhibition of a kind which painfully impresses on the beholder a sense that there is an intensity of mental effort resembling actual agony, and, in the case of honest mediums, such as my visitor was, is no doubt a genuine earnest striving to attain what seems to them to be an attainable object, this object being a connection with some ultramundane agency, such as we speak of as a spirit.

The value of my inquiry into table-tipping lies in the fact that I was dealing with sincere believers, confident of their powers; but, above all, that they were strictly honorable and honest in their procedures.

As I have stated, I have never had anything to do

with any professed mystic except my Sunday afternoon visitor, and him only by reason of peculiar circumstances. My sufficient reason is that I am not versed in the arts of legerdemain, and should be at a hopeless disadvantage with the skilled manipulator of slips of paper, slates, pieces of vari-colored chalk, knotted ropes, cabinets, phosphorescent fiddles, and similar paraphernalia engineered in the dark or under circumstances carefully designed to bewilder the observer and prevent him from investigating. It is vain to expect a man of science to accept any manifestation ascribed to supernatural till he can apply to it at least the elementary conditions and tests which the commonest kind of common sense requires him to apply to the manifestations of Nature. Besides, it is not for me who affirm nothing to disprove anything. It is for those who assert incredible things to make good, not by childish tricks and vague, irrelevant and silly revelations, but by the clearest and most unimpeachable demonstrations. It would be a most unprofitable and, in the main, a most unsuccessful attempt were one who is inexpert in the delusive arts to undertake to lay bare the mysteries of the occult and tell how they are brought about. But we may confidently declare that by far the greatest part can be accounted for on the basis of straightout fraud, deception, conscious or unconscious, fatuous credulity or simple lying.

Formerly a favorite explanation for a large class of these mysteries was that of coincidence. Coincidence may explain many extraordinary occurrences, and though this is often a glaringly weak device, yet some astonishing instances are well, and, in fact, indubitably authenticated. Thus, a gentleman standing at a cer-

tain place in London one day dropped a shilling and was unable to find it. Several years afterwards he chanced to be again at the same place, and looking down saw a little packet on the ground, which he picked up and found that it contained twelve pennies. (This is told by and of noted persons. I have lost the reference and I may not be entirely exact in my version, but I am substantially so.) Many anagrams are singularly expressive, but, of course, we cannot attach any significance to them. For example, the question put by Pontius Pilate to Christ, which, whether it was put jestingly, as Lord Bacon says it was, or, as I should like to believe, was put in earnest seriousness, has always seemed to me to possess the profoundest meaning—"What is truth?" The Latin words are, "*Quis est veritas?*" The anagram is, "*Est vir qui adest*"; "It is the man who is here." Sir M. E. Grant Duff states in his "Notes for a Diary" that Lord Acton said that the strangest of all coincidences he had ever heard of was that Sir Edmundsbury Godfrey was murdered at the bottom of Greenberry Hill and that three men were hanged for the murder whose names were, respectively, Green, Berry and Hill. But the theory of coincidences has been much overworked and does not altogether satisfy except in a few instances.

A small instance of coincidence has occurred in connection with this lecture which may be worth mentioning. Three persons in this city have, each seemingly without knowing of the purpose of the others, just selected the same topic for a discourse, and without any obvious reason for doing so. On last Sunday one of our clergymen preached on spiritual rappings. On last Monday a lady of this city published in one of our news-

papers an article on spiritualism, and on this Friday here am I lecturing on the same subject. The subject is, at this time, not at all prominently before the public, and, so far as it appeared, no one in Richmond was seriously considering it. There was no concert, I suppose, between the lady and the clergyman, and there was none between either of them and me; and, as for my share in this triangular coincidence, I may say that my materials were gathered months and even years ago, that the discourse was completed several weeks ago, and that this particular night was selected for its delivery fully two weeks ago. Yet somehow all three of us have contrived to hit upon the same out-of-the-way and unobtrusive theme, and have, apparently, altogether independently of one another, presented it to the same community at practically the same time.

In attempting to explain the phenomena of the occult we must nowadays give great weight to certain matters formerly not even suspected, but which have quite recently been brought to light and are now being carefully studied. These matters relate to a set of very obscure and very strange faculties belonging to the brain itself and operating both physiologically and pathologically, which are capable of manifesting phenomena well calculated to lure the incautious and credulous observer into the belief that he is dealing with something supernatural. What is called subliminal consciousness is of especial importance in this connection. Too little has as yet become known of this to enable us to expound it with scientific precision, but it is clear that the phenomena due to it are such as pertain to Nature and not to supernature.

When called on to explain marvels it is well to have

in mind King Charles, the philosophers and the fish; and before undertaking to tell how the thing was done to make sure that it was ever really done at all. And in trying to make sure we shall find that a most portentous and imposing structure can easily be erected on the flimsiest and most unsubstantial foundation, and that human testimony to the miraculous is absolutely stupendous in its folly and its corresponding worthlessness. Yet, after all, as I have already pointed out, we skeptics do not have to explain. There is no principle in the science of disputation more firmly grounded than that he who presents for acceptance an event out of the established and universally recognized order of Nature must substantiate his case. It is for him to prove, not for us to disprove. And, if we are to believe every statement we cannot disprove, there will be no limit to our credulity. We shall have to believe that the moon is made of green cheese. That this is the structure of our satellite has been persistently asserted for at least 350 years—it is mentioned by Rabelais, who died in or about 1553—and the assertion has never yet been successfully controverted or disproved, and, at present, there is no reason to think it ever will be. I myself have strong doubts of its truth, and would doubt it even though it were supported by so high an astronomical authority as the spiritualist Flammarion, but I do not see how I am to resolve my doubts into certainties. In the effort to make us credit the incredible it is much the habit, in default of arguments which can impress our reason, to assail us with what are thought to be convincing analogies, with things we know are realities, yet do not understand, with gravitation, for instance, and with electricity particularly. But we do understand all these

things sufficiently to know—and for the matters in question this is all-sufficient—that they are natural, and that, under no circumstances, do they act miraculously. In truth, as to these matters, every man has his own standard of credence or credulity which is set and adjusted in accordance with his individual mental make-up.

In this exposition of the occult I have been obliged to ignore several topics as important as some I have considered. Among these is hypnotism, a subject which well deserves a candid inquiry, but which, if introduced into a discourse, would demand the whole field for itself. If any excuse for my shortcomings is needed, I must plead the exigencies of the case.

I have said so much to you on my strange and obscure subject that I feel that you have the right to ask me what is my own belief as to existence beyond the grave. I have the utmost willingness to give a straightforward answer—if I could. But I cannot. What I am about to say, in conclusion, must suffice. In the study of his relation to the universe what man has invented is boundless, but it is valueless; what he has discovered is precious, but it is circumscribed. It can be said unqualifiedly that upon the question of existence after death he has gained no direct proof whatever. Some inferential light is afforded by a consideration of the indestructibility, which is immortality, of matter and energy. This helps only as to the general aspect of the question. As to personal immortality, the facts, so far as they are comprehensible by us, seem to be adverse to the possibility of it. We know thought, or mind, or soul only as an accompaniment of changes in matter; not different in mechanism from the changes which

result in the production of the light and heat from the flame of a burning taper. I speak from the standpoint of science. Revelation is not within my purview, and I wish those among my hearers who found upon it faith in another state of sentient being to know that what I say is not spoken to controvert it.

There were—or can I say there are?—those who when we walked together on the earth loved me with love so deep and holy that, if they now themselves exist, it, too, has never died; which would surely bring them to me, could they come, to guide, to comfort and to bless—all which I need so much. To renew communion with them here would be happiness so exalted as to sweetly temper the awe I could not but feel. But never yet, not in my sorest extremity, has come the dimmest token that they think of me, or know of me any more. They are gone. And for aught that I can tell, or can, in this world, hope to ever know, they are obliterated from the sentient universe.

ADDENDUM TO "THE OCCULT"

The Exaltation of Animal Magnetism

I have come into possession of No. 1, Volume I, of the *Magnetist* for November, 1845, and published in Richmond, Va. This periodical informs us that it is "edited by an Amateur," and that it is "devoted to the investigation of the physiology of man and the diffusion of useful knowledge"; moreover, that "certain individuals have issued this number, confiding in the intellectual alimntiveness of their fellow citizens for its continuance." In fact the paper was the local organ of those citizens of Richmond who in its day were believers in what it calls animal magnetism and mesmerism, but which we call by the more stately name of hypnotism.

It appears that about that time a certain peripatetic French philosopher, or, in modern nomenclature, a traveling fakir, Professor DeBonneville, so called, came to Richmond to expound the mysteries and display the wonders of animal magnetism and clairvoyance. Animal magnetism was elucidated by the transformation of pocket handkerchiefs into snakes and water into castor oil, and by frenzies of the arms and legs and by like marvels, such as have since become so familiar; while clairvoyance was represented by what we, in the light of modern advances, are obliged to consider as the quite trivial feat of reading a book with bandaged eyes. The

citizens were cordially invited to come to the expositions and be edified for a reasonable admission fee, and they attended accordingly in droves.

As we learn from the *Magnetist*, the citizens were instructed by Professor DeBonneville that "there is an elastic invisible ether pervading all nature, and that a modification of this ether pervades the nervous system, which, being set in motion by the will, can be made to combine with the nervo-magnetic principle of another individual and thus operate upon his brain so as to paralyze and to hold him subject to the will of the magnetizer." Part of Professor DeBonneville's hearers, it seems, were perfectly able to assimilate this doctrine, but many found it too sublime to be grasped by their limited powers of comprehension, and these, as is natural with persons of defective understanding, were irritated by their incapacity and grew very angry, and, on the other hand, the illuminated ones, as is natural also with persons intuitively wiser than everybody else, exalted by self-consciousness of superior knowledge, became angrier still. The effect was to quickly divide the citizens into two violently hostile sects—the true believers and the infidels—and a mighty war of words broke out. The newspapers entered into the conflict with avidity, the *Whig*, according to the *Magnetist*, being particularly vicious towards the true believers. Committees investigated Professor DeBonneville's capital experiments in eye-bandaging and pronounced them to be bare-faced frauds, and among the epithets hurled at him and his disciples it is gratifying to fall in with that good old stand-by, and always handy verbal projectile, "atheist."

But to an alumnus of the Medical College of Virginia, unquestionably the most deeply interesting fact which is

discoverable in this ancient record is that Dr. Augustus L. Warner, our dean at that period, was enthusiastically intermixed, implicated, and complicated in and with all the ferment which was then going on; and that, if we can trust the allegations of the *Magnetist*, not only did this venerable personage emphatically declare that the true believers were "a parcel of damned fools," but, what is most startling, that he was the instigator and ringleader of a mob of the infidels which, at the last, fell upon Professor DeBonneville and raced the philosopher clean out of town. Can such things be?

However, times in Richmond have greatly changed. In our days the successors of Professor DeBonneville have repeatedly visited us and departed unmobbed, and, what is more, the citizens have received their gospel gladly. Students of medicine here have submitted to take lessons from them in hypnotic learning, and paid them for the privilege of their instruction, and physicians themselves have condescended to co-operate with them in public shows, which, assuming that they possess a profoundly psychological significance, yet have the misfortune to look marvelously like third-rate mountebank kick-ups. And so it is the world over. Animal magnetism has received the sanction of many men of credit, who thus have exalted it from mesmerism to hypnotism, till at length it has attained as much substantiality and permanence as the shifting and transitory beliefs which have ever constituted so large a part of the science of medicine are able to confer. Yet, even in this prosperous state of things, we cannot be altogether blind to the fact that there is still clinging to it some of its old-time ill odor. Many medical men, while professing to believe in it, are rather ashamed of it.

Many medical schools have little to do with it, and many shun it altogether, which is a remarkable and a somewhat discreditable circumstance if hypnotism is indeed a true science. At the Medical College of Virginia no notice is given to it, except in a brief and general way, in the lectures on medical jurisprudence. Is, then, we may ask, the present-day exaltation of hypnotism an actuality, vital, because of innate life, or is this exaltation only the most gigantic of all the deceptions which the antagonists of hypnotism claim have always been its essence?

Connected with hypnotism are several point-blank questions, entirely proper to be put and requiring direct and unambiguous answers, which are likely to be fired at a medical man, but which he will find that he is unable to squarely meet. For on this subject there is great need of trustworthy statements, and we are at a loss to know who is to furnish them and what dependence we can place on them when they are furnished. It is to be considered that, in our time, there is an extraordinary recrudescence of abject credulity and superstition—a most remarkable phenomenon. For while in the dark ages it was the ignorant, now it is the educated who are the dupes of their own absurdity and folly. And this, too, though we are flattered by the boast, sounded loud and far, that we have in operation a most highly developed and effective system of education. Yet, whatever the character of this system may be, it is certain that we have good reason to be thoroughly ashamed of the fruit it has borne, and one of the most shameful evidences of its futility is that, so widespread and firmly fixed in the cultured classes is a greedy capacity to believe and to be deceived, that it is palpably injudicious

to receive any statements which even a highly educated person may present regarding matters much beyond our ordinary experiences without distrust.

Here, in view of the displays of the so-called Christian Scientists, I am moved to say that Dr. Warner, were he to revisit the glimpses of the moon, would assuredly reiterate the opinion that these Scientists also are "a parcel of damned fools." Indeed, loyalty to our departed dean strongly constrains me to offer the remark myself on his behalf. I am, however, withheld by the consideration that such energetic words are not easily to be found in my vocabulary, and, especially, by a misgiving that in another sixty years or less our own orthodox science, as it undulates along, may get itself into some such relation with Christian Science as that into which it has at the present time got itself with animal magnetism.

Some time ago a correspondent of the *Richmond Dispatch* submitted to that paper the following questions: "Upon what scientific principles is hypnotism based? Has it been fully investigated and weighed in the balance judicially? Has its power been fully and seriously considered? Has it been established as a science?" I was asked by the editor to answer these questions, and as the reply I made to them embodies what I believe is a just estimate of hypnotism in its general aspects, I take the liberty of reproducing it here:

Hypnotism is a condition very similar to somnambulism, which is produced by artificial means. It is based, in general terms, on the fact that the mind can be dazed, but the underlying scientific principles are not fully understood, and the theories upon the subject de-

pend upon physiological propositions which are too abstruse to be easily explained. It has been quite fully investigated, but there is a difference of opinion as to the actual value of the investigations; it is very certain that all of them do not deserve to be called judicial. Two very formidable difficulties obstruct the pursuit of these inquiries—one is the incorrigible propensity of the subjects of the experiments to deceive, many of these persons being arrant frauds, and the other is the credulity of the experimenters, who are often altogether too easily satisfied with their results. And, besides, the practice of the art has been so long and so completely monopolized by charlatans that reputable and qualified observers justly distrust its manifestations, and are loth to meddle with it, for they do not feel that they are equally matched when contesting with practiced impostors.

No faith whatever can be put in the traveling expounders of its mysteries, and it is a sheer waste of mental energy to attend to anything they say or do. Still, hypnotism must be regarded as an established science to the extent, at least, that it has been studied by trustworthy scientific men, who vouch for the reality of some of the phenomena claimed for it. There seems to be no doubt that impressionable persons, whose nervous systems are disordered, can by hypnotic methods have their wills partially suppressed, so that they are disposed to obey up to a certain limit suggestions made to them by the hypnotizer. The range and amount of the influence which can be thus exercised are, however, quite restricted, being by no means as stupendous as enthusiasts have declared them to be. It is very questionable whether a person of ordinary sense, while in the hypnotic

slumber, can be made to do anything he does not choose to do; and when one asserts, as an excuse for his rascality that he was hypnotized, it is well to have in mind the old dictum that "not everybody whose eyes are shut is asleep." No unimpeachable observer has verified the extraordinary manifestations which have been attributed to some phases of this state, such as reading sealed letters, seeing into closed boxes, describing occurrences in distant places, and even foretelling future events. All judicious inquirers are satisfied that these displays are delusions or deceptions.

It should be pointed out to amateur hypnotists that it is a very risky experience for the living human brain when it is used for a plaything. Irreparable injury may be done to the victim of their play, for "that way madness lies." It is as if a watch were made to run backwards, and the teeth of its wheels sprung out of gear, for the fun of seeing the works jerk and hearing them clink and clatter. So great is the danger of lasting harm, which is sure to come if this rude strain of the nervous system is often repeated, that many conscientious physicians hesitate to use hypnotism even as a curative agent. It is a shame that traveling fakirs are allowed to attempt it upon children, and that children are taught by the contagion of example to attempt to practice it themselves, and, therefore, the medical profession, knowing how demoralizing and otherwise injurious are these public exhibitions of so-called hypnotism, is almost unanimous in advising that they be prohibited by law.

THE SORROWS OF SCIENCE

A Lecture to the Class in Chemistry

At the outset I wish to say that this discourse has been prepared exclusively for the students of my class in chemistry, who are beginners in the study of medicine. The discourse must, therefore, be regarded as a sort of family affair, being the talk of one medical man to other medical men. In the selection of the topic and its treatment I have been governed by a principle which I believe to be indisputable—namely, that medical men have the right freely to consider anything whatever that relates to man. In what I shall say I do not presume to speak for the college. The opinions I express are presented as my own alone. I by no means insist that anyone shall assent to my views. On the contrary, I desire him to fully exercise his own judgment. All I ask is that he shall hear what I may say with the candor with which I would listen to him were he expressing views entirely at variance with mine.

On hearing the title of this discourse, "The Sorrows of Science," perhaps your first thought is that it quite appropriately expresses your own feelings, which assure you that science indeed has its sorrows, and very afflictive ones, arising from the complexities and perplexities in which the study of it has already persistently entangled you. From these, or most of these, you may

reasonably expect to ultimately free yourselves. But others, graver and more difficult to conquer, will continue to present themselves, if you shall remain imbued with the scientific spirit. It ever was so, and so it ever will be; so masterful is the yearning to break through the stern wall that shuts out knowledge and so unyielding are the barriers.

Nevertheless, you are, in fact, pursuing your scientific studies under fortunate conditions. Science is now everywhere honorably recognized. It is intimately connected with the progress of the world and, to a great degree, dominates its activities, and you assume relation with it in full assurance that, for you, the way has been smoothed. I do not speak particularly of the material facilities with which you are supplied, the well-equipped laboratories, the admirable and abundant appliances put at your command. What I would emphasize is the higher, nobler, and far more necessary acquisition which has been fought for and conquered for you, the freedom to work in every realm of Nature and the right to judge for yourselves of the character and bearing of your results. Not that you are even now absolutely free. The conclusions to which your studies lead you may, very possibly, be widely at variance with some cherished opinion or prejudice whose upholders resent, in some instances fiercely resent, opposing views. But, nowadays, the worst you have to apprehend from this hostility is some lies, a few curses, considerable abuse, and, in extreme cases, a certain amount of social and business ostracism. It is very true that this might be made to turn out very seriously indeed; but, at least, you are not now in peril of the dungeon, the rack and the stake. The world has not always been so forbearing.

Many a one of your predecessors has made his pilgrimage along the toilsome though fascinating paths of science in want, in ignominy, and compassed round with sorrow; and not a few of them have reached their goal through blood and fire. These are our martyrs, as dear to us and as worthy of remembrance as the martyrs to other noble aims and aspirations. Their calamitous story is but too well known to your elder brethren who have acquainted themselves with the history of science and is proper to be told to you who are on the threshold of the scientific life. That you beginners in a like journey may also know of them, and, in these happier days, shall not be forgetful of them, is my reason for addressing you to-night. It is only by realizing the blackness of the past that we can adequately appreciate the brightness of the present; nor can we measure the grandeur of the height to which science has at length ascended unless we contemplate the steep and rugged way up which with well-nigh broken heart she has dragged her bleeding feet.

Men of science have had their share of the common afflictions of humanity, poverty, ill-health, neglect, contempt. In fact, they seem to have had more than their share of these. Their history in these respects is full of painful interest, but in these it does not much concern us at present. For the most part this phase of their history exhibits merely examples of the common lot, under conditions which the world at large does not conspire to produce by the wanton withholding of right or determined infliction of wrong. The sorrows of science we are chiefly to consider are such as have no proper place in the scheme of existence, but are such as its enemies have imposed upon its votaries to punish them

for upholding the unwelcome results to which their search for truth has led them.

I have said that scientific men seem to have had more than their share of the common afflictions of humanity. Some of these afflictions, we cannot doubt, have fostered, if they may not have even originated, the scientific bias of mind. But I cannot now consider this point further than to remind you of the innumerable instances in which some bodily defect, precluding its victim from participating in the pleasures or business of his fellows, has driven him upon himself and resulted in a striking development of the mental faculties. Especially, certain peculiarities often conspicuously show themselves in the character of men of science, and lead them in their devotion to their beloved objects, which are generally exalted far above the commonplace pursuits of mankind at large, to disregard their personal and social well-being. Thus we find them, as the result of their self-absorption, often remarkable for their lack of business capacity, for their seclusiveness, for their supersensitiveness, and for other repellent traits, which put them beyond the pale of popular sympathy and not infrequently engender downright unfriendliness towards them. It is true that modern conditions have greatly mitigated and otherwise modified this character, but in former times, when such opportunities as a man of science might rationally make use of to better himself were of the scantiest, this character prevailed, and was the source of much evil to its possessor. I do not wish to linger on this part of my subject, but I may cite our forefathers in chemistry, the alchemists. These men, deeply absorbed in the quest of the philosopher's stone, or the universal solvent, and the elixir of life, submitted themselves to incred-

ible privations and labor, and dauntlessly faced the dangers of their hazardous and, at times, fatally disastrous experiments. Men of their temperament naturally kept aloof from ordinary human interests, and, as a consequence, were regarded by their contemporaries as unpleasing, mysterious, and even as unholy persons, and were shunned and ill treated accordingly. And, in later times, they have often been looked upon as mere cheats, or, at the best, as selfish seekers after wealth and an indefinitely long life. But, if to turn scientific discoveries into gold is a reproach, the reproach must be shared by such men of our own day as Koch, who traded in his tuberculin, and Behring, who has made much money by his diphtheria antitoxin. And, if to strive for long life is discreditable sordidness, then all normal mankind is discredited. Let us try to be just to the alchemists—those earnest, patient, much-enduring workers of the old time—remembering the many precious bits of knowledge they delved out and have bequeathed to us, charitably believing that their zeal was not altogether selfish, but that their sordid lusts, if so we choose to name their aspirations, were often tempered by a pure love of knowledge and a wish for companionship with Nature in her deeper mysteries; and that at least some of them were not unlike the illustrious astronomer Kepler—astrologer as well—a self-tortured victim of his devotion to science, who confides to us that, in his struggles to discover the laws governing the revolutions of the planets round the sun, he considered and he computed till he almost went mad.

Among the earlier civilized peoples physical science was, by the cultivated class, looked upon with contempt; thinking, or, more accurately, imagining or dreaming,

being regarded as a far nobler occupation than doing. Mathematics, indeed, was esteemed, but not so much on account of its practical capacities as that there was supposed to be something mystical or magical in numbers. The discovery of a principle in science or the invention of a useful machine was, by many of those whom we ourselves are in the habit of praising as great men, regarded as a degrading employment of the intellect. Something of this spirit of cultured Greece and Rome has survived to our own time, as may be seen in the indifference shown towards the physical sciences and the contemptuous inferiority to classicism assigned to them by the great English universities, which only somewhat recently, and with reluctance, have consented to give modern living science a chance with the old-time defunct literatures. And your own observation will make it plain that, with the majority of people, the ideal man of learning is not a thoroughly informed physicist or chemist or anthropologist, but the man who has swamped his brain amid the soggy lumber that has drifted down to us out of the smash-up of antiquity. And you will note, too, that, while an institution which glories in pottering with words and ideas in vogue twenty or thirty centuries ago is upheld by the populace in its self-conceit and honored with the appellation of university, an institution where the vital and comprehensive science of medicine is vigorously cultivated is classed with the old-field seminary as a school, and is called, not a university, but only a college. In my opinion, which, however, I fear will not carry much weight, Watt, who made the steam-engine a practical machine, has done more to bless mankind than Plato, named the divine, and all his much be-praised Greek and Roman confreres have done or ever

will do to the end to time. I by no means intend to undervalue what has been done by Plato and the like, and I will not sneer at whatever satisfaction those who can appreciate it can get out of it, but far the greater number of our fellow men, and not all of them dolts either, find it much too refined to be availed of by them, and have the most serious need of very much more, and that of a very different order, than the divine Plato can supply. And some of our modern men of science themselves take what I cannot but think is a somewhat exaggerated and perverted view of the nobility of science, when, in order to exalt the merit of the worker amid the recondite and abstruse, they depreciate the seeker after the useful, and sneer at those who ask, "*Cui bono?*" and strive to furnish a concrete answer to the question.

Science in its dawning days, dull and slow as it was, encountered a danger which has always beset it and which has always been its most formidable one. This was collision with theology. The theology of those times was indeed of a very coarse sort, in purity and nobility far beneath most of the theologies of later periods, but it was no less venerated, and was no less intolerant of contradiction. The early Greeks were but little given to systematic experimentation, the predominant feature of modern science, though they were observant and noted many of the phenomena of Nature, making some show in astronomy and successfully cultivating geometry. Their special delight was speculation and generalization, occupations much less laborious and exacting than experimentation. Speculation, however, sometimes entailed considerable risk on the speculator on account of what the mass of the community considered as its impiety. Socrates himself, and himself

accused of atheism, thought that inquiries into the ways of Nature were offensive to the gods, and something of an insult to them. It is well worth recalling how closely these old-time speculators approached some of the fundamental conceptions of the science of to-day—notably as to atoms, the indestructibility of matter, and attractive and repellent forces. But, dominated by a predilection for quiet meditation and a contempt for active investigation, their science was, generally, amazingly at variance with the facts.

As an example of this, showing itself in matters in which we medical men are deeply interested, let us take the teaching of the famous philosopher Plato himself as to the make-up of the human body. According to him the gods made the head round to conform it to the shape of the universe, which he considered to be that of a sphere. The rest of the bodily structures are mere servitors of the head. A double soul is provided, a divine and immortal part, which is placed in the head where it presides over the organism, and an inferior and ignoble mortal part, which is placed in the breast and kept from interfering with the noble part by the interposition of the long and narrow neck. The mortal part of the soul is itself double, and its two sections are separated by the diaphragm. Above this partition is the section concerned with the emotions, and below it is the section concerned with the appetites. As the appetites are of an unreasonable and unruly disposition the liver is set among them in order to restrain their rowdy propensities. To do this effectively the organ is made of solid and bitter material and is furnished with a bright and polished surface that it may act as a mirror to reflect the exalted thoughts of the noble soul among the

disorderly characters dwelling in the abdomen and awe them into respectability. For keeping the surface of this hepatic mirror bright the spleen is designed, serving to wipe and rub it off in the manner of a mop or scrubbing-brush. To protect the whole mechanism flesh is packed about it, much as paper or straw is used for the stuffing of a packing-box. And Plato thinks that the veins are conduits for the conveyance of sensation and motion. Such is the pitiable twaddle put forth as his exposition of human anatomy, physiology and psychology by him who has been renowned for ages as the greatest philosopher of antiquity.

Aristotle, who was the pupil of Plato, had a far more sensible conception of these things than his master, for his methods for acquiring knowledge were, in some directions at least, akin to our own. At the same time he could prosecute his studies unmolested, for he was under the protection of Alexander the Great, whom he himself had taught.

We may justly claim for the science of medicine, or the collection of sciences which passes under this name, the honor of being, in all ages, the most determined champion of scientific progress. Naturally, its votaries have furnished the oppressors with the majority of their victims. It is therefore not surprising that, in the early times, the physician Hippocrates stands out as the most rational thinker and the nearest approximation to the true scientist. Doubtless he had his sorrows, though what they were we do not know. Judging by the oath attributed to him, he kept in touch with the prevalent religious ideas, and so avoided the rock on which so many of his successors have been shattered.

The Romans were extremely tolerant in religious

matters, and hence not prone to torment scientific men. They seem to have cared nothing for them, one way or the other, except that the more sublimated intellects despised the practical men for their utilitarian endeavors to alleviate the hardships and labors of mankind. Thus Pliny, though a most earnest and diligent man of science, after his fashion, was a great office-holder besides, his science, which was probably regarded as atheistic, not standing in the way of his political advancement; and his devotion to science seems to have brought him no other sorrow than his final extinction by the inhalation of sulphurous gases while making a scientific study of the great eruption of Vesuvius which destroyed the cities of Pompeii and Herculaneum. Occasionally a doctor suffered, but this was rather an incident of his mode of practice and not of his scientific opinions, as in the case of a certain graduate of the School of Alexandria, who, though at first welcomed by the name of "the healer of wounds," was ultimately driven out of town as "the executioner."

In the history of science there have often been periods when it was greatly to its advantage that it was beneath the notice of the men of influence and authority; and much of the freedom from persecution which the earlier scientists enjoyed probably was owing to the opinion that they were not worth the bows and arrows, rocks and brickbats that it would have taken to kill them.

It was the famous School of Alexandria that first systematically supported observation with experiment. This school thus becomes the originator of modern science, which, while it uses intellectual processes to their fullest extent, bases its reasoning on the solid ground of direct and actual interrogation of Nature,

operating with the hands not less than with the head. As we have seen, hitherto speculation was considered as satisfactory. If a phenomenon was presented to some thoughtful person, instead of investigating it by experiment, he sat down and mused on it, assisting his judgment by his fancy—as Thales did when he satisfied himself that magnetism was adequately explained by regarding a magnet as the dwelling-place of a demon. On the contrary, the methods of the Alexandrian workers were eminently practical and their results correspondingly substantial. The School of Alexandria was founded at an early period and endured for several centuries. During a part of that time the men of science connected with it were the recipients of extraordinary consideration. The rulers of the land took a profound personal interest in their work, encouraging and upholding it in a right royal manner. Those were indeed the halcyon days of science, the like of which it has not since seen. But, unhappily, in the progress of the years ecclesiasticism took root in Alexandria, flourished there, grew strong, and warred on what it called profane learning. It triumphed in the conflict. Science was crushed, its vivifying light was extinguished and a long night of dreary intellectual darkness settled down upon the Christian world.

The destruction of the Alexandrian School and the beginning of the great eclipse of learning were signalized by the slaughter of Hypatia at the instigation of a Christian bishop. This illustrious woman we men of science of the twentieth century commemorate as the most conspicuous on the roll of our early martyrs. Her assassination was, it is true, provoked by her philosophical teachings rather than by her opinions on matters of

science. Still, she represents freedom of thought, which is the life of science, and was the victim of the deadliest enemy of science, ecclesiasticism. Stricken in years, but of dauntless spirit, resolutely asserting the inalienable freedom of the human mind, she was seized by a mob of monks, and her aged body, stripped of its clothing, was dragged through the streets into a church, where one of the ecclesiastics dashed out her brains. The memorable martyrdom was consummated by hacking her body to pieces, scraping her flesh from her bones, and finally giving all to the flames.

Unhappily the Christian Church early and persistently adopted the Bible as its text-book of science; and, as the teachings of the Bible on scientific matters are irreconcilably at variance with the teachings of Nature, ecclesiasticism and true science were put in irreconcilable conflict. The hostility of the Church, fierce and powerfully efficient for many centuries, has continued even to our own time, when, owing to the practical separation of Church and State in nearly all Christian countries and consequent paralysis of the terrible secular arm which the Church long actuated, it is, if still occasionally virulent, no longer very formidable. Fortunately, however, science, despised, spurned, and crushed out of Christian Europe, gained strong and earnest friends elsewhere. These were the Arabians converted to Mohammedanism. Ruthlessly savage as the Mohammedan religion was in pursuing its conquests, and deserving as it is of the bitterest execration therefor, it is nevertheless entitled to our profound gratitude for having kept brightly burning the precious light which the professors of a nobler faith were striving to extinguish.

Mohammedan scientists, in the beginning, had, like Christian scientists at all periods, trouble from collision with the current theology. The caliph Omar burnt the remains of the great Alexandrian library. One of the more enlightened caliphs was denounced by a Mohammedan doctor of divinity of his time as an atheist for the damnable heresy of measuring a degree of the circle of the earth. At a later period philosophers were persecuted, and even put to death. The celebrated physician Averroes, the stanch advocate of reason as opposed to mysticism, the great upholder of the widely disseminated belief that the soul of man is but an emanation from the universal soul, to which it returns and into which it is reabsorbed when the body dies, was driven into exile for his philosophical opinions and reduced to extreme poverty. But the prevailing attitude of Mohammedanism towards science was that of the most enlightened, liberal and zealous friendliness. In all important Mohammedan cities magnificent schools were established for the study of Nature, where instruction was given by the most learned men, Mohammedan, Jew, or Christian, that could be procured, and where students of every nation and creed were welcome. Medicine was especially favored, and the first medical college in Europe was founded by Mohammedans. It is impossible to withhold our profound admiration and appreciation of the exalted catholicity so soon attained by a religion originally based, not as its most strenuous rival was, on peace on earth and good will to men, but on the most sanguinary persecution.

European science is especially indebted to the Arabians who had effected a lodgment in Spain. It is difficult to overestimate the benefits which the Christian

nations unwittingly, and, indeed, unwillingly, received from those learned, enlightened and tolerant infidels. Particularly is it incumbent on the student of chemistry to remember their labors and achievements in his department of science. But through these people, in the year 1502, there was inflicted upon science one of its greatest sorrows. In that year occurred the expulsion of the Moors from Spain by triumphant ecclesiasticism. It is a most painful story. Even at this remote day our righteous indignation burns against the stony-hearted clerics as we melt in sympathetic pity with the humbler Christians of the land constrained to weep at the sight of the misery of men, women and children, who, though alien in race and faith, were their fellow creatures still. In Spain science was supplanted by ecclesiasticism, affording a memorable lesson filled with instruction and warning. To know the necessary and inevitable consequences of a reversion from liberality to bigotry, from the noble to the ignoble, from the good to the bad, we need but to study the subsequent history of Spain, which we find can be succinctly expressed in the phrase, "the decline and fall of the Spanish empire."

It is with regret and humiliation that we note how differently from Mohammedanism Christianity has conducted itself towards science, and we deplore the fact that its hostility, often in former times culminating in brutal violence, has lingered even to our own day. In this connection let us listen to the words of Isabella, the Spanish queen, who sanctioned the expulsion of the Moors. "In the love of Christ and his maid-mother," she says, "I have caused great misery, and have depopulated towns and districts, provinces and kingdoms." These few words are full of pathos, for they are the

outcry of a woman innately good and with a tender heart, but dominated by a perverted idea of religious duty—the type of many others all along the tide of time, who, we must believe, meant to do justly, but, misled by strong delusions, have done instead the most horrible crimes.

In our righteous denunciation of the cruelties which have been inflicted on harmless men by Christian potentates and functionaries we should make it clear that we recognize a radical distinction between the acts of self-styled Christians and Christianity itself. For my part, I proclaim that the tormentors who in the name of the Christian religion have harried, tortured, and murdered are not Christians, but wolves in sheep's clothing; that they are traitors to Christianity, and by their atrocious deeds have dishonored its beneficent and august Founder. Let it be understood, then, that when I seem to assail Christianity I am not attacking that exalted religious system whose principles were enunciated by Christ himself, but that perverted and spurious Christianity which has been fabricated by fanatical and corrupt men to gratify their prejudices or passions or ambitions.

For long periods the Mchammedans contrasted most strikingly and favorably with their Christian contemporaries in the rational investigation of Nature, in the practical adaptations of knowledge, in general culture, in freedom from the bigotry of race, creed or opinion, in everything that enures to mental and material well-being. I cannot forbear from lauding their schools especially as examples which, remarkable as the fact seems in this liberal day, we ourselves have not quite equaled, but which are worthy of our best efforts at emulation.

A scientific school, a medical college for instance, should be untrammelled. Its students should not frown upon, but welcome the freest exposition of ideas, opinions and beliefs. You who are pursuing the study of medicine are not children with unformed minds, nor divinity students with minds kept within bounds which are definitely marked out and rigidly observed. All Nature is yours to roam over and explore. Our aim is the truth. We may not be able, under the most favorable conditions, to perfectly attain it, but we cannot even approximate it if we are forced to constantly encounter obstacles designedly put in our way.

When I taught children, as I did for many years, I did not teach them that man was descended from the ape, because the doctrine, though it was acceptable to me, was abhorrent to those who controlled the school. When, a long time ago, I applied for the chair of chemistry in a certain denominational college had I not been rejected on the ground that though I might be a good chemist I was an indifferent Methodist, but had been made one of its professors, I could not have ventured there to expound the relations of the soul with the body, as I have done here, because there and then the Bible was the ultimate authority on science, to which all the ordinary text-books on physics, chemistry and physiology were compelled to yield. At the present time I am connected with no educational institution but the Medical College of Virginia, and it is with inexpressible relief that I feel that I am, as I should be, absolutely free to express what I believe medical science teaches, however violently its teachings may conflict with non-medical opinions or creeds. Did I not feel thus, could I be assured that this college was only a kind of medical

nucleus floating in a cytoplasm of orthodox theology, I would separate myself from it at once.

One of the chief blessings of advancing manhood is the privilege of breaking away from the limited, the bigoted, the false, the lying instruction dealt out to childhood. How well I remember that, when a little child, in all my school-books, spellers, grammars, arithmetics, geographies, and especially histories, whenever it was possible there was interjected something of the narrow and vile New England religious beliefs then prevailing. Thus, by my spellers, arithmetics and the rest I was taught, in season and out of season, that Christianity is the true, and only true, religion. Of this I will not complain, but I do complain that I was also taught that Protestantism is the only true Christianity, and that all the atrocities which have so painfully marked the progress of Christianity were inflicted by Roman Catholics upon Protestants. Under this pernicious teaching I grew up to look upon Catholics as people apart from the rest of the community, to fear them as monsters willing to burn me up, and to hate them as enemies to all good men, we Protestants, of course, being the good. And I can recall how I trembled when, impelled by the curiosity and temerity of childhood, I entered their church—they had but one here then—which I regarded as some dread and mystical pagan temple. I can testify that the instruction thus imparted to me did me incalculable harm, inducing a warp of the mind which, in spite of all my subsequent earnest efforts to correct it, I regret to say I have not to this day been able to altogether rectify.

But what a different aspect was put upon the matter when, released from the shackles of my bigoted school-

books and schoolmasters, I could read history for myself. Ranging freely through unbounded fields I soon realized that a great injustice had been done to me in forcing me to maintain one point of view. For instance, as to the Catholics, I ascertained that the murders committed by Bloody Mary might be quite fairly set off by those committed by Good Queen Bess, and that the butchery of the eve of Saint Bartholomew was, on the whole, less cruel than the grinding misery, ranging from the petty meanness of prohibiting the marriage of a Roman Catholic with a Protestant to the monstrous villainy of hanging the priest who solemnized it; and extending from the days of Oliver Cromwell far into the nineteenth century, which Protestant England has inflicted on Catholic Ireland. But let me say again that, in stating these melancholy facts, I am not assailing Christianity. On the contrary, I would that you and I were in our conduct genuine Christians, striving, as far as human frailties permit, to practice Christianity, not indeed as the vast majority of the professed followers of Christ have practiced and still practice it, but as Christ himself taught it.

Of the multitude of men of science who have undergone persecution in Christian countries I can only glance at the history of a few whose eminent abilities and exceptionally severe sufferings have made them especially conspicuous in our martyrology. One of these was the venerable Roger Bacon—a very bright light in a very dark world, but a light put under a bushel. He ended his troubled life something more than six hundred years ago. He was a diligent student of Nature, and was a master in the physics, chemistry, astronomy, mathematics and other science of his age. Many discoveries and in-

ventions attest his genius and learning. It is a grateful commemoration of him to witness the standard lecture experiment which illustrates the preparation of nitrogen by means of a burning body in a jar of air inverted over water, for he is the originator of this experiment. But his experiments and investigations brought great sorrows, for they fastened upon him the extremely dangerous character of a dealer in magic. He was a dignitary of the Church, which made his scientific pursuits appear specially execrable, and his brethren were bitter against him. By extraordinary good fortune he escaped being burnt as a wizard, but he had to endure many and great hardships. For ten years he was confined, and forbidden the use of books, instruments and writing materials—a dreadful infliction on such a man—and, after an interval, the heavy hand of the Church again was laid upon him, and for yet another ten years he was imprisoned. To have half of his working life blasted and made miserable is a fearful price for a man of science to pay for knowledge, yet Roger Bacon's knowledge cost him this.

Some two hundred and fifty years after Roger Bacon there was a man of science flitting about Christian Europe, dodging the ecclesiastics hot after him, who is worthy of our lasting remembrance as one of the most determined and intrepid upholders of the sovereignty of the human mind the world has ever known. This man was Giordano Bruno. Called to battle against the enemies of intellectual freedom at a time when they were in the fulness of their strength, he was as defiant as Martin Luther, and, though championing a far different cause, he fought as good a fight, but, less fortunate than he, fought it to a disastrous

issue. Like Roger Bacon he was a member of a religious order—a most incongruous situation for one whose spirit was so independent and assertive—so that we are not surprised that he occupied it for only a short time and only in his early years. His scorn of the current theology and philosophy, his tenacity of opinion and his boldness of expression brought trouble upon him wherever he went, and aroused a deadly and persistent enmity which, in its relentless pursuit, at last left him no abiding place. Finally, in the city of Venice, the Inquisition got him in its terrible clutch. He was transferred to Rome, where, during an imprisonment for seven years, without books or writing materials and under stress of other persecutions, efforts were made to force him to recant. It was in vain. He was put by the ecclesiastical authorities into the hands of the civil authorities to be “punished as lightly as possible and without the shedding of blood”—a horrible mockery of words, by which the Church condemned him to be burnt alive. “Perhaps,” returned the dauntless philosopher to the men who had passed judgment upon him, “you feel greater fear in pronouncing the sentence than I have in receiving it.”

Bruno's specific crime was teaching that among the stars are worlds inhabited like our own—a doctrine which, in our day, is regarded as by no means intrinsically false, and which it would astonish us to hear classed as immoral or irreligious. He also taught that the soul cannot exist apart from matter—an opinion which physiological science of the present time, while as yet far from fully endorsing, is at least to a considerable extent beginning to share. Moreover, it was his belief that there is an intellect which pervades the uni-

verse—which intellect is God—a belief which is to-day held by the majority of mankind and by multitudes of the most cultured among them. For this belief and this teaching Bruno, the philosopher and man of science, was on February the sixteenth, in the year of our Lord 1600, murdered by churchmen in the capital of the Christian world.

Dr. John W. Draper, relating the story of Bruno, after speaking of his unflinching defiance of his murderers, observes: "What a contrast between this scene of manly honor, of unshaken firmness, of inflexible adherence to the truth, and that other scene which took place more than fifteen centuries previously by the fire-side in the hall of Caiaphas the high priest, when the cock crew, and 'the Lord turned and looked upon Peter'! And yet it is upon Peter that the Church has grounded her right to act as she did to Bruno." Continuing, he remarks prophetically: "But perhaps the day approaches when posterity will offer an expiation for this great ecclesiastical crime, and a statue of Bruno be unveiled under the dome of St. Peter's at Rome." That day has almost come, for our day has seen a statue of him erected in Rome in defiance of the protests of the ecclesiastical progeny of his murderers, not indeed in St. Peter's, but on the spot where he was made a sacrifice for freedom and for truth.

Most conspicuous of all on our roll of martyrs stands Galileo. Insulted and indignant science can never forget him, and its votaries scarcely ever utter his venerated name without some resentful expression of their feeling. His sufferings, as grievous as they were, were less severe than what has been inflicted on many of his fellows, but he far surpasses most of these in the

magnitude of his contributions to human knowledge; and especially his case is of commanding importance for having brought about the complete and humiliating overthrow of ecclesiastical pretensions to infallibility in matters of physical science. In warring on Bruno ecclesiasticism had a certain advantage, for we cannot prove the truth of his assertion of the plurality of inhabited worlds. But when it assailed Galileo it put itself in irremediable antagonism to facts susceptible of the clearest demonstration. This memorable collision of theology and science took place in 1633, when Galileo was seventy years old. The aged philosopher went down before the overwhelming power of the Church, and was forced to become the central figure in a mummary whose ludicrous ritual, however, is put out of sight by its tragical associations. Clad in a peculiar garment he was led into a convent where the cardinals who judged him were assembled, made to kneel before them with his hands upon the Holy Gospels, and, under menace of the rack, was compelled to say that he abjured, cursed and detested as errors and heresies the truths set forth in the Copernican system of the world. For his remaining days he was the prisoner of the Inquisition. At length, crushed by personal and family sorrows, by blindness, and by the accumulated infirmities of age, he died; and then received the last indignity which an ignoble Church has it in its power to inflict—denial of burial with Christian rites in consecrated ground. Thus was accomplished this celebrated victory of ignorance over knowledge—a victory which has forever ruined the arrogant claims of ecclesiasticism by exposing its utter unfitness to judge of man's relation to Nature.

We may feel some disappointment that Galileo did

not show the resolution of Bruno; and there have been men in our age of free thought and free speech, when it is perfectly safe to defy the Inquisition and the stake, who have been so ungenerous as to sneer at the broken old man for yielding when his life was balanced against an astronomical proposition. For my part, when I consider the terrible position in which he was placed, I am compelled to regard his conduct with the fullest sympathy and charity. What substantial inducement could he find for offering his body to be burnt? To die for one's country, or for one's religion, it is universally agreed, is glorious, but to perish in behalf of the rotation of the earth is a sacrifice for which it is not easy to arouse any great amount of enthusiastic admiration. Many a saintly martyr, indeed, consuming at the stake has been triumphantly sustained by his assured belief that his chariot of fire would transport him to a haven of eternal and ineffable bliss, but the belief for which Galileo was asked to lay down his life is as little able to afford consolation in the hour of death as would be a meditation on the gyrations of a grindstone.

I shall note but one other victim, and him because he is nearer to our own time, and especially because of his eminent connection with our own science of chemistry. This is Dr. Joseph Priestley, a pure and pious and deeply hated man, who was not merely a man of science, but a Christian clergyman of unblemished character, having no fault in him but the theological fault of heterodoxy. He denied the separate existence of the soul. This doctrine, which more than a century ago brought obloquy, disgrace and disaster upon an exemplary Christian clergyman is the same the suggestion of which not long since in Richmond, from this desk, so shocked many good, and

bad, people. Everywhere he was denounced as an infidel and atheist, and, on account of his religious principles and for no other unfitness, his clerical brethren conspired to prevent, and succeeded in preventing, him from going on a scientific voyage with Captain Cook, for which he had made arrangements. Scientific societies at home and abroad honored him as the discoverer of oxygen, but the two great English universities, whose function surely it should have been to encourage and reward zeal for knowledge, being, however, under the theological domination of an exclusive sect, ignored him. The hostility to him was great and very bitter. The walls of Birmingham, where he resided, were scribbled over with such inscriptions as "Damn Priestley. Damn the Presbyterians," and the boys yelled after him, "Damn Priestley. Damn him forever." Finally, a mob of his fellow citizens, full of loyalty to the king and zeal for the Church, attacked his house, set it on fire, and with it consumed his library, his papers and his scientific instruments. He shook the dust of the unworthy city from his feet, quitted his country and came to America. He took up his abode in the village of Northumberland, in the State of Pennsylvania, where he passed the remainder of his days; and where, in the year 1874, it was my privilege, as one of a great convocation of American chemists, to do honor to his memory as the Father of Modern Chemistry.

While it is true that most of Priestley's troubles grew out of his political and religious contentions, yet these were made to injuriously influence his scientific status, as was shown by the frustration of his projected voyage with Captain Cook, and by the fact that his scientific brethren of London looked unkindly upon him—for men

of science are mere mortals after all, and are not invariably insensible to the seductions of power and station, nor to that vanity of loyalty and orthodoxy which manifests itself in obsequious cringing before the meretricious majesty of State and Church.

It is pleasant to be able to say that the most illustrious among the philosophers of modern times, Sir Isaac Newton, escaped persecution. Fortunately for the peace and quiet which the nature of his studies pre-eminently demanded he was in accord with the predominant religious opinion. He wrote in exposition and elucidation of the current belief, applying his great intellect to unraveling some of its most abstruse mysteries, and, notably, to the pious but futile labor of interpreting the Hebrew prophecies.

It is not to be concluded, because you do not nowadays hear of a man of science chained to a stake and burnt, or forced to don a Kuklux mantle and abase himself in a church before a consistory of priests, that the spirit of persecution is extinct. Unhappily, it is still as active as it dares to be. The scientist who has affiliated himself with the Church is held to strict accountability for his scientific beliefs and is visited with penalties as extreme in intent as ever they were in former times should he be bold enough to oppose reason to dogma. That these penalties are not exacted in their fulness is not, I am constrained to believe, because there is any relenting, but because there is no longer the power to inflict them. The secular arm, once prompt to obey the behest of ecclesiasticism, has in our time, except as to some minor matters, such as the observance of the misnamed Sabbath, withdrawn its aid, and spiritual punishments must take the place of physical. It is but a few years since that in

England St. George Mivart, a learned and able biologist, who had long and powerfully battled for the religious denomination to which he gave his allegiance, dutifully and vigorously upholding its principles against that sturdy champion of liberal science, Professor Huxley, offended and was punished. When, after a fruitless attempt to induce the ecclesiastical authorities to relax their requirement of certain beliefs too gross to be seriously entertained by an intelligent child, he at length refused to degrade his intellect to their reception, he was ruthlessly excommunicated—a condemnation meant to be as terrible as it was in ancient days, though in his time and country it could effect little more than drive him, in his old age and when near to death, out of the communion of the Church he loved and whose consolations he earnestly craved. And the scientist who has not connected himself with any religious denomination, and so is not directly amenable to its discipline, cannot always escape an unpleasant responsibility should he espouse a scientific truth which is held to be at variance with some favorite theological conception. If he is a dweller in one of the narrow-minded communities which are numerous and potent in this country punishment of his heterodoxy can be made very severe, and even ruinous to him. He must be prepared to face coarse vituperation, social ostracism, exclusion from places of honor and trust, and, if he makes his bread by practicing medicine, the loss of his practice—in short, all the merciless and shameless concomitants of a spiritual boycott.

When we consider how persistently persecution has beset men of science we inevitably ask ourselves, What is the explanation of it? What is there in science that renders its votary obnoxious to his fellow men, and ex-

poses him to their bitter and, at times, their destructive hostility? A general answer we may find in the fact that it is always dangerous to jostle deep-rooted ignorance and superstition—two conditions to which science is irreconcilably antagonistic. At the same time, while a collision is always liable to be brought about by the presumptuous aggressiveness characteristic of ignorance and superstition, these have a vast advantage from being able to control the forces which govern society, and which have usually been allied with them, and are able to exercise a compelling power such as science does not possess and would scorn to use if it could command it. Nor must we overlook the fact that ignorance and superstition are not confined to the vulgar. Advanced thinkers of all kinds and of all periods have been harassed and oppressed by respectabilities no less than by the rabble.

While men of science have been victims of ignorance pure and simple, science itself has been clogged by the obverse of it, which shows itself as conceit of knowledge, falsely claiming the name and honor of philosophy. It was this which in earlier times disdained the invention and improvement of mechanical appliances as something unworthy of the notice of a wise man; and whose mark is still seen in the disposition to set pure science far above applied science. Yet ignorance has not been invariably persecuting nor obstructive. Much of the time it has been merely indifferent, giving no approval or encouragement, but when it found a man so foolish as to occupy himself with a pursuit so vain as that of science leaving him alone with his folly.

When we look for specific reasons for persecution we find that heretical astronomical conceptions hold a very

prominent place. Especially has this been the case when the persecutors have been Christians. This antagonism, like many other antagonisms of Christianity to the physical sciences, has arisen from the circumstance that the Church, almost from the first, made the Bible the criterion of scientific truth and held astronomy strictly to the literal statements of the book—a requirement impossible of fulfilment. The idea that the earth was the only inhabited world, that it was fixed, and that it dominated the solar and stellar systems, has been particularly fruitful of calamity, as was conspicuously exemplified by the fate of Bruno and of Galileo.

But much the largest share in promoting the persecution of men of science is to be assigned to an intense, exaggerated and misdirected respect and reverence for supernatural beings which man himself has invented and endowed with human attributes. In his ruder intellectual state he endeavors to bring himself into relation with his imaginary creations by lodging them in material forms to be revered as sacred objects; forms which, when he becomes more polished, he stigmatizes as idols and supplants by figments of the mind, complacently shutting his eyes to the fact that these are no less idols than the others. Naturally, he believes that beings thus humanly endowed are pleased by fear and flattery of themselves and by suppression of their enemies. His flattery is gross; his fear is excessive. Fear, we well know, is, as it concerns mere human affairs, seldom very amenable to reason; as it concerns superhuman affairs, it contemns reason and is apt to discard it altogether. As long, therefore, as this state of mind predominates it is inevitable that, so far as it is possible to prevent it, no one will be permitted to do anything that is con-

strued as offensive to the formidable supernal powers. From the exercise of this unhappy proclivity has come incalculable misery to mankind.

Man has imagined, too, that some of these visionary beings are supremely good and that others are supremely bad—always measuring these qualities by his own standards of good and bad. To ally oneself with the good is virtuous; with the bad is wicked. Physical and chemical experimentation was an unhallowed prying into their secrets, and when far pursued became trebly accursed, since, according to a long prevalent belief, the profounder mysteries of Nature could not be revealed without the help of the baser sort of supernatural beings. The relation of man himself to the superior powers was regarded as something altogether too sacred to be considered in any manner except in that which was prescribed by a specially ordained authority. Questions pertaining to the soul, in particular, were held to be in the province of theology exclusively, and an attempt to co-ordinate man's spiritual with his physical nature was looked upon with horror and treated as a profanation of surpassing turpitude. Even the dead human body was extravagantly revered, and though it might be lawfully hacked to pieces to gratify the savagery of a warrior, or dragged from its grave and burnt to ashes to please the bigotry of a priest, the dissection of it to procure indispensable knowledge was punished as a crime.

It is noteworthy that the most determined and violent efforts to enforce uniformity and fixity of belief have ever been exerted in respect to just such matters as human capacities are least qualified to know and understand. The dominant majority of mankind have not

only satisfied themselves that there is an ultraphysical Nature, but they are so well assured that they are conversant with its organization and methods as to feel fully authorized to compel doubters to accept the doctrines they prescribe. Moreover, it is to be observed that their knowledge of these inscrutable things has not been obtained in the way science has employed to gather what it puts forth as facts, by patient balancing of experiment against experiment, but by unreservedly crediting the statements of men and writings they have heedlessly agreed to venerate as supernaturally inspired.

"No thoroughfare. By order. Moses." This was the notice-board which Huxley says confronted him everywhere when he set out on his scientific wayfaring. The sign is still up and continues to obstruct our progress. It is truly wonderful how our own enlightened age permits itself to be bullied by this antique personality, who, if he was the horribly cruel, lustful and blasphemous wretch he is said to have been in the 31st chapter of the Book of Numbers, for instance, was one of the most execrable creatures that ever lived; and, instead of his being an object of devout admiration, as he is to so many excellent persons, we should rejoice to think that, as is highly probable, he is a mere mythical character. For, if he did the dreadful deeds ascribed to him, no amount of fanatical piety, cunning statecraft, worldly wisdom and brute courage can offset them, and it should be a satisfaction to every good man, and it would be creditable to Moses himself, had he never existed.

Mankind seem never to have been able to clearly understand the oneness of Nature, or that God and His works are inseparably associated; that Nature is, as

Goethe, the German poet and scientist, names it, "the living visible garment of God;" and that it is no dishonor to Him to try to apprehend His creation wherein He manifests to His creatures His greatness and His glory. So it has come to pass that, though this wonderful garment is freely displayed to us, there have in all ages been masterful men, influenced by exaggerated and irrational reverence, who have rudely forbidden any close inspection of it.

Our own science of medicine also has made itself abundantly obnoxious. In the earlier ages diseases, and especially widely prevailing and deadly diseases, were universally believed to be direct manifestations of the divine wrath. This notion has been held well within comparatively recent times, and, indeed, has not yet altogether died out. That this belief is erroneous, and that the great destruction of health and life is, in fact, attributable not to the wrath of heaven, but to the ignorance and perversity of man, is made evident by the more or less complete control we have qualified ourselves to exercise over some of the most formidable maladies. When smallpox threatens, enlightened people do not appeal for supernatural aid—they vaccinate; when yellow fever invades a city, they do not invoke the gods—they kill the mosquitoes. And so as to other diseases; we rely on such earthly resources as we may happen to possess, assured, to say the least, that these are exceedingly potent auxiliaries to our prayers.

Yet, in ignorance or wilful disregard of facts which are obvious to all enlightened persons of the present day, a large proportion of mankind has always looked upon diseases as directly inflicted by some extramundane power, by a justly offended or by a wantonly malignant

spirit, and put as much faith in supernatural as in natural remedies, and oftentimes more. The art of healing thus came to be associated with the occult. The practitioner was supposed to be necessarily something of a magician and his studies to be in mystical and forbidden regions. If he was a sincere student he would feel compelled to be very observant of the dead body—a proclivity calculated to bring him under grave suspicion, and during the numerous and long periods when the dead body was regarded with superstitious reverence, if indulged to the point of an actual dissection, fraught with the most serious danger. This uncanny view of the physician was encouraged by the medieval priesthood, and hence came the prevalent notion that medical men were for the most part, if not wholly, atheists. Medicine has never altogether freed itself from the grasp of theology and we come upon evidences of this injurious connection all along down to this day. Even so recently as the latter half of the nineteenth century there were persons of education and of high ecclesiastical station who violently opposed anesthesia in labor on the ground that it would be a flying in the face of that Scripture wherein an utterly unknown and irresponsible writer of some thousands of years ago has taken upon himself to pass sentence of painful parturition on woman. And it has happened to me as a physician to be enjoined from performing an obstetrical operation imperatively necessary to save a mother's life, and as coroner to have my injunction against the premature interment of a body dubiously dead disregarded because to perform the operation and to delay the burial would have infringed some churchly prejudice or superstition.

It is remarkable how many of our predecessors in

science speculated on the nature and relation of the soul, and how assiduously they labored in this illusive field. To medical men especially this was an attractive subject, as was inevitable from the nature of their studies in the structure and functions of the human body. But it was a subject eminently productive of trouble to them, which in many instances culminated in their destruction. As I have already indicated, the trouble arose from the tenacious insistence on the part of theology that it has a monopoly of all that relates to the soul, and that any one outside of its circle who ventures an opinion on the subject is a pestilent intruder and meddler. On the other hand, physicians are persuaded that anything connected with the manifestations of life—soul no less than body—is clearly within their domain. They have accordingly persisted in investigating the soul, but generally with disagreeable and not infrequently with disastrous results, for till comparatively recent times they have been by far the weaker party. We have seen among the small group of scientists passing under our review that Bruno and Priestley believed that the soul could not exist independently of the body, and how it fared with them when they gave expression to their belief.

In receiving their share of the assaults on science the chief brunt which physicians have had to bear has been as sacrilegists, magicians and atheists. Their sacrilegious character was considered to be shown in their tendency to pry into the works and ways of God through physical and chemical experiments and by their propensity to dissect the dead, whose bodies were held to be peculiarly sacred objects; and it was this propensity which connected them with magic and atheism. Parts, or, for some purposes, the whole of the corpse, were

thought to be most potent agents in the concoction of charms and the invocation of demons; and it cannot be denied that the anatomical observations of the physicians were calculated to minimize to them the distinctions between man and the inferior animals and to put their religious views more or less out of harmony with orthodox beliefs. These observations, which in modern times have eventuated in what most well informed physicians regard as an established fact, that man has been evolved step by step from less developed organisms, our predecessors were prone to use as the basis of opinions on man's psychic nature, implying ideas concerning the soul so contrary to the dogmas on this subject as to elicit the severest stigma the vocabulary of the Church could impose.

I may here note that, inasmuch as chemistry has always been indissolubly allied with medicine—the search for a medicament which would indefinitely prolong life was one of its earliest and most engrossing pursuits, and most fruitful of discoveries advantageous to medicine—and, moreover, is replete with startling and mysterious phenomena, chemists came to be regarded as magicians of a peculiarly nefarious type, and consequently they were constantly in peril of being burnt.

While we are recounting and condemning the afflictions which have been imposed on science from without, it would be uncandid, painful though candor is, to suppress the fact that not a little of its sorrow has originated within. I have boasted that science is tolerant and scorns to forcibly uphold its opinions. While the statement is true so far as it applies to the world at large, I deeply regret that I must qualify it in respect to our

own household, for I have to admit that towards one another scientists have at times been most unjust and harsh. Envy and jealousy are such usual accompaniments of great intellectual endowment as almost to seem natural to it. They are conspicuous and notorious infirmities of the poetical and literary temperaments, and, unhappily, the scientific temperament is not exempt from them. Many instances of the harassment of one scientist by others, ranging in its degree from petty annoyance to malignant persecution, deface the history of science. Some of these I may glance at, taking them almost at random. For example, we see the calm, almost stagnant, atmosphere of mathematics thrown into violent commotion by a controversy raging between and around Newton and Leibnitz regarding the calculus; and so esthetic a theme as the philosophy of color exciting Goethe to bespatter Newton with vile abuse. Or, restricting our view to those who are more immediately associated with our own science of medicine, we recall the harsh, not to say ferocious, treatment rendered to illustrious physicians in connection with some of the greatest benefactions bestowed upon humanity—to Ambrose Pare, when he introduced the ligating of arteries; to Harvey, when he demonstrated the circulation of the blood; to Jenner, when he discovered the prophylactic power of vaccination; and to those humane and sagacious men who resolutely advocated anesthesia in opposition to some of the most eminent surgeons of the time, who, strange as it may seem, maintained that pain is a good and desirable thing, and were not ashamed to say that they knew not how to wield the knife unless its track was blazed for them by screams of agony.

But I will not pursue the ungrateful subject. You

have only to cast your eyes over your own communities to perceive examples of enmity and strife, more or less flagrant, among men of your own science.

When the crimes ascribed to science have been punished by the State the punishment has generally been very severe; for commonly the State has been urged on or dominated by an ecclesiastical organization, and innumerable examples attest that the heart of a religionist perverted to enmity is singularly hard and cruel. The punishment has usually been imprisonment with certain superadded deprivations and inflictions, and death. A favorite mode of aggravating the hardship of imprisonment was by the withholding of books, writing materials and scientific instruments. To many persons this will seem a petty and ludicrously inefficient measure; yet, in fact, there are few inflictions which a scholar or votary of science could not endure with greater equanimity. The vast mass of mankind when affliction comes upon them are able to derive comfort, often great and sustaining, from religious beliefs which, whether true or false, they accept and use unquestioningly. But the studious and inquiring man, accustomed to try and to prove all things, can get no satisfaction from anything that his reason does not authenticate as true; and he is likely, therefore, it may be against his earnest desire, to stand aloof from ideals which so powerfully sway less exacting minds. Under these circumstances his supreme, and perhaps his only source of consolation, is to commune with Nature and with men of kindred mold who feel with him that in this communion they are reposing on the bosom of their Father and their God. To such a man the deprivation of the indispensable implements

for thinking and acting is a severity of the most cruel kind.

Of the innumerable modes by which death may be inflicted it is known, and it has been known from times long antecedent to the birth of Christ, that some are almost, if not quite, painless. It is a most remarkable and a most damning fact that from among these modes the Christian Church in its role of murderer has deliberately selected one of the most agonizing of them all—death by burning. It sickens the soul to think of it. Burning his captive at the stake was the supreme delight of the American Indian, of all savages the most abominably unfeeling. In my official capacity as coroner I have been required to witness many dreadful forms of death, but none more horrible than death by burning. The sight fills the sensitive mind with the deepest pity and sorrow. That a Christian priest should coolly plan this fearful manner of killing a man, a woman, a child—for neither age nor sex could bar, nor weakness nor loveliness extort compassion—participate in the execution, and then could dare to gaze upon the body scorched and baked and hideously gashed and cracked and odorous—a sickening sight that tries the nerves of the seasoned doctor—that this should be would be incredible did we not know that the instances of it are so numerous that cautious history hesitates to name the enormous figures lest it be not believed. Surely if the system falsely named Christianity can be swayed by a spirit so demoniac, the sympathy and compassion which dwell in all but the most obdurate hearts compel us to rejoice at the spread of opposing disbeliefs to at least an extent which may serve to hold it in restraint.

The most impressive fact a reader of the New Testa-

ment finds in it is the extraordinary benevolence it inculcates. It teaches this everywhere. How the Christian Church, with this doctrine of surpassing philanthropy for its foundation, when it deemed it judicious to make murder a part of its polity, came to select one of the most appalling modes of murdering is hard to understand. I can never think of it without becoming filled with a raging indignation which drives me, unreasonably, I know, but almost irresistibly, far towards hating and cursing the whole fabric which audaciously claimed to be the religion of the embodied love who, in the agony of death, looked pityingly upon his murderers and prayed, "Father, forgive them."

In comparison with these Christians how greatly nobler appear those pagans who murdered Socrates on account of his imputed atheism, not by the horrid stake and fire and fagot, but by the far less repulsive agency of a neurotic poison.

The shame and the compassionate incredulity of recent times, unwilling to believe that man's heart can be deceitful above all things and desperately wicked, have striven to gloss over these atrocities; and as we find apologists for Judas Iscariot, who betrayed Christ, and for Nero, who swathed Christ's followers in pitch and set fire to them to make torches to light up his own hellish orgies, so we find apologists who are trying to make us believe that Roger Bacon, imprisoned for twenty years, was kindly dealt with because his life was spared, and that Galileo was humanely treated because, as is probable though it is not certain, he escaped the rack with which he was threatened; and there are some who, even in our century, assert that Bruno was justly burnt as an anarchist unsettling beliefs officially pro-

claimed. Whatever excuses may be offered for the burners of heretics—the genius of the age, conscientious zeal for the salvation of the souls of men, and the rest—it is impossible to deny that they were a singularly obtuse, hard-hearted and cruel race, and that in the kindlier feelings of human nature they were but a shade superior to the Indians of America; and, indeed, if we consider the advantage the churchman had over the savage in cultivated intelligence, and, above all, in the religious principles and doctrines he professed, the churchman as an exemplar of the Christian virtues sinks far below his savage colleague.

It is not so very long ago that the Church put out, or was compelled to put out, its dreadful fires, for they were lighted far into the nineteenth century. The last that blazed in Europe was in 1826—in Spain, and the last in America was in 1815—in Mexico. An interesting instance of an aborted burning, in which the poets Byron and Shelley figured, occurred in 1821, in Italy. On this occasion the offense was not by the Church, but for the Church, through the agency of a female religionist who lorded it over one of the Italian provinces. She contemplated burning one of her subjects at the stake for stealing a wafer-box out of a church. The skeptic Byron and the atheist Shelley took active measures to prevent the atrocity, but the saintly woman curbed her too rampant piety and only sent the sacrilegious rascal to the galleys.

Let me here remind you that the attempt so often made in England and in our country to fix these villainies upon the Roman Catholic Church exclusively is altogether unwarranted. Protestantism had an identical spirit. If Catholic inquisitors burnt the philoso-

pher Bruno, a Protestant hierarch, with even less show of reason and with circumstances of greater barbarity, burnt the physician Servetus. During the times when the crime could be perpetrated with the connivance of the State it was the crime of the whole Church; and if Protestantism is really less culpable than Roman Catholicism it is only because it has never had equal opportunities. For it may be accepted as a truth established by universal and many times multiplied experiences that no aggregation of power, however moral may be its professions, can be completely virtuous in its practices; and, on the contrary, that when it is beset by inducements it will surely stray from the straight path. We cannot doubt that agnosticism, or what the Church calls infidelity, itself, as ardently as it now contends for freedom of opinion and the right of private judgment, should it ever attain supremacy will imitate its predecessors and adversaries, and, to the extent of its ability, become a persecutor.

Under their severe discipline certainly the men of science were not always as courageous as we might wish. But it does not become us in our security to reproach those who were in jeopardy every hour. To be shut up in a medieval jail with rats and baser vermin, starved, festooned with fragmentary garments rotting on your back, with no charming young ladies bringing you flowers on Sunday afternoons and lulling you with the melodious blending of their sweet voices with the heavenly harmonies of the parlor organ, as would be your fortune were you a hoodlum in the Richmond jail; but, instead, to be visited by a stern, unpitying priest, come not to comfort, but to condemn and threaten—this was no light thing; and to be burnt alive, perhaps with fagots

fabricated of green wood, was probably even worse. We, therefore, need not be surprised at the evasions, humiliating as they may appear, resorted to by learned and noble men in their efforts to declare great truths in the face of malignantly hostile and all-powerful error; that Copernicus speaks of his grand conception of the system of the world as merely the expression of an exercise in mathematics; that Galileo asks that his convincing corroboration of Copernicus shall be regarded as a fiction and a dream; that Descartes conceals his firmly grounded opinion that the animal body is a machine in the description of an imaginary mechanism. The woman Hypatia perished defiantly, and the man Bruno went undaunted to the stake. We honor them for their constancy, but let us not be too hard on others of our brotherhood who, front to front with great dangers, have done no better than Simon Peter did, whose conduct on that morning when the cock sounded his accusing clarion has been impressively contrasted by Dr. Draper, as we have seen, with the conduct of Bruno when in the pitiless hands of the men who claimed to derive authority to destroy the heroic philosopher from the shifty saint himself.

Circumstances have so ordered it that we ourselves are inextricably associated with the Christian form of religion—a form whose intrinsic moral excellence must be acknowledged and commended by every candid man, however firm may be his disbelief in its divine origin. Of its Founder the bitterest revilers of his professed followers have spoken with profound respect. It is therefore one of the most deplorable facts of history that Christianity as it developed and grew strong elected to become the greatest foe to the advancement of learn-

ing and make itself the most potent source of the sorrows of science. To speak derogatorily of the Christian religion is repugnant to the virtuous and generous mind; yet it is impossible to discuss our present topic, the discussion of which is not only strictly legitimate, but pregnant with useful lessons, without uncovering the defacements of Christianity, and showing it to have been the fruitful mother of sin, of crime, and of woes unnumbered. But let us be consoled. It is not the religion of Christ against which this dreadful accusation can be justly brought, but the hideous fabric built up by wicked men who have stolen his livery to serve the devil in. We have but to read the New Testament, teeming with incitements to all the noble virtues, and then to read our books of history to note with pain and regret, with loathing and indignation, how far has been the departure from the simplicity, the beauty and the purity of Christ's own teaching.

It was the unnatural union of the Church with the civil power which gave the Church its maleficent and disastrous strength—a union which began as soon as Christians became sufficiently numerous to be of political importance, and which was assiduously and adroitly managed till at length the relative positions of Church and State were reversed, and the representative of the Church could even dare to arrogantly kick the crown from off the head of a king abjectly kneeling to him. The result of ecclesiastical supremacy was the forcible repression of free thought. The Reformation, as it was started by Luther, effected only a partial release, for the reformers were, as to what they called carnal knowledge, as intolerant as their adversaries themselves. But the chain was broken. And it has been unwinding more

and more ever since till our own days; and now, though it still is rattled, furiously sometimes, it can no longer bind. In England and the United States, the freest countries in the world, and the most boastful of their freedom, ecclesiastical outcry may in the twentieth century drive a college professor from his chair for teaching unwelcome physical, chemical or biological truths and force him into the poorhouse, but it cannot any longer put him in jail. In the querulousness engendered by unappreciated freedom and prosperity we do much grumbling and complaining. But, truly, we dwell in a blessed land. The lines have fallen unto us in pleasant places—yea, we have a goodly heritage. And of our inheritance I know not but that the goodliest is the absolute separation of Church and State bequeathed to us, not by the efforts of pious churchmen, but by the unflagging labors of such enlightened infidels as Thomas Jefferson and Benjamin Franklin.

Science is necessarily brought into collision with theology, for it is by its inherent character constantly overthrowing supernaturalism and bringing portions of its pre-empted territory under subjection to Nature. Ecclesiasticism is the embodiment of theology in its most aggressive form. Always and everywhere it has been the enemy of all sciences and concepts aiming at a just understanding of Nature—to astronomy, to geology, to the doctrine of evolution, to many of the most vital departments of medicine—and, wedded to supernature, which it is beyond the power of man to comprehend, it turns its back on Nature, with which he is in direct and intelligible communication.

It is a great and palpable injustice, often perpetrated by weak-minded or unscrupulous religionists, to stig-

matize the opposing attitude held by scientific men towards some of the tenets of so-called orthodoxy as hostility to Christianity, and even to religion itself. The accusation is little short of slanderous. No doubt the scientific class has its share of evil-thinking and evil-doing men. The opinions of such men on any moral or religious question we justly despise. But science has also its share of virtuous men. Why should these men be hostile to Christianity or to any other religion in whose moral teachings they firmly believe, and to which they endeavor in their conduct, like other good men, to conform? Their hostility is not to worthy religious beliefs, but to the attempt of ecclesiasticism to overrule in matters which are, to say the least, as much in the province of science as of theology. To denounce them, under these circumstances, as enemies of religion is as unjust as it would be—a thing often actually done—to denounce as enemies of virtue those who deprecate the follies committed and the wrongs inflicted in the name of virtue by men whose general conduct entitles them to be called good. Of science it can be rightly said that it equally merits the commendation bestowed by St. Paul on love: it “rejoiceth not in unrighteousness, but rejoiceth with the truth.” And, moreover, in its earnest strivings after the truth, it, unlike its antagonist, obeys the admirable injunction of the apostle to prove all things and hold fast to that which is good.

In this discourse I have directed your attention to what was perhaps already sufficiently obvious, that science cannot advance with ease when it is hampered by a shackled intellect. Still, it was long thus hampered, and I have accordingly further shown you, by historical facts and examples, that perverted religions,

manifesting their perversion by their assuredness and its resulting insolent intolerance, have been the most active, the most persistent, and the most savage foes to free and progressive thought. But the world has been enlightened, and great changes are taking place. It is a striking sign that bigotry is not now the masterful despot it long was when, in our days, Servetus, who was burnt by the Protestant John Calvin for differing with him on some trumpery theological abstraction, has had his expiatory statue erected in Geneva; that Bruno, who was burnt by Roman Catholic inquisitors for asserting that other planets than ours might be inhabited, has been similarly commemorated in Rome; that Thomas Paine, who has been execrated by Protestants and Roman Catholics alike, and who has been styled by Theodore Roosevelt "a filthy little atheist," because he applied a kind of "higher criticism" to the Bible, has had a bust of him set up in Philadelphia. During the period comprised in my own youth and well along into the years of my manhood Roosevelt's opinion of Paine was held almost universally in this country, and to dissent from it would have seriously debased the moral character of the dissentient in the estimation of the community and affected his social standing. I myself was brought up to look with horror on Paine, the vile enemy of God and of himself, as I was taught to regard him, nor am I, even at this day, an enthusiastic admirer of him. But I would be just to the man, and cannot withhold my respect for his sincerity when I see him, caught in the wild whirlwind of the French Revolution, proclaiming beliefs abhorred by his kindred and race, with his neck under the impending axe of the guillotine.

No accurate or candid writer or speaker will hold

truly Christian men responsible for the outrages done under the sanction of nominal Christianity. The worst of these outrages were perpetrated, it is true, in times long past, and we would be very willing to remember them charitably, but that their persecuting spirit, while mitigated, still lingers, and now and then breaks out unpleasingly. Possibly we may agree in the validity of the apology presented by churchmen for the persecution of science, that it was due to "the genius of the age," but we rightly blame them if they nurture the genius of that age and project it into our own. It is to the Christian physician of our time that we can especially look to remove this reproach; for he can endow himself with the high character which a noble religion nobly exemplified confers, while his vocation brings him into relation with the spiritual nature of man, and his views and opinions are broadened by the liberality and catholicity of thought which his department of science is peculiarly calculated to impress upon the mind.

There is an important subject which theology is able to make peculiarly embarrassing to the Christian physician of this enlightened day—the subject of medical science as it is set forth in the Bible. It is far from my intention to offend anyone in this audience by assailing writings which millions of the best of our race for ages have revered as of divine authority. On the contrary, were it fit, I might add my tribute of affectionate admiration to the multitudinous tributes of abler and better men. But this would be of little worth from such a man as I am except as the sentiment of a sincere heart; and yet, too, strict sincerity might require me to append something of dispraise. The little I have to say of the Bible on this occasion has to do exclusively

with its bearing on medicine as a practical science and art.

Even those who are inimical to the Bible are generally willing to admit that it offers a satisfactory basis for religious belief and practice; but no well-informed and candid clergyman, Jewish or Christian, of the present day will claim that it is an authority in science. Those of you who are familiar with it—and I advise all of you to become so, not for the purpose of searching out defects, but for the profit which even an unbeliever can derive from it—must have discerned serious imperfections in its astronomy, its geology, its chronology, and, what most of you are perhaps better versed in, its medical science. No educated physician, however devout he may be, accepts its biology or its pathology; nor does he look with patience on the horde of healers who found their therapeutics on the Scriptures. Here in Richmond, not long since, we saw a little child with diphtheria treated solely by prayers, and dying under the treatment—the sad result of combating a deadly malady by methods prescribed in the Bible. Recently, in one of our city newspapers, you could every day have read this advertisement: “We guarantee to cure indigestion and dyspepsia.—Divine Healing Institute.” Thus very deftly do these sanctimonious greasers, and their fellows, the Christian Scientists also, combine worship of the Almighty Father with worship of the Almighty Dollar. Daniel O’Connell, the famous Irish patriot and stanch Roman Catholic, when the priests remonstrated with him for some of his political performances, gave them plainly to understand that, while he would take his religion from Rome, he would get his politics at home. In like manner, medical men may take their religion

from the Church, but they should get their science from science itself.

It is unfortunate that a scientific teacher, when his instruction, imparted for its legitimate purposes, forces him in collision with the science of the Bible, is likely to be spoken of very harshly. This treatment is very unjust, for assuredly the duty of a teacher of our time is to teach the science of this century, and not that of twenty, or it may be, of forty centuries ago. My discussion of the topics I have been handling will, I foresee, bring upon me some, perhaps much, censure. It will be said that the matter or the manner is evil, or that both are evil. It is easy for the censorious, the straitlaced, the carping, to see evil in anything. I have known a clergyman to rank baseball games with horse racing, classing both as sinful amusements. Possibly they are such; at any rate, they can, no doubt, be made so. But so can attendance on the Sunday church services be objected to by a perverse fault-finder, for it is notorious that a majority of men and women attend ostensibly for worship, but really to contemplate one another, and that a little devotion is mixed with a great deal of ogling and flirting. No doubt great harm can result from this; but should I on this account denounce preachers and preaching I should justly be thought to be as foolishly captious concerning them and their ministrations as I think some preachers have been concerning me and mine.

Whatever may be the limitations set by self-constituted censors for other people, and however subserviently some of these people may respect these limitations, I maintain that the physician has the right to investigate all things whatsoever that pertain to man, living or

dead. And, while I believe that the things I have set forth before you are profitable for the consideration of all who have the intellect and the learning to intelligently grasp them, yet I have forborne to address them to all men, but only to men who are physicians in the making. If, with the Roman poet, we, in a general way, consider that nothing relating to man is foreign to us, because we are men ourselves, we are under a special obligation in this respect if we are medical men also. This is our warrant for investigating whatever pertains to man's psychic nature, undeterred by the efforts made by ecclesiasticism to appropriate the whole subject to itself—not, indeed, for critical investigation of it, for ecclesiasticism does not rationally investigate, but that it may merely speculate about it. It is a peculiarity of science that in its strivings for more light it does not attempt to deceive itself by misrepresenting facts which do not suit its preconceptions or desires. Seekers in other fields may find it expedient to gloss, to conceal, to pervert, or to suppress, but we, who do not cater to the feelings or opinions of any class, or solicit external countenance or support, accept Nature's revelations just as they come to us, and speak freely to one another about them. In this respect we are a guild to ourselves, and do not hesitate to inquire into matters which outsiders, for reasons which they may think are good, consider to be improper subjects for our investigation.

And here I would seriously ask any good and candid man who has heedlessly objected to what I have said of the science of the Bible to pause and thoughtfully consider, and then to tell me, not does he think my course is or is not sensible or prudent, but does he really

think it is honest, it is right, it is *moral* for me to timidly leave young men who look up to me for instruction in science to flounder among beliefs that contradict essential facts and principles in physics, in chemistry, in physiology, in all the biological science which I and the other teachers in this school are striving to impress upon them as truths demonstrated to us by Nature herself? Prudence and expediency may continue to keep us, as it has hitherto so long kept us, silent. But the question, the great moral question, persistently rises to disturb us: Are we who impart knowledge doing justly by those who seek it when we encourage them by our silence to believe what we do not believe ourselves?

Assuredly it is no derogation to a physician to be a religious man. On the contrary, to no other man is religion, in the legitimate sense of the much misrepresented word, more creditable or more necessary. But it is requisite that he keep his religion and his science apart. Much injustice is done to scientific men by the refusal of their adversaries to recognize this necessary separation. Science, as such, is independent of religion and has no religious creed. What, after all, has belief in formulas and creeds to do with goodness? The sorrowful narrative we have been unfolding teaches us that the most exalted orthodoxy may be allied with the most pitiless bloodthirstiness. We have seen the fullest and straitest believers pursue, imprison, and burn to death some of the noblest of mankind. "He hath showed thee, O man, what is good; and what doth the Lord require of thee, but to do justly, and to love mercy, and to walk humbly with thy God?" Thy God, sought after and accepted with all the sincerity of thy

heart and understanding, whether the God thou hast found be the God of the Christian, the Jew, the pagan, or the agnostic.

Nature, to whom we make our appeal, refuses to enlighten us on matters outside the scope of the present world, and is indifferent, not only to our earnest questionings, but to our poor selves as well. We must take her as we find her, neither actively benevolent, nor yet actively malevolent; but steadily moving forever forward, impassive, on her awful way.

“From scarped cliff and quarried stone
She cries, ‘A thousand types are gone;
I care for nothing, all shall go.
Thou makest thine appeal to me:
I bring to life, I bring to death;
The Spirit does but mean the breath:
I know no more.’”

For seeking the truth, for proclaiming and upholding what they believed was the truth, countless men and women, and children, too, have suffered and died. Religion has multitudes of them on its rolls of martyrs, and science can name far too many. For truth's sake, as I have had to relate to you, Hypatia, aged, frail, and a woman, had her brains beaten out; Roger Bacon, pious, inoffensive, and a churchman, was jailed for many a weary year; Galileo, the glory of his country and his age, old and blind, was humiliated, imprisoned and menaced with torture; and Bruno, more faithful to his earthly mistress than the prince of the apostles was to his Heavenly Master, was harried from side to side of Europe and at last burnt at the stake. We who are far humbler workers than they, and living in a nobler

age, have no cause to fear their fate. But truth has not yet fully prevailed. Her enemies are still multitudinous, violent and powerful, and able to inflict grievous hurt upon her votaries. They can take from her defender his social station, his place of honor, his fair name, his bread. But when that is done what has been done? No more than has many times before been done. A fanatical crowd, armed with overwhelming and unreasoning power, has crushed one other puny upholder of truth whose strength could not measure up to his devotion, yet has ignobly failed, as the champion of lies must always fail, to abate one jot or tittle of invulnerable, ever-living truth herself.

Still, human weakness and human prudence compel the question, Is truth, then, worth striving for, if this is to be the goal? It is the glory of science that to this question it answers, Yes. To the noble man of science, as to every other noble man, truth is a divine mistress to be wooed and won. In wooing her he freely spends his days, his strength, his all, and the possession of her at last is the exceeding great reward of all his toil and suffering. For, unlike a mortal mistress, she has no mortal taint. Changing not, her possessor can altogether trust her. She is his abiding comforter in all vicissitudes, in sorrow, in sickness, in death itself. She will not leave him nor forsake him in this world, and, in whatever other world he is to stand, there, too, she will stand with him, and mightier and purer than he will enfold and uphold him in her strong and loving arms.

ADDENDUM TO "THE SORROWS OF SCIENCE"

A SPECULATION

When it is considered how profoundly medicine is indebted to Mohammedanism, that this science, along with other sciences, was rescued and kept alive by Saracen infidels when Christian believers were trampling it to death, and at the dawn of a brighter day was restored to us by these infidels strengthened and adorned, physicians may be pardoned if they manifest a respectful interest in the character and scope of this form of religion and are impelled to speculate on its possibilities and potentialities.

The learned and thoughtful historian of the Decline and Fall of the Roman Empire has been charged, and apparently justly, with the display of a marked preference of the civilization established by the pagan Trajan to that inaugurated by the Christian Constantine, and with regretfully beholding the subversion of the one by the other. This criticism has been urged most forcibly in recent days, when the oppressions imposed by Christianity in its advancement have been thrown off, and men are untrammelled in thought and action. Yet, in extenuation of Gibbon's bias, it may be remarked that his studies had led him to contemplate the dissolution of a grand, powerful, and seemingly beneficial system, whose ruin was being accomplished by the substitution

of religion in affairs where statesmanship was necessary, and by rulers whose orthodoxy was much more highly esteemed than their virtue or ability. It was not unnatural that he should feel something of indignant disgust at seeing a glorious, strong, tolerant, honest paganism corroding away under an inglorious, feeble, intolerant, dishonest Christianity. It must be considered also that when he wrote Christianity could not present an attractive aspect to an eye so scrutinizing as his. Europe showed the Church separated into two great parties ferociously hostile to each other. The most hateful of all the engines of ecclesiastical tyranny, the Roman Catholic Inquisition, was in operation. In his own country the iniquitous union of Church and State existed, and Protestantism had enacted villainous laws against Catholicism, while the dominant Protestant sect persecuted the weaker sects of the same faith. He himself, had he avowed his real religious beliefs, would have been deprived of some of his valuable civil rights, and when he had become a member of Parliament he could not be a participator in legislation till he had made himself a hypocrite in religion. While, therefore, it is probable that few, in our time, will share his preference, perhaps it should be conceded that to a mind trained in the direction in which his was so intent, and under the circumstances influencing it, the opinions he appears to have held were not unreasonable, nor, indeed, altogether reprehensible.

In the progress of his great work Gibbon came to a period of time ominous of another tremendous change in the religious faith of civilized Europe—the change from Christianity to Mohammedanism. It is interesting to recollect in this connection the story, containing a

fact possibly, but a slander probably, of the conversion of Gibbon himself to Mohammedanism. The transformation of Christendom was narrowly averted by the issue of a single battle. Let us listen to Gibbon's own impressive comment on the momentous arbitrament:

"A victorious line of march had been prolonged above a thousand miles from the rock of Gibraltar to the banks of the Loire; the repetition of an equal space would have carried the Saracens to the confines of Poland and the Highlands of Scotland; the Rhine is not more impassable than the Nile or Euphrates, and the Arabian fleet might have sailed without a naval combat into the mouth of the Thames. Perhaps the interpretation of the Koran would now be taught in the schools of Oxford, and her pulpits might demonstrate to a circumcised people the sanctity and truth of the revelation of Mohammed."

Suppose that the issue of the battle of Tours had been adverse to Christianity, that the transformation was effected, and that Europe, and by consequence America, was Mohammedan to-day. Would our present situation be as good as, or worse, or better than it actually is?

A philosopher speculating on this problem, the consideration of which he would find curious and might think perhaps in some degree profitable, would probably regard as a fitting preparation for his inquiry a comparison and a contrast of the doctrines of the two religions and the tenets and practice of their respective votaries. To do this, however, in a satisfactory manner is a task of difficulty, for each religion is divided into numerous sects whose beliefs are frequently widely divergent. The following synopsis aims to exhibit in a

general way the main points of agreement and difference, and may be taken as representing the opinions of the average devotee, but with the admission that the cultured and thoughtful adherent is entitled, in some instances, to construe the statements more strictly or more loosely than they are herein set forth.

Mohammedanism recognizes only one God; Christianity recognizes three Gods, but combined as one, and some of its most influential forms are apparently polytheistic.

Mohammedanism regards Jesus as a man of exalted character and inspired; Christianity regards him as God.

Mohammedanism recognizes a pre-eminent evil spirit, Iblis; Christianity recognizes the devil.

Mohammedanism recognizes good and evil spirits, and angels as ministers of God; Christianity does likewise.

Mohammedanism teaches the resurrection of the dead and a final judgment; Christianity does likewise.

Mohammedanism recognizes a heaven sensuous in its conditions and adapted to the propensities and circumstances of human nature; Christianity recognizes a heaven spiritualized and refined, for the most part beyond the appreciation of human nature.

Mohammedanism recognizes a hell of torment terminable at length for all its victims except a specified class; Christianity recognizes a hell of torment interminable for all its victims without exception.

Mohammedanism possesses a book which it regards as divinely inspired—the Koran; Christianity possesses the Bible.

Mohammedanism recognizes certain men as divinely inspired; Christianity does likewise.

Mohammedanism declares that miracles have been and can be performed; Christianity does likewise.

Mohammedanism teaches predestination, or the predetermined fate of each man in this and in another world; Christianity in some of its most influential forms does likewise.

Mohammedanism enjoins prayers, numerous, cumbersome, and at specified times; Christianity does likewise in a less degree.

Mohammedanism prescribes religious fasts and festivals; Christianity does likewise.

Mohammedanism has no Sabbath; Christianity has usurped the name and transferred the day.

Mohammedanism commands almsgiving; Christianity does likewise.

Mohammedanism commands a pilgrimage to the holy city of Mecca; Christianity in some of its most influential forms countenances pilgrimages to various holy cities and places.

Mohammedanism enjoins frequent ablutions, complete or partial; Christianity does not.

Mohammedanism prohibits the use of certain kinds of food; Christianity in some of its most influential forms does likewise, though the prohibition is restricted to specified occasions.

Mohammedanism makes the total abstaining from intoxicating liquors, gambling, and usury obligatory; Christianity does not.

Mohammedanism makes the kind treatment of the inferior animals obligatory; Christianity does not.

Mohammedanism debases the social status of woman; Christianity exalts it.

Mohammedanism allows polygamy; Christianity does not.

Mohammedanism facilitates both marriage and divorce; Christianity does likewise, though some of its most influential forms hamper marriage and aim to make divorce almost impossible.

Mohammedanism is intensely hostile to idolatry; Christianity is likewise hostile, but in some of its most influential forms practices what is with difficulty distinguishable from idolatry.

Mohammedanism is peculiarly ferocious towards persons it calls infidels; Christianity is likewise.

Mohammedanism commands the propagation of the faith by compulsion; Christianity forbids it, but practices it whenever and wherever it has the power.

Mohammedanism exhorts to virtue and the practice of morality, and denounces vice and immorality; Christianity does likewise. It is to be noted that the conception of what is virtuous, vicious, moral, and immoral is essentially the same with both religions.

In process of time each of these religions, as it grew and became powerful, deviated from the doctrine and practice of its founder, and, in many respects, perverted both doctrine and practice, so that at the present day we have neither a pure Mohammedanism nor a pure Christianity.

There is some reason for the surmise that Gibbon himself regretted that the change from Christianity to Mohammedanism had not been effected. But, capable as he was, his opinions in such a matter need not be our guide. Let each man who is not wedded to the triumphant belief and cares to consider the question think it out for himself. In doing so he should subordinate the

ideas impressed upon him by education and environment relating to a subsequent state of existence apart from the world with which living men are immediately concerned. For we know what we are, "but it doth not yet appear what we shall be." Whatever our teachers may urge upon us about some other world our welfare in this must needs be a paramount object, though welfare here may properly involve some consideration of the contingencies and possibilities of a future state. Which, then, Mohammedanism or Christianity, can give us the greater happiness while we are engaged in the active affairs of life, and the greater comfort when we contemplate death? To the great majority of the men of our race and time the question seems so simple that they will answer it at once, and in favor of Christianity. To a few, however, and they not the least profound, the question seems intricate, and these will hesitate before replying. They may even remain silent—pondering the fact that Mohammedanism was the savior of classical literature and science when Christianity was promoting their destruction, not merely by passive neglect, but by active repression, and that this form of religion is hostile to science even at this day; and, taking into account the almost inevitable result of Mohammedan liberality and encouragement, these thinkers may be drawing nigh to the conclusion that under Mohammedanism long since the absurdities and ignoble adjuncts of the faith would have been swept away and only its rational part have survived, and that we would now be enjoying a religion based on the universally recognized principles of morality and elaborated in accordance with the dictates of reason.

RADIUM: ITS RADIATIONS, PHYSICAL, CHEMICAL AND MENTAL *

A LECTURE TO THE CLASS IN CHEMISTRY

It is incumbent on the teacher of chemistry, at the birth of an element, to promptly recognize the newcomer and greet it with a word of welcome. During my own somewhat extended service in teaching I have had occasion to discharge this pleasing duty near a score of different times. As happens with the great majority of the new-born in other spheres than that of chemistry, most of these elements have developed into very commonplace characters, and are sunk into more or less dim obscurity, and the student is but little afflicted with them. Recently, however, an element has been brought forth of such extraordinary and unexampled activities and potentialities as to make its birth an epoch in science. This is the element named radium. Manifestly this is not to be dismissed with only a cursory notice. But, for a student to be in accord with the educational systems prevailing in our time, it is far more important that he shall be able to pass an examination than it is for him to know his subject; and hence, in order to qualify him for his passage, it has be-

*This lecture is printed as it was delivered in 1905. Some additions and a few changes would be needed to bring it up to date.

come necessary for the teacher to deluge him with so vast a mass of heterogeneous learning that there is no place in the regular course of lectures for an exposition of a mere epoch-making discovery. A study of radium may add profoundly to his knowledge and greatly enlarge his understanding, and it may even enhance his moral qualities by compelling him, as he contemplates the manifestation of attributes which he feels are well-nigh ultra-natural, to "look through Nature up to Nature's God." All this the study of radium may do; but it is futile, after all, for it will not enable him to pass the State Medical Examining Board. Therefore it is that I remove this lecture from the regular course, where it rightly belongs, but where it would be an impediment to the noble ambition of passing, and deliver it here and now, under cloud of night, where, if it does no good, it at least can do no harm.

Though interest in radium is shown pre-eminently by scientific inquirers, intelligent people generally are eager to know about it. Notwithstanding that a most voluminous output has been written and spoken concerning it, we are still constantly beset with such questions as, "What is radium?" "What is it that it does that is so wonderful?" and, which is an inevitable question from our practical people, "Of what account is it?" It is my purpose to-night to try to answer these questions after some sort of fashion, and in a more or less satisfactory way.

Very likely most of you know already all that I shall be able to tell you. Realizing that perhaps I shall present nothing that is novel, I will content myself with the humble attempt to systematize what possibly has been floating about somewhat promiscuously in your

minds, and I shall be entirely satisfied if I can make you feel that I have, in some slight degree, clarified and connected the knowledge of the subject which you have already acquired. In the short time that can be allotted to a lecture I could not, even if under the circumstances it were advisable to do so, enter deeply into the recondite scientific aspects of the subject, and I must restrict my view to some of its salient and superficial features. I may style my discourse, "Radium: Its Radiations, Physical, Chemical, and Mental."

So much has been said of the wonders of radium that very extravagant expectations are apt to be formed as to what it can do, and persons to whom its effects are shown are commonly much disappointed at what they see of them. This is unavoidable, for there is not enough radium procurable in the whole world to furnish forth even a very modest semblance of an illustrated lecture as this is popularly understood. The fact is that most of its astonishing properties are of a sort that cannot be adequately appreciated except by those who are somewhat deeply versed in physics and chemistry; and so, unless you are willing to tolerate such information as I can give for its own sake, overlooking its paucity of illustrative ornamentation and experimental display, it is very possible that you will find me an uninteresting expounder of the mysteries which I aim to elucidate.

Radium was discovered by a woman, Madame Curie, five or six years ago. To trace the steps leading to this discovery we must go back some twenty-five years, when Mr. Crookes, now Sir William Crookes, made his remarkable investigations of what he considered as a fourth state of matter—the ultra-gaseous. His experi-

ments were made by discharging an electric current through glass vessels from which the air had been almost completely exhausted. These vessels have been named Crookes tubes, and one form of them has since become very familiar as the X-ray tube. As far as these experiments concern us at present their most important feature is the singular glow which lights the interior of the tube and its cause. Mr. Crookes attributed the glow, not to what is vaguely called electric light, but to matter itself—to a bombardment of the glass by excessively minute particles rushing against it at an enormous speed. Mr. Crookes' views were much disputed, but the discovery of radium seems to have served to verify them, for the radiations and emanations of radium are, at least largely, undoubtedly material particles, such as can be caught and bottled up, similar to odors of various sorts, which we do not doubt originate from actual particles of the odorous body; and the properties of the radium radiations are, to a great degree, identical with the properties of Crookes' so-called cathode rays. These material particles of Crookes' are the electrons of the present day. According to him they are not solid, nor liquid, nor gaseous, do not consist of atoms propelled through the tube and causing luminous effects when they strike; "but," in the words of Sir Oliver Lodge, "consist of something much smaller than the atom—fragments of matter, ultra-atomic corpuscles, very much smaller, very much lighter than atoms, things which appear to be the foundation stones of which atoms are composed."

During the subsequent years the phenomena of the Crookes tube were sedulously studied, but mostly under the influence of a purely scientific bias. All this time

the experimenters were being flooded with what to us medical men are such extremely practical things, the X-rays, which were streaming from every tube. Neither Crookes himself nor his successors knew this. They knew that a good deal was going on inside the tube, but it did not occur to them to see if something might not be happening on the outside as well. It is true that Lenard, a German experimenter, discovered rays which could pass through certain opaque objects—the X-rays themselves, in fact—but it should seem that Lenard was one of the set of scientific prigs which glorifies abstract science and snarls at its practical applications, and which thinks that the man, for instance, who prints an algebraic rigmarole to elucidate some futile but recondite property of steam is far more deserving than the man who invents and puts to work a steam engine. He published his observations in some esoteric scientific journal, and they were noted by his brethren as to their bearing on various theories and speculations, but that they could be utilized to locate a bullet in the depths of the body was an idea too basely mechanical for them to entertain. Fortunately, Professor Röntgen independently discovered the same facts, and, being a practical man, he has won honor and glory for conferring an incalculable benefaction on mankind. While working with a Crookes tube and using a peculiarly prepared screen, Professor Röntgen noticed that he could plainly see the bones of his hand through the flesh. We may suppose, as is reasonable enough, that his next procedure was to subject his pocketbook to these strange rays, this being one of the stock experiments done by every performer, and that through the leather he saw money in it—perhaps a five-cent nickel, or, maybe, a silver

quarter. Then, indeed, the overwhelming magnitude of his discovery burst upon him, for to hit upon a contrivance capable of revealing anything in a college professor's pocketbook is clearly an achievement whose importance is of the very first class.

As you know, Professor Röntgen's discovery excited intense interest. It gave a wonderful impetus to scientific research in its particular field, but the most important result was the discovery by Becquerel, a French investigator, that uranium—a metal whose compounds are employed to impart a yellow color to glass and porcelain—spontaneously emits rays having characters much like those of the rays coming from the Crookes tube. Thus, a piece of uranium placed together with some object and a photographic plate in perfect darkness will impress an image of the object on the plate, as the X-rays can do; and certain electrical characteristics are common to both uranium and X-rays. At this stage Madame Curie appears. She noticed that different specimens of uranium varied much in their photographic and electrical activities, and conceived the idea that the active substance was not uranium itself, but something associated with it. This idea she worked out at great pecuniary cost, and with manual and mental labor inexpressible, and at last the self-denying, persevering, sagacious, and learned woman was rewarded with the discovery of a new element with characters so strange, and apparently so greatly at variance with principles long believed to have been immutably established, as to make natural philosophers stare and gasp.

Discoursing of my female fellow creatures is a proceeding which, on principle, I as much as possible systematically avoid. But, when I have been obliged to

speak of them, those of you who may have heard me must have been astonished at the kindly candor I have displayed. It is certainly most regrettable that, if I may trust what is declared by those who appear to have studied the matter with the cool impartiality of science, I cannot disguise from myself that woman should seem not to be unimpeachably perfect psychologically, nor even corporally, for I am assured by investigators who profess to be correctly instructed in the true principles which determine ideal physical beauty that, as respects this attribute so generally supposed to be peculiarly woman's own, it would be graceful, on their part, to abstain from putting themselves in competition with our sex. Still, I am entirely willing to believe what I have read and heard told of them—that they possess merits which, in some measure, counterbalance their defects; and it is one of my profound regrets that I have never yet had a vacation long enough to enable me to bestow the time, industry, and patience which, as I understand it, would be required to hunt up these merits. But, with all their faults, I, as well as you, love them still; and the most cynical must own that the world is at least breezier, if not better, for their presence in it.

There are, however, women we esteem for one reason or another, but who are so far removed from us in time, in space, or by some other condition, that love is scarcely the term which expresses our regard for them. Such women we must honor, if in a colder yet in some statelier way; and among these I place the women who are conspicuous votaries of science. Madame Curie is one of them. But there have been others. Two of her predecessors I cannot refrain from naming here to-night. The first is Hypatia, of the Egyptian city of Alexandria,

memorable not only as one of the earliest female students of Nature, but also as among the first of that long, mournful, and glorious procession which we venerate under the name of the Martyrs of Science. She studied and taught fifteen centuries ago in the great School of Alexandria, the memory of which we should not willingly let die, for it was such a noble university as, in many respects, no modern city, or State, or nation has been able to parallel. Here, two thousand years ago, the progenitor of all steam engines puffed and whirled. Here, too, astronomy was magnificently cultivated, achieving results which, bequeathed to us, are valued by the astronomers of our own time as a precious legacy. And, what is especially interesting to us medical men, here the science and art of medicine was most earnestly pursued, notably in the highly practical departments of *materia medica* and therapeutics, and in the fundamental branch of anatomy, wherein, indeed, they exhibited an efficiency to which we nowadays do not venture to aspire, for in conducting their researches they, unless they are belied, dissected not only dead subjects, but living ones, too. Hypatia herself was an astronomer, a mathematician, and a teacher of one of the current systems of philosophy, and she wrote treatises on all these subjects. She was highly gifted intellectually, and an eloquent, cogent, and bold expounder of her opinions, and hereby aroused the savage animosity of those who held opposing views. And so it has been brought to pass that in a town grown up on the thither side of the world, in a land which had for her no name or place, I, who long ago completed my cycle of unreasoning enthusiasm for the sex, am to-night commemorating a woman dead and gone these fifteen hundred years, in the face of men of

a State and country then unborn, in a language whose accents were to her unknown, and sorrowfully recalling how this noble creature was by the ferocious enemies of human knowledge stripped naked in the streets of the city which she adorned and enlightened, her skull beaten in with a club, her body hacked in pieces, her flesh scraped from her bones with shells, and, at last, her relics consumed with fire. *Sic it ad astra Hypatia*, in this manner Hypatia renders back into the common stock her splendid share of the elemental atoms and their energies.

In time the great School of Alexandria was utterly obliterated in obedience to the malevolent caprices of warriors, legislators, and the other ephemeral arbiters of mundane destinies, and presently all Christendom was overwhelmed by that doleful night in whose portentous intellectual blackness it was fated that men should grope for century upon century before the blessed dawn appeared. I am aware that I am straying from my proper topic in introducing these matters, but they are really not so remote from it as it may seem at a casual glance, and I trust that you will pardon me for lingering a moment longer while we contemplate the state of the Christian world at that time. It was a dead world, dead and rotten, a most miserable world, the mass of the people enslaved by debasing ignorance and superstition, and pre-eminently degraded in manners and morals. Yet, during this period, letters were assiduously cultivated, the so-called classical studies were pursued as the embodiment of knowledge, and the whole was dominated by religion—ostensibly by religion, but in reality by its hideous simulacrum, ecclesiasticism. The one thing lacking was physical science. There was

none, or next to none, of this, for investigations of natural phenomena were discouraged or sternly suppressed. Contemplate the picture, for there is no more impressive example of the state of a lettered people without science; and, to deepen the impression, look at the intellectual and material condition of the adjacent Mohammedan communities, where science in all its forms was freely pursued and generously cherished and fostered. Or, yet more convincing, behold medieval Europe setting literature, classicism, and ecclesiasticism to trampling the life out of natural science and perishing for need of the light it had wantonly extinguished; and then compare all its dreary centuries with the one resplendent century which has just ended, when science, fully awakened, roused itself, achieving victory upon victory, till now at last it stands forth magnificently and defiantly triumphant.

I trust that it is not necessary for me to avow that my remarks do not imply any hostility to literature, the classics, or true religion. From my childhood, all along to my declining years, literature has been the delight of my happier hours and the precious solace of my days of sore affliction. I have enjoyed a due participation in the pleasure and profit afforded by the productions of Greek and Roman genius, and I claim, too, that I am, though in a very humble and assuredly a very imperfect way, a religious man. It is impossible that I can be unfriendly to what has blessed me so richly. My only object is to enforce upon the attention of you young men who have devoted yourselves to science, and who are expected to be its champions, the fact that your own people can, no more than could the peoples of the past, thrive under bookish scholarship and narrow and

tyrrannous pseudo-morality, but that to progress and prosper the assiduous cultivation of the physical sciences is absolutely essential. Consider how far we in Virginia, and in the South generally, yet lag behind in this, and let me entreat you to use your influence, which will hereafter be great, in your several communities to remove this hindrance and reproach.

One day towards the close of the eighteenth century, in the city of Bologna, in Italy, there was a lady, the wife of a professor, busied in her husband's laboratory among a number of students who were working with an old-time electrical machine. She was ill, and was herself ruefully skinning frogs which she had been condemned to make into soup and take as medicine, frogs being the fashionable substitute at that stage of the medical sciences for our present-day cod-liver oil. Of a sudden she saw the legs of one of her frogs begin a rapturous dance. Naturally, she was much astonished and desired an explanation of the performance. The students, no doubt, considered that it was sufficiently well accounted for by the pure cussedness normally inherent in frogs, but this theory did not satisfy the lady. Impelled by what we call in men love of knowledge and in women female curiosity, she related the circumstance to her husband, who was a man of science, and engaged his interest in the solution of the mystery. This lady was Madame Galvani, and she had made a discovery which was to transform the world, for she had seen the birth of dynamic electricity.

I believe that I am the only human being who has ever had the grace to utter a word of recognition of Madame Galvani's services to mankind. To Thales, the Greek philosopher, centuries before Madame Galvani, a

kindred opportunity had been presented. He had seen amber when rubbed attract bits of straw and the magnet attract iron, but the offhand conception that there was a devil in the amber and another devil in the magnet explained everything quite well enough for him; and thus, by his dulness and indifference, he assisted in cheating the world out of the practical advantages of electricity for more than two thousand years. Yet Thales is classed as the chief of the Seven Wise Men. What a difference between the hale, opinionated, stupid man and the sick, receptive, and sagacious woman! And what a contrast in the treatment meted out to them! All mankind, for ages, has flattered Thales, but not a soul has spoken a good word for Madame Galvani except the coroner of Richmond, Va. The credit for her observation of the dead frog's dance even has been taken from her and, very generally, ascribed to her husband; and he himself, who earnestly pursued her prompting and builded the foundations of a new and mighty science, has been cruelly slighted. The ignoble rulers of his country turned him out of his professorship, and his science, to which the name of galvanism was given for a time, has been rechristened and is now frequently called voltaism, after his successor and rival, Volta. Illustrious electricians are commemorated in the names given to the units employed in electrical measurements, as the volt, ampere, ohm, farad, franklin, henry, but among these names we find no galvani and no frog.

The story of the beginning of galvanism has been very variously related, but, for my part, I much prefer the woman version of it. It is to me most interesting and most grateful to reverently reanimate the scene of the

Italian lady, bright and alert while dying of consumption, so dear to her husband that his loss of her accelerated his own end, beholding that marvelous display of life in death—the first intellectual being for whom Nature had deigned to unveil this phase of her deeper mysteries; and all unknowing that in those twitching limbs lay the promise and the potency of the telegraph, the telephone, the dynamo, the trolley-car, the electric lamp, and the other mighty wonders which electricity has already wrought, and the mightier ones which it is to work hereafter.

The discovery of radium, perhaps, in its scientific bearings, the most momentous discovery hitherto made, and effected by yet another woman, is the lineal descendant of Madame Galvani's frog. But for the frog there would have been no Crookes tube, which, as I have stated, stimulated the researches ending in radium. Indeed, after radium was found, but for the aid rendered in various ways by this frog-begotten electricity Madame Curie would have had to stop far short of the wonderful height she has attained in the knowledge of its properties.

Madame Curie is a teacher in one of the public schools near Paris. It would be interesting to know what was the scope of the school duties and the amount of the salary which afforded leisure and money sufficient to enable a public school teacher to prosecute a long, laborious, and costly hunt for a substance worth some \$1,500 a grain. We are compelled to admire her corporal and economical make-up scarce less than her mental. Think what she could have done had she been a teacher in our own State of Virginia—a State the Committee on Schools and Colleges of whose latest Legis-

lature, presumably selected from its most intelligent and cultured members, was eager to destroy one of its great and beneficent seats of learning by selling its buildings for old brick and its scientific implements for junk brass and waste glass—keen, as I may say, to murder Hypatia once more and to scrape her bones afresh. The institution thus marked for destruction, and over which the threat of ruin by the hands of our legislators still impends, is the one within whose walls you are now assembled, the Medical College of Virginia.

I have myself been a public school teacher, and have necessarily associated much with female teachers. My heart has sorrowed for the drudgery imposed upon them and the pittance bestowed for performing it, and my soul has burned with indignation at the tyrannical repression and the unmanly, and, in some instances, the ungentlemanly, treatment to which they are subjected by conceited, arrogant, self-seeking, ignorant men put in authority over them by the vicious administration of our public school system. Under this drudgery and tyranny they would perish but for their noble faculty of endurance, a faculty in which, as we physicians so often have occasion to know, the female sex far excels our own, and which has made woman a close second to the army mule. It is past all question that were Madame Curie a Virginia school teacher pursuing a scientific investigation, she would need to be literally a mass of her own radium, manufacturing her own energy, and able to live on her own fat without ever getting leaner. I have read her most remarkable thesis in which she describes her work on radium. It exhibits not only her extraordinary experimental and manipular skill, but an extensive and profound knowledge of physics, chemis-

try, and mathematics. I respect, I honor, I revere this lady, and gladly pay her the highest compliment I can pay any woman by declaring my matured conviction that she is quite worthy to be a man.

We are now quit of the women, with whom I have been flirting in a most unconscionable and unwonted fashion, and I revert to my proper topic.

In the first place, it is to be considered that, in speaking unqualifiedly of the characters of radium, we are not entirely accurate. Radium itself is, as yet, unknown, and what we have learned has been attained by study of certain of its combinations with other elements. It has been ascertained, however, that it is a metal belonging to the alkaline-earth group. When it shall have been isolated it is quite certain that in its properties it will be found to be closely allied to the metal barium. Indeed, Madame Curie is so assured in her knowledge of it that she has announced a definite number, namely 225, as its atomic weight. This confidence as to the status of a substance which no one has ever seen, or otherwise observed, is not unwarranted, nor is the instance unprecedented in chemistry. In the books from which, when a child, I was taught this science the element fluorine had a place, and its atomic weight was given; yet it is only very recently that fluorine has been dragged forth and made to show itself as an actual entity.

The bromide of radium, as this is the easiest to prepare, is the favorite compound for observation and experiment, and it must be understood that when the term radium is used such use, unless we are obviously precise in our language, is provisional and for convenience, and that we are, in fact, speaking of the bromide of

radium or some analogous salt of the metal. These salts in the ordinary physical and chemical relations closely resemble the corresponding salts of barium. Thus, the chloride, nitrate, carbonate, and sulphate of radium are white, like the chloride, nitrate, carbonate, and sulphate of barium, though in time they become yellow, orange, pink, or violet colored; and they impart color to a so-called colorless flame when ignited by it, though this color is not a variety of green, such as barium compounds impart, but crimson—in this resembling the compounds of strontium, another of the alkaline-earth metals.

The radium salts are prepared from the mineral pitchblende. This mineral is found chiefly in Bohemia, and is made up of oxide of uranium and numerous other substances. The process of extraction of radium is extremely laborious and far too complicated to bear description on the present occasion. Tons of material must be worked up to obtain a minute amount of radium. Judging from the published statements, our own specimen of ten milligrams (about one-sixth of a grain) of radium bromide must have required the manipulation of some 100,000 pounds of the mineral.

But the compounds of radium, while they show a general resemblance to the compounds of barium, also possess properties that are unique. Thus, they are luminous in the dark, shining with a glow-worm sort of light, and they spontaneously generate and continuously evolve heat and electrical and chemical energy; and, moreover, they exhibit the property of radioactivity to a most eminent degree. By radioactivity is meant the sending forth of rays or emanations which have the power to affect a photographic plate in the dark, and

to excite fluorescence or phosphorescence in certain substances, and to render the normally non-conducting air a conductor of electricity. The effect on the electrical conductivity of the air has been especially useful in bringing to light the fact that radioactivity is by no means peculiar to radium, but is a widely diffused property; so that we may reasonably hope to find before long some abundant and cheap equivalent of the rare and costly radium. As yet, however, radium, which has been prepared with an activity of something like 1,800,000 times as great as that of uranium (the standard), is far in advance of any other radioactive substance known.

Three different kinds of rays have been detected in the radiations shot out by radium. They are named, respectively, alpha, beta, and gamma rays. Two of these sets, the alpha and beta rays, are actual particles of matter; the other set, the gamma rays, is not matter, but is attributable to waves in the ether analogous to the waves by which we are accustomed to explain the phenomena of light, and is, apparently, our familiar X-rays. The particles constituting the alpha rays differ from the particles constituting the beta rays in their size, which is greatly larger, in their velocity, which is much slower, in their ability to pass through obstacles, which is far less, and in their electrical state, which is positive. The extremely minute, rapidly moving, penetrating, and negatively charged beta particles are, in fact, identical with the cathode stream in the Crookes tube. Taking the radiations as a whole, we are struck with the facility of their passage through various kinds of matter—through wood, aluminum, and the human body, for instance. Our own specimen sends its rays

with ease through its enclosing brass box and an eighth of an inch of brass besides; and, as Dr. Ennion G. Williams has found in his experiments with it, through an inch of iron and a dozen silver dollars.

In addition to its radiations radium emits a kind of vapor, which is called its emanation, but which seems to be, in fact, compounded of several emanations, each having its peculiarities. Perhaps a satisfying notion of the state of the case may be obtained by comparing the emanation to the vapor which rises from hot water, and the radiations to the rays of heat which the water gives off. The emanation, or a part of it, has many of the characters of ordinary gases. Like them it diffuses, obeys the laws which govern the relation of volume to pressure and temperature, and condenses by cold as if it were liquefiable.

By means of its emanations radium can communicate some of its properties to neighboring objects, an effect called induced radioactivity, and the specimen we have here is at this moment quietly infecting me and you. To prevent, or at least diminish, its injurious action on the tissues of the body it is, when it is manipulated, enclosed in a receptacle of thick lead.

In order to convey a distinct idea of the peculiarities of radium I do not know that I can do better than repeat a suggestion which, some time since, I put forth in an article familiarly descriptive of the new element. This is to regard radium as a bit of the active sun substance itself. Its analogy to the sun is indeed very close, for it generates and emits light, heat, and electricity, and it photographs, excites phosphorescence, and affects the skin and subjacent tissues of the human body with a kind of sunburn. Some of its capacities, for in-

stance, its ability to produce X-ray effects, are, it is true, not directly observable in the sunbeam, yet all of them can, by indirect methods, be derived from it. But, especially, radium does all these things apparently without outside help, creating its own energy, ever burning, never consuming, like the sun.

Instances of bodies capable of exhibiting one or another of most of these characters are sufficiently numerous, as, for example, those in which the development of heat leads to so-called spontaneous combustion. But hitherto, in all cases, the sequence of cause and effect has been clearly evident, and the appearance of one form of energy or of matter has been plainly correspondent with the disappearance of an equivalent amount of some other. Thus the balance was maintained and there was no infraction of the principle of the conservation of energy, which asserts that energy must be begged, borrowed, or stolen, but cannot be created, and of the indestructibility of matter—or at least of the indestructibility of the atom—propositions which we have long believed to be firmly established as fundamental facts of science. It is apparently not so with radium, and this it is that makes radium so great a wonder and so mighty a mystery.

When we seek to account for the emission of light and heat from burning coal gas, for instance, we readily explain it by the energy developed in the change of the gas into other substances under the influence of chemical affinities. We know that the gas is used up, or, as we express it, burns up, and that, for this burning to occur, it is indispensable that some of the oxygen of the air shall also be used up. We know, too, that in this transaction there is neither gain nor loss of matter, and

that there is a most rigid correlation among the heat, the light, and the chemical energies. These principles apply the same as they do to the burning gas to all known instances of the exhibition of energy except to the energy shown by radium (and three or four cognate substances), where, seemingly at least, they fail. For radium gives out light and heat continuously, and will, as well as we can judge, do this with undiminished activity for indefinite centuries to come, and without using itself up, as the gas does, and without the aid of oxygen or any other extraneous help, such as the gas is compelled to have. To repeat our analogy, like the sun radium creates its own energy, and, though ever burning, it never consumes.

Heat Effects.—Some of the performances of radium, while of profound interest from the standpoint of science, are of a nature too recondite to justify a consideration of them in such a discourse as I am now engaged with. Taking those of its characters which are most readily appreciated, we will first notice the one which almost everybody can apprehend, its continuous manufacture of heat, which exploit it performs, as I have said, without fuel and without consuming itself—that is, spontaneously. It displays this trait by persistently keeping itself about four or five degrees Fahrenheit hotter than its surroundings. M. Curie demonstrates this experimentally by having two vessels, each provided with a thermometer, one vessel containing a portion of radium bromide, the other containing an equal weight of a barium salt for comparison, when it is seen that the thermometer influenced by the radium stands several degrees higher than the other. Keep in mind that this development of heat goes on constantly,

and that the radium does not waste itself by burning, and that it does not undergo any change of composition. The quantity of heat which is perpetually evolved in this strange manner is truly surprising. It is enough to enable the radium to melt considerably more than its own weight of ice each hour, and to do this hour after hour and day after day without perceptible loss of its own substance. Ten grains of radium could in one day heat about 200 grains (about one tablespoonful) of ice-cold water sufficiently to make it boil. A yet more striking idea of its capabilities is given by comparisons which have been made of it with certain combustible substances. Thus, a pound of coal in burning sets free energy sufficient to raise one pound vertically about 2,000 miles, and similarly a pound of hydrogen, which is the most energetic combustible we can command, can raise one pound 8,000 miles, but a pound of radium, without burning, but spontaneously, can manufacture energy sufficient to raise one pound about 2,400 million miles; and it has been calculated that fifteen pounds of radium are capable of keeping a one-horse-power engine continuously at work for several centuries.

Physiological Effects.—I have mentioned a kind of sunburn which radium can inflict. Our familiar sunburn is not a heat effect, or not entirely so, but is largely attributable to the action of some of those rays in the sunbeam which are called actinic. Nor is the burn which radium can cause due to the heat the radium evolves, but to some other radiation which is of a peculiarly insidious, penetrating, and vicious nature. Its effects may become evident at once, or may delay their appearance for many days after exposure to the radium compound, and they may reveal themselves as mere red-

ness, or as a blister, or as an ulcer very rebellious to treatment and long in healing. Many experiences of its potent severity have been incurred accidentally or voluntarily by experimenters, even from the fractions of a grain with which they had been working. We, therefore, can easily credit the statement that a pound of radium placed in a room would quickly slay whoever entered and lingered there. It is on the skilful control of this formidable property of radium that we chiefly base our hope of utilizing it as a medicinal agent.

On its physiological side it may be noted further that, when it is caused to act on the brain and spinal cord of certain animals, paralysis and death ensue, and that when its emanations are breathed by small animals the animals are killed by them. It is interesting to know that the whole body of an animal thus killed, as well as its separate parts, becomes radioactive, and can impress a photographic plate. Radium is inimical to plant life also, turning the leaves yellow and withering them. It appears that, while it impedes the development of microbes, it does not do so very actively.

Electrical Effects.—As radium spontaneously charges itself with heat, so it is able to spontaneously charge itself with electricity; and, as Madame Curie remarks, it is the first example of a body which possesses this power. She and her husband observed that a specimen which had been enclosed in a glass vessel had accumulated enough electricity to rupture the glass, exhibit a spark, and give a shock. Its radiations also are in an electrified state, and are deflected from their original path by a magnet in a peculiar way, though on the whole much as other electrified bodies are. Moreover, they discharge electrified bodies—for instance, the charged gold leaves

of an electroscope—by rendering the surrounding air a conductor of electricity.

Fluorescent and Phosphorescent Effects.—The ability of radium to arouse the curious glow of fluorescence or phosphorescence is not the least remarkable of its properties. This glow it excites in a large number of substances, and it is in some instances very beautiful and impressive. Among these substances are the salts of the alkaline and alkaline-earth metals, paper, cotton, glass, barium platinocyanide, zinc sulphide, the diamond and several other minerals. So energetic is its power that it can act through the intervening human body. A very striking display of this ghostly attribute was observed by Dr. George F. Kunz and Professor Charles Baskerville when, bearing a fragment of radium bromide, they passed in nocturnal procession through a museum of minerals and saw many of them do salutation to the kingly element by lighting their lambent fires at its approach.

An exceedingly interesting exhibition of phosphorescence excited by radium is given by the instrument called the spinthariscopes, which was invented by Sir William Crookes. The instrument is made by enclosing a little rod tipped with a speck of radium salt in a brass tube, having a screen coated with the phosphorescent variety of zinc sulphide at one end and a lens for observing at the other. The radium bombards the screen incessantly with its projected atomic fragments, giving it an appearance comparable with the shimmer of the moonlight reflected from the surface of some dark and troubled pool.

Chemical Effects.—Besides exhibiting the physical and physiological phenomena which have been con-

sidered, radium produces a number of chemical effects. These are frequently shown by changes of color in the bodies on which it acts. Thus, under its influence glass becomes brown or violet colored, and white salts of the alkaline metals turn blue, green, yellow, or brown. Paper is scorched and rendered brittle, and is, besides, pierced with sieve-like perforations. Yellow phosphorus is changed into the red variety, and the oxygen of the air into ozone. Water is decomposed by it into its constituent gases, and Crookes has found that radium emanations change the color of diamond and crystallized diamond itself into graphite. Some of the radium compounds themselves undergo chemical transformations, which are shown by the development of colors and by the formation of new combinations; thus, the chloride of radium and barium generates compounds of oxygen and chlorine, and the analogous bromide generates compounds of oxygen and bromine. Its photographic or radiographic effects also illustrate its chemical activity. Madame Curie has found the photographic power to be operative at more than two yards distance from the radium, though it was shut in by a glass container. Aluminum offers no great obstacle to the photographic radiations, but most other metals are obstructive. The radiograph taken by radium, unlike that taken by X-rays, does not satisfactorily distinguish bone from flesh. Our specimen is eminently photographic, and by means of it Dr. Ennion G. Williams has made the interesting and instructive radiographs which we have here—some of them made through wood, some through iron, and some through piles of silver dollars.

Transmutation Into Another Element.—One of the most astonishing feats attributed to radium is its transmutation of itself into another element—namely, into helium. This harlequin performance it accomplishes quite rapidly and altogether unostentatiously. Radium emanations have been sealed up in a tube, and when they were examined a few days afterwards the radium was gone and in its stead was helium—a wonderful thing, suggesting, among other considerations, that the dream of the old alchemists of the conversion of the baser metals into gold is not all a dream, and offering an approach to the solution of a problem stated for the chemist by the great Faraday himself—the realization of the once absurd notion of transmutation.

We have now noted some of the conspicuous characters of those radiations and emanations of radium which can be classed as physical and chemical, but, in a figurative sense, there is another extensive and important set of its radiations which may be called mental—whereby I mean the group of speculations which are the outgrowth of the cogitations of sundry philosophical cultivators of science upon the physical and chemical radiations and emanations. Some of these notions are highly ambitious, their scheme being no less than an attempt, by wielding radium as a lever, to break into Nature's most strongly barricaded fastnesses; but others have the humbler and more practicable object of apprehending and explaining the novel phenomena which have suddenly confronted us.

It will be easily believed that especially the deeply-rooted faith in the doctrine of the conservation of energy will not tamely succumb to the assault which radium is making upon it. The new element may in-

deed appear to create energy, but this may be only a pretense after all, and numerous attempts have been made to account for its anomalous behavior on this supposition. Among the most plausible suggestions as to the cause of the spontaneous radiations of radium are that, somewhat after the manner of prolonged phosphorescence, it may be energy gathered at some former time and then gradually emitted; or that it may be energy generated in a change of the nature of the atoms of radium; or that it is somehow connected with gravitation; or that the radiations are some kind of ether waves, undiscovered as yet, which radium can arrest and transform into radioactive energy. None of these suppositions can be said to be altogether satisfactory, but perhaps the last is rather more convincing than the others. An illustration of Lord Kelvin's will help you to appreciate it. If two similar glass vessels are filled with water, and into one is put a piece of white cloth and into the other is put a piece of black cloth, and the vessels are tightly sealed and exposed to the sun, the water in contact with the black cloth will after awhile become and continue perceptibly warmer. This is because the black, unlike the white, cloth has the power of receiving thermal energy imparted by the heat waves of the sunbeam and sending it out as thermometric heat to the water. In like manner, we can suppose, radium receives and deals with some special kind of radiation. The prevalent view is, however, that radioactivity is due to energy liberated by the disintegration of atoms of the radioactive body.

One of the most interesting and important speculations connected with the radiations and emanations of radium is that which suggests the divisibility of the

atom. The very name itself expresses our belief in the integrity of the atom as an ultimate particle of matter, and it is somewhat startling to be told that this particle is, in fact, susceptible of breakage into a multitude of fragments. Yet this statement is made and it is corroborated by experimental demonstrations which are regarded by many eminent physicists as conclusive.

But these experiments have led to a still more startling hypothesis, which is that either electricity itself is matter or that matter is electricity; and, associated with this perplexing conception, is the kindred one that matter may be force, or that force may be matter. It has come to this, that, as Mr. A. J. Balfour puts it, "there are those who regard gross matter, the matter of everyday experience, as the mere appearance of which electricity is the physical basis"; and again, by these views, "matter is not merely explained, but is explained away." Moreover, these experiments seem to require us to believe that the old, discarded, and apparently definitely disproved idea of Sir Isaac Newton's, that light is a material substance, made up of so-called corpuscles, is, in fact, the true one, and that our cherished wave theory of light must, at least in its current form, be abandoned.

If the conceptions I have indicated shall attain realization the consequences to physical science will be indeed momentous, for they imply the overthrow of some of the most solidly built and imposing constructions of scientific endeavor—monuments of the earnest, long-continued, and wearying labor of great philosophers.

Whatever shall turn out to be the truth as to the fixity of the atom, or as to the conservation of energy, it is satisfactory to know that you, as practical men

who are to busy yourselves with practical pursuits, cannot be disturbed by it. As chemists we shall not be required to change our methods or procedures, nor as physicians shall we find that the truth or the falsity of the new views has any obvious influence on the art of healing. Should they prove to be true the worst infliction we shall have to endure is a shift of our point of observation, necessitating a different explanation of phenomena; but this is, as it always has been, so common in our science of medicine that a doctor does not need to grow very old before he becomes acclimated to it.

Two other speculations regarding radium are, perhaps, worth mentioning. Sir William Ramsay is of opinion that radium is not one of the original elements or forms of matter, but a temporary phase of some changing substance, which, starting, it may be, as uranium, and becoming radium for a time, is continuing its transmutation into other things, notably into helium, so that ultimately—after about 1,100 years, he estimates—all the radium in the world will have disappeared. Further, he is of opinion, and many other men of science share this opinion, that the ordinary elements may be products resulting from the breaking down of radioactive elements of high atomic weight; and, by implication, that the several elements are mere deviations from a few original forms—perhaps from only one form—of matter. And Professor E. Rutherford, who has done much to add to our knowledge of radioactivity, ventures the suggestion that the earth's heat, heretofore very generally attributed to a molten interior mass, is the product of the earth's stock of radium.

As to the attitude to be taken towards these revolutionary propositions, I presume to speak for no one but myself. In the words of Mr. Pitt's somewhat mixed figures, "Confidence is a plant of slow growth in an aged bosom," and I, who have been long affiliated with various departments of science, and have seen speculation upon speculation and theory upon theory spring up, flourish, and wither away, am become hard of belief—perhaps unduly hard. This pronouncement of a crush of atoms and wreck of matter has, as yet, to me the weight only of an assertion for whose validity I require more substantial evidence than what is drawn from a hypothesis based upon a theory itself the offspring of still some other theory; and, therefore, I can take no fixed position till more light enables me to discover firmer ground. Opinions are, at present, only in the stage of hypotheses, not yet advanced to the dignity of theories. Even should this dignity be attained I shall not forget that there is still an enormous difference between a theory and a fact of Nature. Exuberant thought is a characteristic of our time, and, as is the case in all exuberant growth, vigor is sacrificed to luxuriant show. Judicious pruning is to be employed by those who value substance above showiness, and at last existing thought must be corrected and chastened by the sober second thought of the more or less remote future. The criticisms we have justly applied to the opinions of our predecessors will inevitably be applied by our successors to our own, with the result that much which is fanciful will be sobered down, much which is crude will be refined, and much which is wrong will be rectified. I cannot doubt that you who are yet on the threshold of professional life

are destined as you advance in years to undergo the experience I myself have undergone, by finding that many things which we your instructors are presenting in all sincerity as facts will hereafter, by reason of fuller and more exact knowledge, have to be qualified, or, possibly, altogether annulled. I believe, therefore, that I am giving you valuable counsel when I advise you to maintain, in matters of science, a calm conservatism and to cultivate the habit of rational skepticism, steadfastly keeping in mind that, as to a fact of Nature, the mere word of no man, however eminent he may be, is as good as his bond, and that his bond is worth nothing unless it is indorsed by Nature herself.

In a consideration of this whole subject you can hardly fail to be impressed with the strong tendency of modern science to recurve upon its path, and favor or adopt ancient notions which it had been in the habit of complacently condemning as palpable errors, or deriding as childish absurdities. Atoms, the unity of matter, the transmutation of one kind of matter into another, the great doctrine of evolution itself, are all oldtime conceptions. I have spoken of the revival of the dead and buried Newtonian theory of light, and I may say the same of Franklin's discarded fluid theory of electricity. Our own special science of medicine can exhibit a large number of these retrogressions, recent examples of which are seen in a return to the old mummy and crocodile medicaments, the use of which is now sanctioned as organo-therapy, and to Witch-of-Endor sorcery, now called hypnotism. However, if we should feel impelled to adversely criticise this backward course we would be obliged to admit that it has been entered

upon and pursued, at any rate for the most part, in a rational manner, and we would have the assurance that, in discussing its character, we should not be dealing with absolute nonsense.

I wish that I could speak as charitably of other retrogressions of our time. To my mind the exuberant and expansive growth of medieval superstition at this the period of the world's greatest enlightenment, and among its most enlightened people, is an extraordinary psychological phenomenon. Never did people know so much as now, and never were they such great fools. It is remarkable that this sudden development and rapid increase of gross forms of superstition are quite recent occurrences, and almost contemporaneous with the vigorous cultivation of the material sciences. About the middle of the nineteenth century ghosts, along with witches, had been practically downed, but they then began to rise again, and now are fully up and flourishing, and are cherished by persons who are subjected to the chastening discipline imposed by such sturdy matters as steam and electricity, and even medicine and the law. During the latter half of the last century the eminent skeptics of the period, men who were not sneerers and scorers like Voltaire and the old horde of so-called infidels, but philosophers, whose intellectual operations were under strict subjection to the precepts and methods of science—Spencer, Darwin, Huxley, Tyndall—waged a mighty warfare on the side of what is popularly termed materialism, or of the natural as opposed to the supernatural. Reaction is the necessary reciprocal of action. These men were exceedingly active, and it is not improbable that the prevalent extraordinary outburst of supernaturalism,

or, properly, of superstition, may be attributable, in considerable measure, to a fierce resistance to audacious science.

Of the multitudinous delusions which are so strangely setting their disfiguring mark on our cultured age that one called Christian Science is, to medical men, the most extraordinary. We are particularly struck with the great number of its disciples and patrons, and the high degree of education, and even of intellectual cultivation, which, it must be admitted, many of these possess. It is truly amazing how any man, or even any woman, of ordinary sense could yield to so paltry a superstition. It should be evident to any one who is capable of exercising the faculty of comparison in the most elementary way that the procedures of these Scientists are essentially the same as those of the derided and despised negro conjurers of Jackson Ward; for, with both the Scientist and the conjurer, there is a vague appealing to some obscure and mystical agency which is expected to perform by means of an immaterial force what the law of the universe has immutably ordained shall not be accomplished but by matter. And, indeed, in this parallelism, the advantage is greatly with the conjurer, for his pitiable folly is excused by his ignorance, while the abject absurdity of the Scientist, with its offensive admixture of irreverence, is condemned by his knowledge.

But it is unhappily too obvious to the student who has made himself acquainted with the workings of the human mind that neither great piety nor great learning, nor even great intellectual acuteness, is an infallible protection against the infection of superstition, and superstition in its most humiliating forms.

It is unpleasant to relate that our illustrious friend, Sir William Crookes himself, is ghost-ridden, and has retrograded so far as to be capable of believing so puerile a thing as that he has seen a woman's spirit materialize itself into flesh and bone, petticoats, pantallettes, paint, puff-powder, and all.* Science itself is tainted by the prevalent infection, and some of the speculations of genuinely scientific men have a form and texture forcibly reminding us of the mystical and fantastic conceptions of the ancient occult philosophers.

I do not know whether to bid you laugh at or weep at our own grave and reverend, our very noble and approved good masters, the managers of the Jamestown Exposition, who last May changed the date which had been formally appointed for the solemn ceremony of breaking ground, for the reason that they were first flustered by realizing that the day was the thirteenth, and then were completely upset by discovering that it was a Friday into the bargain. Another day was selected instead. Great will be their dismay when they hear that the occult powers they so touchingly had hoped to propitiate have pronounced that they have only jumped out of the frying pan to land into the fire, for my learned friend, Madame Zadkiel, astrologist, phrenologist, and ladies' botanic physician, who, in reference to this event, has set a figure, as she expresses it, in conformity with the methods of astrological science, informs me that the horoscope is surcharged

*Since this statement was delivered I have been told by a lady expert in feminine toggery that I am in error as to the pantallettes, the fashion having changed and these garments having been discarded by female ghosts, and females generally, before the era of Sir William's vision.

with woeful forebodings. This figure was erected for the meridian of Jamestown, and for the hour and minute when the official ground-breaker tucked up his sleeves, spit on his hands, and rammed in his spade. Among other dreadful things Madame Zadkiel finds that Saturn is peregrine and retrograde in the ascendant, and beholds not the lord of the eleventh house; and she tells me further that the significator of the Exposition is afflicted by quartile of the greater infortune, that the dragon's tail is where his head ought to be, Jupiter is going to combustion, and the moon is in Scorpio—together a most doleful configuration.

Finally, I am to attempt an answer to the important inquiry: What are the practical uses, present and prospective, of radium? It is a striking feature of our time that a discovery in physics or chemistry is at once questioned not only as to what it is able to do for science, on the one hand, but for art on the other. I have told of the revolution, tending to anarchy, with which the discovery of radium threatens science. As to the arts, it should seem that results, not as disturbing, but as astonishing, may be expected from it when we can get radium in quantity, and if we shall be able to bring its powers under subjection—nothing less than the promise of unlimited heat, and light, and mechanical power—such as the sun offers us, and almost as lavishly and inexpensively. Its peculiar properties, assimilating it to the sun, encourage us to hope for something like this—perhaps to have at command localized or domesticated miniature suns, ready to do for us on a small scale what the greater sun does in its large way. And, indeed, this prospect is not altogether visionary, provided we shall learn how to

originate and control the required conditions. But just here it is well to consider what we have hitherto been able to do with the energies of the sun itself, prodigally poured out upon us for ages, or with other kindred energies already in our hands. How imperfectly have we been able to utilize the all-pervading and ever-present force of gravitation! And, as for the sun energy, we as yet know how to use, and in a rude and flickering way, scarce more of it than what, for the time, the sun riotously, almost disdainfully, hurls at us. We have not even begun to learn how to garner its stupendous waste of light during every day to serve us at night, nor its overwhelming torrents of summer heat to temper the chill of winter. And radium is a fiery hippogrif, hard to capture, and desperately hard to harness when it is caught.

It must be admitted that, so far, the promise held out by radium on its practical side has been very inadequately fulfilled. Of the few encouraging applications of its wonderful powers much the most important, and to us the most interesting, are those in the field of therapeutics. The action of its radiations and emanations is similar to that of ultra-violet light and of the X-rays, and it is found to be more penetrating than the light and more manageable than the rays. A certain amount of success has been attained in this direction with radium, but the measure of its usefulness has not as yet been distinctly ascertained. It was fondly hoped, and for awhile even believed, that it could so act upon the optic mechanism of the eye and brain as to make the blind to see, but this it cannot do. Many other abnormal conditions have been hopefully subjected to its influence, but I am afraid

we are obliged to say that it has failed in all except such as are benefited by the X-rays and the various so-called lights.

It is asserted that radium has been found to be a constituent of some mineral waters. As is well known, it is in many instances impossible to account for the marvelous curative powers attributed to these waters by the results obtainable by chemical analysis, and so, in obedience to the speculative and theorizing impulse which so easily besets the scientific mind, it has been suggested that the infinitesimal amount of radium supposed to be contained in the water is the curative agent. How very small the amount is will appear from the calculation that in 1,100,000 pounds of salts poured out per year by one of the celebrated English medicinal springs there is the equivalent of about five grains of radium. All of us know, or at least have heard it said, that a potato or horse-chestnut carried in the breeches pocket is an infallible preventive of piles or rheumatism, as the case may be. Hitherto medical science has signally failed in its attempts to explain this extraordinary fact. May not radium in the vegetables be the explanation?

The few precious particles which I hold in my hand have with difficulty been procured to enable the physicians of our college to better carry out the beneficent purpose of our pious art, the relief of afflicted men and women. They have already served somewhat in this work. We are using them to-night only as the text and illustration of a discourse, and from here they will pass again into the hands of the physicians. I cannot suppose that I have been able to cause you to regard them as I do, but it may be that I have awakened

in some degree that reverence which befits us all when face to face with the majesty of Nature. These fragments, as trivial as they are, after their manner, which is altogether new and strange to us, vividly exemplify the all-pervading, all-powerful, all-enduring energy—wonderful, incomprehensible, divine. We may well behold them with some touch of awe—this lifeless dust, inscrutably alive.

THE BURIAL OF OPHELIA

"Who is that they follow?
And with such maimed rites? This doth betoken
The corse they follow did with desperate hand
Fordo its own life."

For three hundred years English-speaking people have been familiar with the piteous story of Ophelia, told by the master genius of their literature. Hundreds of thousands of our race have loved and deplored this sweet maid, so beautiful, so good, untimely and tragically dead, and buried with maimed rites. And they have seen her brother, driven by indignant grief, rebel against the all-powerful Church and denounce the insult it puts upon the memory of his pious sister; but it is only within a period quite recent that society has sympathized with his protest, reiterated to generation after generation, so far as to discourage and at length to obtain the partial abolition of the barbarities inflicted under the sanction of the Christian religion upon the bodies of men and women who had committed suicide actually, and even, as in the case of Ophelia, constructively.

We are not authorized to suppose that Shakespeare in depicting the burial of Ophelia is expressing his

own feelings. He was not in the habit of identifying himself with the characters he drew; and, indeed, it is most likely that he agreed with the sentiment of the time, and thought that

"We should profane the service of the dead
To sing a requiem and such rest to her
As to peace-parted souls."

Still, the great expositor of human nature, always faithful to his model, reveals what many a bleeding heart has felt, yet, schooled to think the feeling was a sin, has subdued itself and kept silent.

It is recorded that a coroner's inquest was held upon the dead body of Ophelia. Shakespeare, if he had given an account of this inquest held in Denmark, would, influenced by his customary indifference to the harmonies of place and time, no doubt have founded his description on inquests as he knew them in England in his own days. He, however, does not describe it, and our information concerning the procedures as they were then carried out is not sufficiently full or precise to enable us to accurately picture them. Fortunately, to supply the deficiency of the great dramatist, we are furnished with some help by a great novelist. Charles Dickens, in "Bleak House," gives a particular description of the inquest held upon the body of the law-writer; and, as Dickens had been a newspaper reporter, and therefore probably had been present at many inquests, we are warranted in accepting his account of the formalities which were observed in the case of the law-writer as accurate and characteristic. It may be objected that this is an extremely modern instance, but the objection loses much of its weight when we con-

sider that the three hundred years which have elapsed since Shakespeare wrote Hamlet are a period of time altogether too brief to enable Englishmen to make up their minds to change an antediluvian law form or ceremony. We may therefore quite safely assume that pretty much the same course was pursued with the dead body of Ophelia as was pursued with that of the law-writer.

We may suppose, then, that the body having been more or less rudely hauled out of the water, is critically stared at and liberally discoursed of by the assembled vagabonds pending the arrival of the beadle, who had forthwith been sent for. This functionary on reaching the spot, conscious that his official station justifies him in overhauling the remains, straightway proceeds to rummage them; and having destroyed the relation of each thing with every other thing, then carefully readjusts them in the order and position which, to the best of his knowledge and belief, belonged to them before he muddled them up—and thereby much bewilders the neighboring medical man who has been called in to inspect the body. Last of all, what should have been first of all, the coroner is notified. A jury is summoned, and in due time the coroner meets them at the appointed rendezvous. This rendezvous is, almost beyond question, the nearest pothouse or tavern; for these places have, time out of mind in England, been the favorite haunts of coroner's juries. The jury is then taken to where the body is—wherever that may have been—in Ophelia's father's house, perhaps; on the bank beside the brook, possibly—to view it. This done they return to the tavern, cakes and ale

are provided, the witnesses are heard, a verdict is rendered, and the inquest is over.

It is fervently to be hoped that the facts of the case were fully brought out at this inquest. If so, and if the account given by the queen is trustworthy, the death of Ophelia was shown to have been accidental. It would be the grossest stupidity to deem it suicidal; and, indeed, only a narrow bigot could presume to say "her death was doubtful." Clearly her case is in that category expounded by the logical gravedigger, where, if the water come to the man and drown him, he drowns not himself. And, if all were told, it would, too, have plainly appeared that poor Ophelia was demented. All her conduct unmistakably shows this; and, alas! among the rest, we see the pure and refined maid displaying the saddest trait in the insanity of woman—the awakening of coarse impressions somehow received in bygone times and dormant till now.*

It is my own firm belief that all the facts were brought out at the inquest, and that the verdict of the jury was substantially that Ophelia came to her death by accidental drowning, and that at the time of the accident she was insane—so I deduce from the declaration of the gravedigger, that "the crowner hath sat on her, and finds it Christian burial." A coroner myself, I am delighted to thus discover that my venerable brother and predecessor was a man of sense, hu-

*I am by no means sure that Shakespeare, in putting indecent expressions in Ophelia's mouth, really had in mind this trait of insanity in women. He was certainly, in many respects, an acute observer in medical matters, but he is often also wantonly coarse. Whether he intended it or not, he has added a striking touch of nature to Ophelia's madness; but I, for one, do not thank him for it.

manity and generosity; and I am also moved to waft across the drifts of time my benediction to the sagacious gentlemen of the jury. The coroner was overslaughed by a superior power, as his successors have often been, but it is on record that his conclusion was according to "crowner's quest law," and this is sufficient to demonstrate his rectitude. For, though much unseemly jesting has been directed against this crowner's quest law, it needs only to compare the methods of an unsophisticated coroner's court with those of our other courts to quickly perceive that in the former there is manifested a sincere desire and a straightforward and sensible use of means for displaying truth; while in the latter there is employed every device—deluding and prejudiced forms of judicial proceedings, venal dialectic skill, evil cunning, and, not infrequently, what is indistinguishable from actual crime—which is calculated to obscure, to pervert, or to crush it.

But though the law represented by the coroner had absolved Ophelia, the Church would not adopt its just and merciful decision. With unrighteous and uncharitable harshness it regarded her as one who, as Hamlet states it, had fordone her own life—that is, as a suicide. The dreadful meaning of this judgment is that our dear Ophelia, so bereft that she could not know even that she was perishing, is for this to be abhorred and treated as the vilest of murderers. Hence the maimed rites. Her body is indeed not to be insulted with the customary extreme indignities, for, as the attending priest condescendingly pointed out to her heart-broken brother, her obsequies were enlarged to the extent of allowing her virgin crants, her maiden strew-

ments, and the bringing home of bell and burial, instead of lodging her in unsanctified ground, and throwing on her flints, pebbles and broken crockery. And yet, this concession, gracious as it may appear, had no merit in it. For it did not spring from Christian reverence for the dead and Christian tenderness for the living. The seeming charitableness was a mere exhibition of the obsequious respect for power and station, by the display of which, on occasion, the Church has unhappily too often abased itself from its high estate. It was a yielding to "great command," as the priest avowed; in fact, to adopt the blunt words of the gravedigger, "Will you ha' the truth on't? If this had not been a gentlewoman she should have been buried out o' Christian burial."

I may here recall a parallel instance, which has the advantage of being not only modern, but also of being real. In the year 1811 the Richmond Theater was destroyed by fire during the performance of a play, and a great many of the spectators perished in the flames. There was certainly no lack of sympathy for the unfortunate men and women thus suddenly and horribly cut off; but it was the belief of Christian people generally that to witness a play in a theater was a grave sin, and that these persons had died in the very act of committing it. Moved by a desire to inculcate the fearful lesson which, as he conceived, was taught by sudden death in a theater, an eminent clergyman utilized the occurrence for writing a book of warning and admonition, entitled "A Voice From Richmond," which was widely circulated, and which I remember to have read myself, in believing awe, many years afterwards as a little Sunday-school scholar. Aversion on the part of the Church to the theater as a place of wicked amuse-

ment has persisted to our days, and still extensively prevails. Yet in 1865, when Mr. Lincoln, in a theater, on Good Friday, was stricken, the Church uttered no audible condemnation of him for having done what it held to be a great sin, whose enormity, moreover, was augmented, it should seem, by its perpetration on the most solemn of all the Christian memorial days. I should rejoice could I feel assured that this becoming silence signified the abandonment of harsh and irrational opinions and the adoption of kindlier and saner practices. But there is too good reason for believing that it was nothing more than the Church's tribute to earthly greatness, and that, had the victim been a lowly fellow mortal, his fate would have been seized upon to point a moral like that which was found in the fate of the victims of the Richmond playhouse.

To dispassionate minds the bitter malevolence which has been so long and persistently felt and exhibited by Christian peoples towards suicide cannot but appear extraordinary. We may not be able to justify the toleration, amounting to approval of the act, which was shown by the most enlightened pagans of antiquity, but we must allow that in this the pagans were more consistent in suiting their practice to their principles than Christians have been, and did much less violence to the common feelings of humanity. For a period dating far back and coming down near to our own time, English law has regarded suicide not only as murder, but as murder of a kind peculiarly horrible. The punishment it prescribed for the crime it wreaked both on the criminal himself and on his family; on him by burial on the highway, with a stake driven through his body; on his family by forfeiture of his property. This

law, in all its barbarity, continued operative till the reign of George the Fourth, during which the barbarity was mitigated to the extent of abolishing the features of the highway and the stake, but requiring that burial should take place within twenty-four hours after the coroner's inquest, between the hours of nine and twelve at night, and without Christian rites—the penalty of forfeiture of goods being retained. These iniquities still disgrace the laws of England, but, happily, they are not nowadays fully enforced. At present it is allowable to bury a suicide in a cemetery with the customary rites, if a clergyman can be had who is willing to perform them, and forfeiture of goods will not be exacted provided it can be shown that the deceased was insane.* It is asserted that these practices were not imitated by the English colonists of America, nor have they ever existed in the United States; but there yet remains in the State of New York, as in England also, a stupid survival of the old-time savagery in the form of laws prescribing punishment for an unsuccessful attempt to commit suicide.

The law has never lacked for reasons by which to uphold any of its villainies, and, in defense of its procedures against suicide, it plants itself upon its piety and patriotism. According to the venerable legal luminary, Sir Matthew Hale, "No man hath the absolute interest of himself, but, first, God Almighty has an interest and propriety in him, and, therefore, self-murder is a sin against God; second, the king hath an interest in him, and, therefore, the injunction in the

*Some changes in the English laws make them now (1908) much more liberal and humane.

case of self-murder is that he feloniously and wilfully did kill and murder himself against the peace of our lord the king."

We, however, have no occasion for surprise that, in a matter of this kind, the law displays neither sense nor justice. But we have the utmost right to expect that the Christian Church, in dealing with it, shall be both wise and just, and that it shall be actuated by the spirit of generosity and humanity. Of all the practical benefits which religion is able to confer upon the living none is more reasonably to be expected from it, and, at the same time, is more precious than the consolation which it offers to the wretched. The Christian religion is for a vast multitude of our fellow creatures their supreme solace under intolerable sorrow, their rock of refuge in a sea of troubles. In administering the high and holy office of comforter it can be said with justice that the Christian Church has, to a great degree, done faithfully and nobly; but it can also be said, reluctant though we may be to say it, and with no less justice, that, with respect to suicide, it has often perverted its office, and that it long acted, and even now at times acts most unfaithfully and ignobly. How painfully at variance with the attribute of tender compassion we intuitively ascribe to it is its ignominious treatment of the corpse itself. It is in this as if the Church holds a belief or a suspicion that a dead body is not altogether dead, and that it is still susceptible to insult and humiliation. And yet it knows that the palsied tongue cannot cry out for pity, and that the poor hands cannot be raised in deprecation. If it indeed has this belief or suspicion, how inexpressibly unworthy of it is the abuse of its power.

If it realizes that it is, in fact, dealing with a mass of unperceiving and insensible matter, how absurdly puerile are its efforts to inflict its contempt. Surely to rational minds it should be obvious that the funeral rites we observe can, at their best or at their worst, be significant or impressive only to our living selves, and that they are nothing to inanimate clay.

And here it is, where the living have become involved, that the Church commits its great dereliction—a dereliction of such a nature that, as I conceive, we shall not be going far astray if we call it a crime. The ignominy put upon a dead body, unworthy and shamefully and scandalously unworthy as it is of a Christian Church, is at least impotent. The dead defies it. Far otherwise, though, is the effect of it upon the living. For innumerable human beings the last rites performed over the departed father or mother, husband or wife, son or daughter, brother or sister, possess an awful import; and for them the condemnation of the Church foreshadows the final judgment. Who is to picture the misery of souls whose faith gone wrong thus binds them to despair? In all human experience there is no sadder thing than to find an almost omnipotent power and authority, whose foundations are established in the purest benevolence and which incessantly vaunts its love of man, at a supreme moment itself piling upon the accumulated horrors the most appalling of them all. So repugnant is this to every good instinct of our nature that we cannot wonder when men revolt and disdain these worse than heathenish ministrations. To many of us, too, it appears most incongruous and unpleasing to see a minister of religion bestowing the benediction of the Church upon a

crime-laden villain because the apparition of the gallows has driven him to utter a series of words which are construed to be atonement for the black murder of one or a score of men, women or children; and then to see that this minister has nothing but a malediction for the poor wretch who, when impelled by the irresistible urging of despair he has killed himself, has, after all is said that can be said, in taking life, taken nothing that is not his own.

Hamlet, in extreme despondency, laments that the Everlasting had fixed His canon against self-slaughter. In thus recognizing the prohibition of suicide as a divine ordinance he was in accord with a deeply-rooted Christian belief and doctrine. Most Christian people have steadfastly believed the doctrine, apparently considering the truth of it as self-evident; and, consequently, few of them have thought of carefully inquiring into its validity. And yet I apprehend that a candid examination will show that what can be urged in favor of the proposition is very far from being conclusive; and, in fact, that not only is direct proof of it altogether wanting, but that such collateral testimony as can be produced is not easily received till the reason has been forced more or less into subordination. Nowhere in the Bible is suicide expressly forbidden; and in none of the accounts of suicide therein recorded do we find any statement which indicates that it is a crime or a sin, or even that it is blameworthy. These are the facts; still, those who do not like their bald simplicity of course may construe and explain them to suit their views of what they were intended to mean and what they were intended to teach. Many of such expositors have interpreted the facts in the light of

that commandment which says "Thou shalt not kill," arguing that, if it is bad to kill another person, it must be even worse to kill one's own dear self. Only very limber-jointed logic, it should seem, would be able to draw such a deduction from such a premise. A clear-headed and unbiased investigator, after full consideration of the subject, will, I think, find himself obliged to conclude that the canon against self-slaughter is not of divine, but of ecclesiastical, fixing; and that the conviction of the Church that suicide is murder, and murder of a peculiar heinousness, is without warrant from Scripture, but has been attained by the misuse of analogies and by erroneous reasoning.

Pius the Ninth, it is related, on being asked to give the benefit of his powerful influence to the English Society for the Prevention of Cruelty to Animals, declined to do so, on the ground that he could find in the Scriptures no recognition of the right of the inferior animals to receive humane treatment from man. Far be from me the presumption of supposing that I am qualified to instruct the Head of the Church in the understanding of the sacred writings; yet there is a text which says, "A righteous man regardeth the life of his beast"; and I venture to observe that the scrupulosity which has rendered this scripture so restrictive that it cannot be applied for the relief of a tortured dog should, it seems, be not less effective to prevent the expansion of the general command not to kill into authority for perpetrating a special barbarity on human beings.

I am glad to be able to believe that there are now among the members of the various Christian bodies a large number who do not sympathize with the authori-

ties of the Church in their harsh treatment of suicides; and that, indeed, to the credit of human nature, this opposition has, to a greater or less extent, existed always. As indicative of this state of feeling I recall an occurrence in Richmond which took place when I was a child, which greatly impressed me then, which has continued to impress me since, and which, I doubt not, has had an influence in causing me to write this paper. A poor creature suffering from delirium tremens jumped from a window and thereby killed himself. His friends applied to various Christian ministers to give him Christian burial, but all declined to do so, for he was a suicide. As a last resort they betook themselves to an ostracized sort of clergyman, who had ventured to Richmond in an attempt to propagate the heterodox tenets of so-called Universalism. The heretic preacher not only buried the suicide with what, in his heterodox way, he believed to be Christian rites, but he even had the effrontery to speak of the drunken, self-slaughtering castaway as "our brother." The orthodox clergy were naturally much scandalized by the profane irregularities of the interloper. But the community applauded him for what he had done. It was a community which was, in religious matters, narrow and prejudiced to a degree not easily realized in these liberal days; and it may have been that our people were not much disposed to regard the Universalist minister as a Christian, but they did not fail to see that in his conduct, when he was dealing with the frailties of his fellowman, he showed himself to be more Christ-like than were others who had arrogated to themselves the Christian name.

It has not infrequently happened to those who, when discussing suicide in its ethical and religious aspects, have viewed it in a liberal and humane spirit, to find themselves stigmatized as not merely apologists, but as advocates of the practice. For there are, unfortunately, persons with minds so constituted that they cannot, or will not, distinguish between an action itself and what is incidental to it. If there are such persons among my readers, and if they will believe me, I desire to assure them that I approve the act of suicide not a whit more than they do; nor would I, any more than they, recommend it or advocate it. Nor, in what I have said in this paper, is there any covert hostility to the Christian religion, or to any denomination or sect which professes it. Indeed, in recent times, some Christian denominations have, in their attitude toward suicide, become as liberal as I myself can desire, and, therefore, of course, the strictures on the Church which I have felt constrained to make can have no application to them. What I have tried to do is to help, in some measure, to Christianize certain Christians—so far, at least, as would be the removal from them of a stigma of barbarity from which even the civilized pagans had freed themselves. From time to time my office as coroner has compelled me to become acquainted with atrocities resembling those to which poor dead Ophelia was subjected; and, powerless to avert them by reasoning or remonstrance, I have fully shared the indignation expressed by her brother Læertes at the reproach which religion, taking a perverted view of its functions, was thus fastening upon itself, and at the shocking cruelty it was inflicting upon its votaries.

And now, sweet maid—gentlest and most innocent of victims, so tenderly beloved, so touchingly remembered by all who have ever known of thee, whom I have invoked to help me in my pleading for compassion on frail and hopeless ones sorely beset and tried beyond their strength—farewell! Sad symbol of many another flung forth along the dusty years from thy days on and on even to these of mine; of those whose life, like thine, was unsullied, yet to whom because of ill-starred death has been unjustly meted cruel ignominy by ministers of charity and love turned strangely recreant. Far, far, remote from thee, in time, in place, in all things save in human sympathy, but by this made thy brother too, like him,

“I tell thee, churlish priest,
A ministering angel shall my sister be,
When thou liest howling.”

OLD-TIME SCHOOLING

Numerous investigators are inquiring with much interest into the mysterious, startling, almost magical ways of children. It has been my good fortune to be intimately associated for a considerable part of my mature life with large numbers of these embryo men and women, and I have contemplated their mental manifestations with a curiosity which would often be exalted into wonder, growing at length into an earnest longing for the power to read the riddle of their minds. They connect, it seemed to me, the present with the past—with the very remote past, indeed; and I felt that as the embryologist by his peculiar researches finds himself able to deduce the progress of physical life from its beginnings, so the student of the mind of the child, could he understand and interpret it aright, might instruct us in the origin and development of the human intellect. Whether these notions are fanciful or not is, after all, of little practical consequence, the problem being, apparently, too intricate for solution; for, independently of its intrinsic difficulties, it is complicated almost hopelessly by the circumstance that the child's mind is not observable in its pure form, but is continuously contaminated, as we may term it, by his adult environment. Still there is a fascination in the subject well fitted to stimulate the tendency to occult studies, common to all mankind, and which is

by no means altogether dormant even in the staidest and most chastened investigator of Nature.

A history of the ways of children at different stages of the world's progress would certainly be very interesting, even if we choose to suppose that it would not be very instructive. There is a time reserved for all of us who shall become advanced in years when we will feel a charm in these reminiscences, and will thank the kindly hand that draws aside for us the intervening veil. Here and there, no doubt, are men and women who are qualified to describe the boyhood and girlhood of as many as three generations, and I am persuaded that in these descriptions the garrulity of age could very pleasantly expend itself.

The life of the child is inseparable from his education, and this is embodied in the school. It is the purpose of this article to tell something of schoolboy life as it was experienced by me. My account must necessarily be fragmentary and superficial, but I trust it will be found sufficiently explicit to enable the reader, whether of the older or the younger generation, to satisfactorily compare or contrast, as the case may be, the educational training familiar to him with that which I, and a large proportion of my contemporaries, had to undergo.

I was educated in Richmond, Va., and, first and last, I attended a great many different schools. The management was much alike in all, the general plan of discipline and instruction being the same, with variations in detail and degree. Even in those days there turned up an occasional sample of a tribe which has since become the portent and the terror of our age—the educational faddist. I remember then hear-

ing some talk of the "Prussian System." What this system was I do not know, but I have in my subsequent reading come across the circumstance that Herr Sulzer, Frederick the Great's School Inspector, advocated a system of generous dealing with youth, basing it on what he asserted was the fact, that the inborn disposition of man is to do good rather than evil; whereupon Frederick sadly replies, "Alas, my dear Sulzer, I see you don't know that damned race of creatures as I do." Certain it is that all the earlier teachers I encountered were decidedly of Frederick's opinion—all but one—a most kindly old medical gentleman, who started out on Sulzer's system, and went into bankruptcy before the end of the second week, ruined, I fear, by his benevolence. In fact, the doctrine of innate depravity was the foundation on which the whole educational fabric was erected, and education was held to be chiefly a remorseless and eternal warfare, not for destroying or supplanting the depravity, which all agreed was manifestly impossible, but for merely keeping it temporarily under. And there was no escape for us from the consequent beatings and bangings, for our parents were themselves firm believers in the doctrine, and applauded and encouraged the teachers in their conflicts with the devils of which we were possessed. Hence, much the most important qualification of a teacher was muscularity and no scruples in exercising it aggressively. Mental power on his part might be desirable, but bodily vigor was absolutely indispensable. Discipline then, as it commonly is now, was considered to be the crowning achievement of a good teacher, though the means for establishing it were as different as life is from death; for it was not then, as

it is now, a deadening repression of the faculties, but a most lively, ebullient, uproarious stimulation of them.

The stimulants employed were of various kinds. Indeed, anything whatsoever that was handy was made use of. I myself have had experience of switches, leather straps, detached and fastened to wooden handles, slate frames, rulers, pieces of chalk (not the modern crayons, but substantial chunks of genuine calcium carbonate), dictionaries, "Scholar's Companions," and similar weighty educational works, obscure and mystical articles belonging to female apparel, hands, fists, and sometimes the knees and feet of my instructors. It is very usual for persons to glibly say, in after life, that their punishment at school was good for them, and that they never got a lick amiss. I cannot and will not own to this. I will not assert that I was ever treated with actual brutality, but I can recall instances of unreasonable severity and of rank injustice towards me. To this day I am indignant with a man who beat me when I asked him for information on a matter of physics. He chose to consider my question to be silly; but I now know that it was a natural one for a little child to ask, and, moreover, that it was one requiring some thought to answer. His conduct wounded my feelings deeply, and, what was worse, nearly destroyed his usefulness as my teacher, for I did not ever dare to again apply to him for information. Indeed, one of the characteristics of our teachers was an indisposition to respond to inquiries in a straightforward and civilized manner. Very commonly, upon an humble petition for enlightenment, all the help vouchsafed was a rousing of the mental faculties by vigorous thumps on the dome of thought itself, or a general shaking

up of the whole intellectual machinery by means of the claws of the master fastened to the jacket collar of the disciple. But, notwithstanding they would fain have had us believe that these energetic procedures were inspired by a zealous desire to properly advance us on the road to learning, I have a fixed belief that many times their castigations of us were only convenient subterfuges for their own ignorance.

Having tested this method fully in my own person, I cannot say that I altogether approve of it, and in my own teaching I have rejected it and adopted an entirely opposite one. No child has ever asked me a question, however absurd it may have seemed to my maturer mind, that has not been respectfully and kindly considered, and I have always made my pupils feel that they could speak to me without apprehension and confer with me freely. My social and comfortable way of imparting instruction has brought some censure from those who are of the opinion that sternness, or at least gravity and formality, are essential attributes of a teacher; but my own experiences at school convince me that the highest quality a well-informed teacher can possess is the ability to secure the familiar friendship of the pupil—a want of which ability on the part of most of my instructors was sadly felt by me. It is a great evil when a teacher ignores the fact that he or she, too, was once a child, and fails to profit by the bad as well as the good lessons then learned. Many present-day teachers think as I do concerning their relations to pupils, and would teach as I did were they permitted to do so, but the ideas of discipline still prevailing among the dominant officials, exaggerated and in many

respects erroneous, as I am compelled to believe, preclude them from doing as they would.

In this connection I will state a somewhat striking fact, which I have often pondered on. Of course great numbers of my school companions grew up into excellent men and women and acted their parts in life with credit to themselves and advantage to the community, but the only ones among them who have become distinguished in a wide sense, gaining national reputations for scholarship and learning, received the finishing touches of school instruction at a school where there was absolutely no discipline; where we were allowed to walk about and to talk with each other during school hours just as we pleased, with nothing to check us except monthly or bi-monthly an excruciating yell of "Silence!" from the master, and, very rarely indeed, a slate desperately slung by him from one end of the room to the other. It was a sort of babel and bedlam in harmonious combination, and yet I was taught well and learned well there. I should also state that the master of this school was most generous in giving us information whenever we asked for it. He did not think with some other teachers that because the word education is from the Latin verb "*educō*, to draw out," education itself logically consists in dragging our very souls out of us. Nor did he require us to rediscover by next morning what Sir Isaac Newton and similar able persons had spent years in finding out. He told us all about it on the spot, and the facts thus imparted were stowed away as a part of our stock of knowledge, leaving us ready to receive more. I gratefully remember this school, for it was a pleasant place in which to pass the time, and the teacher treated me as

if he believed that I was a human being, not knowing as much as he did, and needing to be helped.

The most brutal instance of the infliction of punishment I ever saw on the part of my teachers was the case of a boy who had in some way offended another boy to whom the teacher, for no sufficient reason that we could discover, was insanely attached. It was a most insignificant offense, but the teacher resolved that it should be signally expiated. Calling the whole school to attention, he made the boy remove his jacket and kneel at a chair, and standing over him with a cow-hide, which he had borrowed from a neighboring stable, gave him a fearful lashing. Casehardened as we boys were, and generally indifferent to each other's calamities, this exhibition powerfully affected us. Though burning with indignation and pity, and ashamed of our teacher, who was also, I am sorry to have to say, a minister of the Gospel, we could do nothing but look and listen at our writhing, screaming companion, vainly begging for mercy. The boy had no father to protect him, only a mother and sister, incapable of doing more for him than to take him away from this cruel place. The man subsequently left the city, and in another part of the country, after many years, became an eminent theologian, and, it may be, a Christian also. Long after I had attained to manhood he revisited Richmond, and the opportunity was afforded me of hearing my old teacher preach. I did not avail myself of the opportunity—I would have listened to the devil sooner.

The teachers I contended with were generally considered to belong to a mild type of the order, but there were others whose reputation for bloodthirstiness and diabolical animosity towards the young of the human

species was so established among us boys that we shivered with apprehension whenever we contemplated the possibility of at some time getting under their dominion.

"Happy schoolboy days" is a phrase inextricably woven into the fiber of our language, and everyone speaks of the thing as if it were a matter of course. It seems ungracious to dispute it and inquire if there is not something of fallacy in it. Still, we may ask, can it be happiness to be a prisoner quelled and dominated by a taskmaster who is often an unreasonable tyrant, at a period of our life, too, when imperious Nature within us is incessantly urging to freedom, activity, and hilarity? The abounding vitality and vigorous resiliency of youth indeed enable the child to endure his condition, but we may be permitted to doubt that he is happy in it; and we may suppose that, while school days are bright and joyous when contrasted with the evil ones too sure to come after them, but little of this happiness is the contribution of the school itself. This, at any rate, is the conclusion I must accept for myself as the outcome of a serious review of my experiences with schools and school teachers.

The establishment of public schools has so changed the former conditions that the old-time teacher is now nearly eradicated and his disciplinary methods have passed with him. The public school teachers are controlled by the principals and superintendents, or, correctly speaking, in most localities, by the members of the school boards, and thus their individualities are suppressed. While it must be admitted that this condition has its own evils, many of them of a serious nature, yet it has the great advantage that it nearly eliminates the irrational and, at times, barbaric dis-

plays that too often were characteristics of the ancient pedagogue.

The methods of instruction were generally plain and simple. A lesson was assigned, with the option of getting it or of being whipped. We were not obliged to get it; if we elected to be whipped instead it was considered an entirely satisfactory equivalent. Indeed, I have known a pupil to seriously disappoint and grieve his teacher by succeeding when, in accordance with his usage, there was a mutual understanding that he would fail. We were allowed to get the lesson when and how we could, but with a minimum of help from the teacher. To get a lesson was to commit it to memory; and to do this in a lump, so as to be able to repeat it word for word, was held to be the perfection of scholarship. It was unnecessary to comprehend it—to be able to say it was all in all. Of course, memory was by far our most valuable faculty, and it was assiduously cultivated. So proficient did we become in memorizing that there were several children of my time capable of repeating the Shorter Catechism from beginning to end, including all the references, literal and numerical—to me a marvelous feat, which I have always regarded with most respectful wonder. I believe there is now an expurgated edition of this volume for the benefit of the feeble-minded youth of this generation, but we used the original work. We had never seen the Longer Catechism—if, indeed, there can really be one longer than the Shorter—but, had we encountered it, I am reasonably confident that, in the fulness of time, we could have mastered it.

There is one horror inflicted upon children nowadays that we were mercifully spared. We did not have to

undergo the ordeal of final examinations. In these later days I myself have assisted in engineering many a one of these devices, and thereby, in the name and for the sake of education, have caused great and widespread misery to children and parents; and what I have in this way learned justifies me in stigmatizing these examinations, as they are commonly operated, as being little better than elaborate applications of systematized torture, dangerous, and sometimes ruinous, to mental, moral and bodily health.

Few illustrative appliances were used in teaching. At one school there was a cube-root block, and at another I think I once saw a terrestrial globe. Only one of the schools I attended possessed physical and chemical apparatus, which, however, was regarded as sacred and shown to us very scantily and only at long intervals. Physics and chemistry were very attractive to me, and it was fated that they were to be very important features of my after life, but I got scarce any practical knowledge of them from my schools. Fortunately I became acquainted with a gifted contemporary who, starting as a natural philosopher, has gently glided on into a fireman, a machinist, a sign-painter, a property-man of the theaters, a compounder of fireworks, a lecturer with the magic lantern, an inventor of perpetual motion electric machines, an analyzer of spring water by taste and smell, and through many other gradations of existence, and is now serenely spending the evening of his days as a peripatetic observer of men and manners. He had an excellent and extensive collection of philosophical apparatus which he kindly exhibited and explained to me, and to him I am indebted for my first real instruction in this field.

My first instructors were of the so-called gentler sex, and in all my earlier schools there were both boys and girls. It is needless to say that, for the most part, the boys looked down on the girls, or up to them, as the exigencies of relative size demanded, with profound contempt, and that the girls despised the boys. Why the two sexes in their incipient stages are normally so hostile to each other is a phenomenon which so far has not been made clear by any philosopher who has turned his attention to the matter. Perhaps, in the beneficent economy of Nature, it is designed as a kind of probationary exercise by which they obtain an antepast of the estate of matrimony, to which most of them are foredoomed, and a seasoning for what they will have to undergo when inextricably linked together. Perhaps this is so, but I have myself always interpreted it to be intended as a kindly warning, and have kept unlinked.

My most disagreeable experiences with the girls grew out of the iniquitous system of monitors, which was in great vogue at that period, one of the girls being set up as spy over the other children. A mean girl can be amazingly mean when she wants to, and can surpass all other creatures in malignity. One of these girl monitors I can never think of but with peculiar horror. She looked upon me from the very first with great aversion, for no reason that I know of but that I was a little boy and she was a big girl. One day at play-time she had mounted into a tree and had ensconced herself in a comfortable notch. This tree supplied the switches used in our school, but notwithstanding its baleful associations it was much esteemed by the children, who climbed into it to eat their lunches, as the

precisians of these times denominate what we called snacks; for it was conveniently constructed and of an accommodating growth, affording nice roosting-places easily attained. On the occasion in question I was peaceably climbing up when the big girl malevolently kicked out her big foot into my little mouth. Exceedingly wroth at this indignity I laid hold of her leg, pulling it and twisting it, and screwing her out of the tree; tumbling her to the ground and breaking her neck, as I fervently hoped, though it turned out to be only her tortoise-shell back-comb. This exploit sealed my fate. She kept her eye on me forever after, and reported me unceasingly—as an incorrigible idler if I looked up from my book, as a hypocritical pretender to love of knowledge if I looked down on it. It was the death of the tree, too, which pined away from loss of its foliage, used up in switching me.

But all girls are not alike, at least, not exactly so; and some of them are better than others, or, more accurately perhaps, less worse, as I shall presently demonstrate.

My female teachers were the ones who introduced me to English grammar—a hideous specter that continued to pursue me to the last of my school days. Nearly all of such practical knowledge as I possess of the art of correctly writing the English language has been derived, not from grammars, but from acquainting myself with the works of standard writers and from that invaluable book called “Five Hundred Common Errors in Speech and Writing Corrected”—now, unhappily, out of print—driven out, I apprehend, by the systematic treatises of those cloistered miscreants, the grammarians, who are continually sending forth from their dens fear-

ful plagues to afflict the children of men. For my part, I regarded, and still regard, English grammar as the sum of all villainies; and, among all its blighting congeries of concatenated complexities, I look upon the subjunctive mood as the very worst.

It is perfectly well known to all who are qualified to judge that from the days of Adam down to these of the female novelists there has never been even one fully grown and matured man who has succeeded in mastering English grammar, and that the insane asylums are, or ought to be, crowded with people who have tackled the subjunctive mood. Yet we little children were required to attempt this impossible task. We had for our text-book a treatise admirably full and thorough, being made up largely by abstractions of the most soul-withering portions of that awful volume, Lindley Murray's *Octavo Grammar*. Fairness requires me to state that our teachers did not insist that we should understand this subject, since their consciences, seared as they were, must have been unceasingly smiting them with a guilty knowledge of the fact that they could not understand it themselves—English grammar, in truth, being like certain stupendous cosmic problems, which must be given up as insoluble as long as the human mind is circumscribed by its present limitations. It was only necessary for us to commit the statements in the book bodily to memory and to repeat them on demand, word for word and letter for letter—any attempt to express an idea in our own language being particularly obnoxious, and at once suppressed as a sacrilegious tampering with Mr. Murray's inspirations.

This was the status of English grammar in the school where its mysteries were first unveiled to me. I was

unable to conform to my teacher's requirements, and could give only a most unsatisfactory account of the subjunctive mood. She bore with me as long as she considered it to be judicious, which was not very long, and then sentenced me to imprisonment with hard labor, ordering me to stay in during all playtime and study that section of the grammar treating of the most abhorrent features of this mood. Moreover, she took my snack from me, and so left me till by fasting and humiliation my crimes against Mr. Murray should be burnt and purged away. She did not, indeed, require me to pray, and I had not yet learned how to curse, but I could cry, and I did; for my heart was broken, overwhelmed by the mortification I felt at imbecility so profound that it could not comprehend even the subjunctive mood and by the disgrace this had brought upon me. And there could be no retrieval from this state of degradation; for the book was printed with type ruinously fine and was scarcely readable by my imperfect eyes. Poor little Bill!—I declare that the attenuated extenuation who used to be you, though in him there is now left not one original atom of yours, as he thinks of how you were treated, is almost ready to cry over you himself in sympathy, as though he were your mother and you her shamefully outraged child.

Very probably a jury of teachers, even of the present day, would decide that my punishment was merited. I myself am willing to allow that the book, judging by its self-satisfied style of exposition, seemed to put everything very clearly, though, for some reason or other, I could not make it out. The descriptive phrases and terms employed, such as "compound perfect," "disjunctive conjunctive," "hortative," "promissive," "pre-

cative," no doubt meant something and were sufficiently plain to a comprehending mind; and very few of the rules in the four pages of them given for the practical use of the mood in every-day speaking and writing had more than thirty-three or four exceptions. Finally, Mr. Murray said, "It is evident on inspection that, in the subjunctive mood, the present tense of the principal verbs, the present and imperfect tenses of the verb "to be," and the second and third persons, in both numbers, of the second future tense of all verbs, require a variation from the forms which these tenses have in the indicative mood"; and, since all this was evident, the teacher thought herself justified in insisting that I should see it—it was not for a Richmond snip seven years old or thereabouts, in a matter of evidence, to set himself in contradiction to the eminent Mr. Murray, of Holgate, near York, England.

I had somehow mastered the fact promulgated by Mr. Murray that "contingency constitutes the subjunctive mood," but all further progress hinged upon knowing what manner of thing a contingency was; and whether it was something objective, subjective, perceptive, or apperceptive, I did not know and had no way of finding out. Richmond was a small place then, not large enough, I supposed, to have a contingency in it—at any rate I had never seen one in my walks around town.

I was completely crushed and utterly wretched. I cannot convey any adequate idea of what I felt, and the reader will never be able to appreciate what I am telling unless he has himself had some similar childish experience and can vividly revive the painful incident. But now a deliverer appeared, coming in the form of a little girl. No big girl noticed me, unless to deride and jeer.

She sacrificed her playtime for me, and sat by me, and soothed and comforted me with sympathetic words and some fragments of her own candy. Sweet little girl—she herself knew the subjunctive mood thoroughly, being able to talk off the whole chapter without misplacing, dropping, or changing, a word, and set herself to giving me an equal proficiency, patiently reading the statements of Mr. Murray to me and hearing me repeat them, encouraging and helping me in every way, and ultimately so well succeeding that I question if any modern phonograph could have discoursed more correctly or understandingly about the subjunctive mood than I did at the ensuing recitation.

Scores of years have passed over me since then, but they have not effaced my remembrance of this incident, very impressive to me though it must seem very trivial to others. It is now far in the depths of the night, and I am recalling it alone, in a semi-subterranean apartment with many a remnant and memento of the dead about me. I am deeply moved as I meditate on my old-time child-friend. I know not whether she is now in this world or in some other. But, wherever she is, I reverently invoke the influences pertaining to this solemn time and place to give all blessings to the benign being who pitied the poor, half-blind, ill-favored, weeping, little creature, cruelly tossed by his woman-teacher into the strangling clutch of the subjunctive mood.

These occurrences have left their impress on me. All my life I have had a tender regard for little girls and something of a mild animosity towards big girls, and when I was teaching children I was never employed more pleasantly and earnestly than when I would be

helping some struggling little girl through her scholastic difficulties.

It may be worth mentioning that the teacher concerned in this incident was the sister of the boy whom several years afterwards I saw so brutally whipped, as I have related. Now that I am no longer an unenlightened child, but a man presumably properly instructed in the orthodox ways of looking at things, I should not be out of fashion, I suppose, were I to regard his punishment as a just retribution—a righteous visitation, in fact, of the sins of the sister upon the brother.

I had a very tender skin, easily injured by rough handling, and a whipping hurt me. Under its infliction I would squirm and kick prodigiously; not wantonly, as most of my companions did, because to do this was the appropriate accompaniment of a whipping, but on account of what I long afterwards learned was called reflex action—as was explained by my revered teacher of physiology, Dr. Brown-Sequard, who, to elucidate the matter, was accustomed to show his students that a terrapin with a broken back would wriggle his hind legs when his tail was pinched. I wish I had known this then, so I could have profited by it. I was an admirable illustration of the phenomena, and the enthusiastic old philosopher would have been delighted could he have seen how beautifully his future disciple responded to the manipulations of an operator. But I made her sweat for it. No woman who ever whipped me was a perfect artist. She could no more strike the intended spot than she could hit a hen with a brickbat, and made herself a byword and a mocking to the spectators. What she lacked in precision and grace, I am,

however, bound to say, she made up by assiduity, and always triumphed at the end.

It is most lamentable that human foresight is so very limited. Were it different, how much advantage might we extract even from our misfortunes. One of my deficiencies as coroner, which I have had the greatest reason to deplore, is my almost heathenish ignorance of the composition and structure of female attire. Never since those early days have I had, nor can I now ever hope to have, such opportunities of equipping myself with this valuable knowledge as were then afforded me. In the course of my multiplex gyrations with my teachers I rummaged all through their toggery, over it and under it, but I had no premonitions of the future usefulness of any discoveries I might make, and though I saw much I took none of it to heart. The most I remember of their dress—and of this I have a lively recollection—is that the back of it was constructed of sprigs and slabs of whalebone loosely resting in receptacles from which they could be withdrawn at a moment's notice and used as weapons of offense. No student of whales ever had a more thoroughly grounded knowledge of all the physical properties of whalebone, its elasticity, its flexibility, its uncomfortable hardness, than I got to have through the unflagging exertions of my earnest female teachers.

In discoursing of those imperial women I trust I do not convey any false impressions of them. I am incapable of wilfully doing injustice to these ladies, or, indeed, to any woman. Every one who has ever heard me remarking upon our female fellow pilgrims must have been struck by the extreme readiness I have shown in crediting them with any merit I have ever been able

to detect in them. It is true that my pursuits compel me to observe strict accuracy in statement, so that I am constrained to say no more good of the female sex than I actually know. That I know so little is possibly not because there is so little to know, but because of that modesty of character which forbids woman to display even her goodness obtrusively.

I suppose that all my old-time teachers are now dead. Let us humbly hope so, and that they are enjoying a much-needed rest; for they fought a good fight—in fact, vast numbers of good fights, probably a dozen a day, on an average, every school day in the year. In accordance with the conventional practice of pupils when speaking of their departed schoolmasters perhaps it is becoming that I should express for mine an affectionate regret, and I now do so; but candor would require me to add that part of my regret is that, in my capacity of coroner, I have not been blessed with the privilege of sitting on certain of them.

If many of the teachers of those times are not remembered with feelings of unmingled affection it was their own fault. Influenced by a vicious theory they chose to make themselves disagreeable and would not cultivate the loving regard of their pupils, preferring to excite our fear rather than our love. But let it not be thought from my account of them that they were altogether bad—far from it; after their fashion they were efficient teachers and could show results not surpassed, if, indeed, they are equaled, by those obtained under the highly artificial systems now in vogue. And, after all, when we closely scrutinize the distinctions which discriminate the older and the newer educational methods, our survey will, for the most part, lead at last to

this: For the school child, under any conditions, "sufferance (in the sense of suffering) is the badge of all his tribe"; the earlier teacher inflicted the appointed suffering as he himself willed through the medium of the body; the later, constrained by others, inflicts it through the medium of the mind; but whether, for the object in view, physical or mental pain is the less salutary neither the autocratic teachers of the old times nor the school boards that dominate the teachers of the present day have ever concerned themselves to definitively decide.

Finally, in balancing accounts with my earlier instructors I gratefully acknowledge that, in spite of what I now clearly recognize in them as great deficiencies and great faults, they taught me very much, and, by dint of their everlasting incarcerations, objurgations, and castigations accompanying their inexorable refusals to give help, they compelled me to teach myself a great deal more.

OUR NOBLE PROFESSION

A Lecture to All the College Classes

Our college has inaugurated a course of lectures on a subject which has been named medical economics, and the lecture I am about to deliver is one in this course.

It has been many years since I practiced medicine, and therefore it is probable that, in some respects, I am not now qualified to be a serviceable adviser of the young graduate. Still, the doctor is not independent of those rules of conduct and sentiments of morality which govern the actions of all good men. For, even in certain apparently gross deviations from the path of rectitude into which, at times, the exigencies of his art drive him, he can plead that he is not actuated by any selfish desire, but that his sin, if it be a sin, is redeemed by the fact that it is committed only for the legitimate benefit of others. If, then, I keep these universal principles in mind my discourse, while its teachings may not be as comprehensive as is desirable, will inculcate nothing that is not worthy of acceptance for guidance in professional conduct.

The propounding of maxims with which everybody is already thoroughly familiar and sermonizing upon them, however edifying it may be, is seldom exhilarating to the auditor. I believe I can be as serviceable to you, and certainly not drier and duller, if I treat my

subject in a way that is more consonant with my own tastes and capacities. I shall accordingly use for my purposes the career of a physician, such a career as we frequently observe, and, as it unfolds itself, appropriate the lessons it conveys.

All the world's a stage, and men and women merely players; and the doctor, like the rest, in his time plays many parts, his acts, however, being by no means generally restricted to seven. These acts I shall consider, not all of them, but only a very few, and those not all among the most important, but only such as I can deal with most conveniently. We may regard his student life as the prologue of his play, from which we may gather some indication of what the theme will be—whether we are patiently to await the development of some humdrum story, or may expect to be thrilled by deeds of high emprise, and whether the incidents are to illustrate good or evil, honor or dishonor. Discarding the figurative style and speaking literally, I would earnestly impress upon you the truth that your student life is the formative stage of your professional character; that if you study to know and not merely to pass you are very sure to become a creditable and perhaps a distinguished practitioner; that if your standard of personal conduct is that of a gentleman you will not fail to obtain the respect of the community, even though it may bestow its patronage scantily; but that if you begin by sacrificing morality or honor to interest, by cheating at examinations, for instance, you are likely to fructify into a disreputable physician and a disgraced man.

Resuming our figure for a moment, let us suppose, then, that the preparation has been completed, the cur-

tain is up, the actor is on the stage and is essaying his part in the great drama. As is the wont of onlookers we will express our opinion of the player and the play, freely, candidly, perhaps too hastily, but which is yet the reflex of the impression made upon us by the things we see and hear. An interesting act at the very incipency of the play, in which, however, only a select few are permitted to take part, is that wherein the ambulance doctor is the performer. This valuable functionary is, hereabouts at least, a very young man packed to the brim with heterogeneous scraps of medical book learning, huddled into him and shaken down. He is eaten up with zeal to corroborate his theoretical knowledge with the practical, and enthusiastically willing to be perfected by suffering, provided it is the suffering of other people. He obeys a call with frantic haste, and, in the discharge of his duty, is disdainfully oblivious of everything foreign to his science and his art. Thus, he cannot tell an inquirer who the victim is, or where, or state any circumstance whatever relating to the catastrophe, but is superabundantly communicative in his account of how the call came in at 9:59 P. M., and how record time was made in going to the scene, namely, in twenty-three minutes, twenty-four seconds; and how there was extensive ecchymosis of the circumjacent areolar tissue of the left ophthalmic region and a laceration of the levator labii superioris alæque nasi, made by some blunt instrument, requiring twenty-seven stitches. The bystanders at the scene, who have already made themselves aware that the blunt instrument was a fist, and that the victim had got his eye blacked and his nose mashed in a fight, look on with wonder as the youthful sage manipulates. They see him administer a hypo-

dermic injection—a medication as inevitable and inexorable as fate, which no man, woman or child falling into the clutch of the ambulance doctor can evade. The injection contains morphine, strychnine, atropine and dynamite—one or all. The twenty-seven stitches are taken. The victim squirms. Over his mouth and nose the sage waves his enchanted wand constructed of a rag soaked with chloroform and amyl nitrite. "Sleep on, beloved!" The rest is silence. After the appointed time, having fulfilled the allotted sacrifice to Pluto and the infernal gods, he gives place to his successor and enters upon a more regulated career of slaughter among the general body of practitioners.

However we may try by grandiloquent declamation to disguise the fact, for much the largest number of us our profession is a trade whereby we make our livelihood. Few of us are actuated exclusively by mere love of wisdom or mere love of man. These are incidentals. We hire ourselves for the service of others, and the pay we receive in requital, and which a plain doctor calls a fee and a lofty orotund M. D. announces as a honorarium, is simply what other laborers speak of as wages. There is really nothing in this view of the matter to be offended at or ashamed of. I cannot suppose that any doctor would feel insulted by being affiliated with Aristotle; yet Aristotle was a palpable trader, selling medicinal roots and herbs over the counter of his apothecary shop at Athens. It is indeed highly advantageous for a medical student to look upon his destined vocation in the light of a trade, that he may profit by study of the methods of traders, a trade which is, of course, an honorable one and to be honorably conducted. It differs from most others in the extensive range of its concerns, their

great variety, their frequent lack of obvious connection with one another, and the unusual difficulty in fully mastering them. As an offset to this somewhat discouraging view we have a right to expect, should our pursuit be successful, a reward which is great. We shall attain a highly respectable and honorable station in our community, we can reasonably hope for a fair share of the ordinary emoluments of honest exertion, and, what is certainly a source of the greatest gratification to a worthy spirit, we know that our work, even though feebly and imperfectly done, or though, as it often is, an utter failure, yet in motive and intention is altogether pure and noble—for the art of the physician is never meant to harm any human creature, but always aims to do good—differing, in this respect, very strikingly from some other highly respectable and much applauded vocations, whose most brilliant exploits are sometimes grounded on cruel injuries and revolting injustice.

As a business the profession of medicine is amenable to the requirements exacted from all who would succeed in any business and the discipline which is inexorably imposed upon them. Suppose one is aiming to be a merchant: how would he prepare himself? I say nothing of his moral outfit—a rascal is a rascal whether he be a merchant or a doctor—but of his mental equipment. His chief effort would be to gain a mastery of what may properly be called the science and art of his business—questions of banking, matters of commercial law, the tariff, whatever relates to the commodities in which he proposes to deal, and so on. But he would not master the subjects by merely wishing to understand them—he would have to set diligently to work. So with medi-

cine. Medicine as a mode of livelihood is mainly a practical art based on science. Neither the art nor the science is worth much to the practicing physician by itself, but they must be united. Therefore do not complain that you are required to learn much that may appear to you to be of little or no value, and do not be peevishly asking what is the use of studying this or that. Of a doctor it may be most truly said that all is grist that comes to his medical mill. Nothing is too trivial for him to know—at some time or other he will probably have use for it. But as you will most likely be medical practitioners and not mere medical scholars, and as your patients will wish you to cure them rather than to make them subjects of erudite obituaries in some medical journal or before some medical society, it is most important that you should know the practical part of your profession. You ought to know why you do a certain thing, but you must know how to do it. It is one of the chief aims of your teachers to furnish you with this practical knowledge, which is so much better than the book knowledge that nowadays is the criterion of ability, especially with examining boards. Bookishness cannot make a serviceable medical man, and many a country doctor who miscalls and misunderstands technical terms is a far more successful healer of the sick than the polished dignitary who sits on a board and applies his scraps of information to exclude worthier men from a vocation which he and his allies are striving to monopolize for themselves.

But while we may with propriety and advantage imitate some of the methods of our fellow tradesmen there are others prevalent with the unscrupulous ones which we would take note of only that we might carefully

avoid them. If our vocation is a trade it is not one of an inferior class. On the contrary, it is of the very highest order. It is permeated by science and art, and to true science and art everything mean and dishonorable is absolutely foreign. There is unquestionably a special dignity and nobility inherent in our trade, or profession, if you prefer this term, which, if ignored, renders a physician peculiarly unworthy. It is not necessary for me to attempt to formulate specific rules for your guidance. All I could say is embraced in the phrase, be a gentleman.

The exalted position which has been awarded by universal consent to the medical profession has had the effect, so commonly engendered by superior station, of inducing us with a rather exaggerated notion of our own excellence. We have been led to form an extravagant estimate of our virtues, especially of our surpassing benevolence. The conditions of our calling compel us to do many beneficent deeds from the performance of which other conditions exempt other people, and this confers an appearance of benevolence, even though the reality may be non-existent. Very often our charitable acts are perfunctory, and we would willingly let a brother practitioner have the credit of doing them if we could shift them upon him. The fact is, that we have our fair share of the general stock of philanthropy, but no monopoly of it. Not infrequently some poor neighbor of our charity patient will, in the noble spirit of humanity, make a hundredfold or a thousandfold the sacrifice we ourselves are making. We vaunt our goodness too much. We are as good as the rest and no better, and the rest realize it when we send in a bill for the goodness we have shown. Medical men undoubtedly

bestow a host of blessings on mankind gratuitously, and our services should be recognized by the public and legislature, and, if practicable, recompensed to a reasonable extent, not because we are philanthropists, but because we are constrained to perform much labor which is of great advantage to the community and yet very onerous and unprofitable to ourselves.

Nothing can be more praiseworthy than for him who has it in his power to succor to give help to the necessitous. But indiscriminating charity is no doubt censurable. For, as long as medicine is practiced as a legitimate means of livelihood, it is not right for one to do needlessly for nothing what his brethren are obliged to do for pay. Bread is the staff of life, but the bakers would have just cause of complaint if, when there was no famine, some philanthropist should in a freak of benevolence give a loaf or a dozen loaves to anybody who chose to ask for it, though all of us would commend him for feeding the starving.

Doctors are not exempt from the prevalent desire to be rich. In spite of the homilies of some philosophers and most moralists directed against wealth I maintain that the desire for the possession of it is commendable, and the pursuit of it by honorable methods is salutary. That it should be the sole object of ambition is certainly ignoble, and to seek to obtain it through immoral or unlawful practices is obviously deserving of severe condemnation. But our well-being in this world is unquestionably a proper object of our exertions, and wealth is one of the surest means for accomplishing it. It is one of the commonest commonplaces, when we see a rich man incurably diseased or oppressed by calamity, to propound the unctuous aphorism, "Ah, money won't

buy everything." Of course it will not, but it will buy almost everything, and certainly will buy what will vastly mitigate misery which without its help would be well-nigh intolerable. It is most edifying to hear a well-to-do philosopher expatiating on the excellences of poverty, its promotion of the homely virtues, its freedom from the carking cares which are assumed to be the inevitable companions of riches, its high disciplinary value. If you should turn out to be poor I commend this philosophy to you, and humbly hope you may be able to extract some satisfaction from it. But, if you will accept the judgment of one who, in the vicissitudes of existence, has been permitted to experiment with both poverty and modest competency, trust me the latter state is beyond comparison the more desirable.

Mr. Ruskin makes this statement: "In a community regulated only by laws of demand and supply, but protected from open violence, the persons who become rich are, generally speaking, industrious, resolute, proud, covetous, prompt, methodical, sensible, unimaginative, insensitive, and ignorant. The persons who remain poor are the entirely foolish, the entirely wise, the idle, the reckless, the humble, the thoughtful, the dull, the imaginative, the sensitive, the well informed, the improvident, the irregularly and impulsively wicked, the clumsy knave, the open thief, and the entirely merciful, just, and godly person." Our numerous and variegated profession can furnish many examples of each one of Mr. Ruskin's classes, and not a few of us figure in two or more of them. The list of qualities is, I think, instructive, for it indicates why, though poor, you may find yourself respected and beloved, or, though rich, that you are despised and hated—and the reverse.

Now, how is the practicing physician to make himself rich? The natural and obvious way is through the fees he collects from his patients. Wherever doctors are grouped there is commonly a tariff of fees upon which they have agreed and by which it is expected each practitioner will abide. Many of the charges are high and beyond the ability of the humbler people to pay without subjecting themselves to privations which it is unreasonable to require them to endure. At the same time, it is among these people that the beginner must, in the great majority of instances, look for his patients. They employ him because they think he will be cheaper than the physician of established reputation. Naturally, if the price of the best and of the worst is the same, they will get the best. If, then, the young physician observes the tariff of fees he is put at a serious disadvantage, and the complaint of this inequality, which is often made, is certainly not unjust. Moreover, while the magnates of the profession see great depravity in the lowering of a fee by an unprosperous brother they do not hesitate to use their power to raise it, and to raise it indefinitely above the normal. This seems to be considered as legitimate. They reason that their superior knowledge and skill entitle them to a superior compensation. The reasoning appears to be sound, yet why is it not equally applicable on the part of the practitioner who might modestly consider that his inferiority in attainments and experience justifies him in pricing his services below the normal? Still, it is to be considered that, in this matter, as in so many others, what it is intrinsically right to do it may not be expedient to do. Where there is a rule established for the government of all it is seldom either proper or wise for an individual,

though the provocation may be great, to violate it. And for the young physician to do this in the case in question would involve him in greater evils than those he was seeking to avoid. His position is, I conceive, somewhat like that of a member of a church when its rigid discipline forbids indulgence in what he and the generality of conscientious people are satisfied is harmless, yet whose plain duty it is to conform or quit the communion. The only course open to the upright beginner is to wait in honorable patience till time and fortune shall bring, if so it is ordained, a prosperous day.

But, in reality, there is more danger of over than of undercharging. Beneficence is indeed the essence of our profession, yet its votaries are by no means exempt from human frailties. Some of us are unduly fond of big fees and make such grasps at them that the victims do not feel able to differentiate us from thieves. A distinguished Governor of Virginia, who was also a lawyer, when he was approaching his end and reviewing his professional career, claimed the merit, in dealing with his clients, of never having robbed the poor, and especially, which he regarded as much more meritorious, of never having robbed the rich. If the claim was just this lawyer has earned and should receive the praise of rare nobility of character. There have been instances of doctors who have treated well-to-do patients and exacted fees so glaringly disproportionate to the services rendered as to startle every one who believes that there should be some reasonable relation between performance and payment. And yet there have also been editors of influential medical journals, commenting on such instances, who have expressed the opinion that these exaggerated fees were really too small. If this is so, and

we are to be guided by these precedents, we should be ashamed to continue our prating about the transcendent philanthropy of our noble profession and cease our abuse of the lawyers for their rapaciousness, and be willing to own that we are in it for business, and that it is a money making business at that—that we “tend the cow of Isis only for what butter she will yield.”

A great clog on the pecuniary advance of the physician is the inhibition of any informing species of advertising. In this matter our ethics is very stringent. It seems hard that a man who by earnest preparation has acquired some peculiar skill should be precluded from letting the fact be known. And it seems even harder that a man desperately in need of the benefit of just this skill is not allowed, in a direct way, to know where this skill is to be had. It is not only hard, but, to ordinary thinkers, it appears to be downright silly. Yet this is the law of the profession, and we ought, therefore, to obey it. Still, the doctor must somehow make his public aware that he is a living entity, and most of us contrive to advertise ourselves more or less efficiently, sometimes ethically and sometimes unethically. Most of the methods employed are too well understood to require comment. A great many doctors adopt the valuable, though expensive, device of jogging around with a horse and carriage, while a few are able to flit through the streets in the costlier, but far more impressive automobile. To get our names in the papers is a most desirable thing, and many of us manage to do it so frequently, and often so strikingly, as to bewilder readers, who are perfectly sure that it was by no connivance of the doctor himself—it could not have been, for the code of ethics forbids. One morning we read, “Dr.

Izzard has gone to Skinquarter." The next morning we read, "Dr. Izzard has returned from Skinquarter." And, from time to time, we shall see these interesting and important announcements repeated. Presently we behold a startlingly headed and leaded account of a stupendous surgical operation performed by Dr. Izzard, who, with consummate skill, has amputated the lesser toe of a citizen whose brains had been blown out by the explosion of an empty whiskey barrel into which a thoughtless boy had dropped a lighted cigarette. Very likely the doctor's portrait adorns the narrative. We read further that the operation was a brilliant success, and that the funeral will take place at 4:30 this P. M. When we see the doctor we congratulate him, and find him disgusted at the distasteful publicity to which he has most unwillingly been subjected; and when we part from him our predominant feeling is one of profound wonder and delight at the inroad of the higher education among the newspaper reporters, which has qualified them to use so many scientific terms with perfect precision and to describe the complex technic of a surgical operation with absolute fidelity.

Again, some of us find it extremely useful to be allied with secular and religious bodies—religious preferably, getting ourselves made vestrymen or deacons, or such like sacred functionaries, since this supplies a coat of moral whitewash whose glare dazzles the eyes of most people and blinds them to what it covers, and, particularly, because the religious societies are dominated by the abnormally active section of the community, the women. (Let me say here that in using the word women instead of ladies, so far from intending to be offensive, it is exactly the opposite. I have an affection for the

word woman that I have never been able to feel for the word lady, and woman, not lady, is my term of endearment for one of the other sex.) A doctor who has collected a coterie of female worshipers, which can be done by cajolery, bamboozlement, or insolence, each adroitly applied to its appropriate subject, has his fortune made. Women are the best of all puffers. They are sincere, they are enthusiastic, they are unscrupulous. They will tell commendatory lies about him and for him all the day long, innocently believing they are telling the truth—truth which is glorified, indeed, as truth ought to be, but still which is, as they understand it, nothing but the truth. They are like the captive female elephants, who, having been captured themselves, take delight in beguiling others into the same captivity. Should the doctor thus fortified excite the hostility of his brethren, as is sure to be the case, it is all the better for him. His female defenders advertise him more assiduously than ever, and his male detractors, hopelessly overmatched and outgeneraled, find that all they have accomplished is to transform one who is potentially perhaps but a second- or third-rate practitioner into the actual head of the profession.

A good way, and a legitimate way, of advertising ourselves, to our brethren at least, is to participate in the discussions in the medical societies and read papers to them. If we have anything which is really worth communicating this scheme is much to be commended. In the nature of things, however, it is seldom that the beginner is favored with the material for enlightening his elders, and it is not seemly for one who has yet to learn to be too forward in teaching. It is to be remembered, too, that the localized members of our fra-

ternity are not surcharged with brotherly love, nor are they renowned for displays of altruistic admiration; so that, instead of the hoped-for sympathetic commendation, the aspirant had best prepare himself for captious fault-finding from censorious critics.

Much of the jealousy and enmity which is so unhappily conspicuous in our professional relations with each other doubtless is due to the impossibility of fixing our proper individual grade of merit. Manifestly one practitioner may be more competent than another, yet the criterions for forming and confirming a judgment are very imperfect. Like the lawyers and the preachers we appeal to the public to decide, but necessarily in a far less palpable way. They display their abilities in speech, by oratory and dialectics addressed to audiences unrestricted in numbers and character, and capable of understanding and estimating the merit of the performance. But we, on the other hand, are confined to deeds, and deeds done in obscurity impenetrable by the few who can witness them, and who, besides, are qualified to judge them by no other standard than the result. How very fallacious this standard is plainly appears when it is considered that in innumerable instances far more of high scientific ability is exhibited in our failures than in our successes. The surgeon, indeed, has some advantage over the physician, owing to the mechanical, and consequently comprehensible, nature of much of his work, and its somewhat spectacular character. What he does is apt to be talked about, but the physician commonly does nothing more striking than any old granny has done a thousand times. He puts some sort of stuff into his patient's inside, a performance not glaringly redolent of skill or knowl-

edge, and by no means impressive. What the stuff will do neither he nor the family certainly knows, and they must wait and see. His prescription may have been the outcome of profound learning and sagacity, but no one except himself realizes it; and whether he shall ever get any credit for it depends on the hazardous contingency of the recovery of the patient. It will be seen, therefore, that the public at large is the judge of the lawyer and the preacher, and it is an extraneous and competent tribunal. It puts each member of the legal and clerical professions into approximately his fitting place; but in the medical profession each doctor is his own judge, interested and partial, and there is an eternal scramble, not for the right place, but for the best.

It is perfectly obvious that learning and skill are indispensable in the make-up of the genuine physician, and it is possible that, possessing these, he may command eminent success while he lacks the amenities and graces which render social intercourse agreeable. Some of the famous physicians and surgeons of former days were notorious for their ill temper and rudeness. Byron speaks sarcastically of mild Baillie and soft Abernethy; and domineering insolence was by no means unknown among the old-time doctors of Richmond. It was not a very strange thing for the doctor to take possession of the patient's house, to go storming through it, to demolish with his own hands obnoxious articles of food or drink, plates, dishes, cups and saucers, and even beds, and to make of himself such a portent and such a terror that when he hove in sight consternation fell upon the habitation, the women rolled themselves together as a scroll and the children fled into the back alley. This sort of thing is no longer tolerated, as it

had to be when only one or two practitioners in a community possessed pre-eminent talent. Nowadays ability is much more nearly equalized, and the patient can readily find a competent physician who does not habitually mix insults with his medicines. As a matter of policy, therefore, if your character is so badly constructed that it cannot furnish a more creditable motive, it is needful that you should impress your patrons with the belief that you are a courteous and considerate gentleman. If you reflect you can hardly avoid the conviction that gentleness and sympathy are essentials in the character of the ideal physician. It is pre-eminently his office to soothe and to console, and he cannot do this perfectly, though he commands the confidence of his patient, unless he has also gained his friendship at least, if not his affection. And in the estimation of the properly constituted mind the pecuniary reward which great professional abilities may have brought is enhanced manyfold if it is accompanied with the tender tribute the grateful heart pays for a kind word and a feeling act.

I have already alluded to the advantage to be derived from female friendship. It is thus most unwise to alienate the women by making yourself disagreeable or hateful or terrible to them. I dislike to take this commercial view of a matter which is primarily one of manners and morals, but since your profession is also your trade it is not improper to warn you of the pitfalls which imperil your progress as a tradesman. And so with respect to the children. Most men love their children better than they love their wives. Should you by omission or commission chance to slay a man's wife he will very probably take comfort from the sub-

missive patriarch, and with him piously declare, "the Lord gave, the Lord hath taken away," continuing, if not with his lips, pretty surely in his heart, with "blessed be the name of the Lord." But should it be his child you will never again, in all likelihood, stand quite the same in his estimation as you did before. It is worth your most assiduous efforts to secure the affection of the children of the families you attend. This is necessary, indeed, in order that you may treat their diseases with the greatest efficiency. Our science is conspicuously weak in this department, for we can obtain comparatively little help from the child itself. But, on the other hand, the child is very impressionable and responsive to the salutary influences of trustfulness and hope which the physician who is not feared but loved can inspire. This is an important direction in which the treatment of the diseases of children can be improved, and there would be no more lucrative specialty if it could be made a real and efficient science.

But, while learning and skill are indispensable qualifications of the real physician, it will not do to depend absolutely upon them to procure success. The promise of this is constantly held out by medical moralizers just as other moralizers never weary of assuring us that if we are virtuous we shall be happy. Both propositions are fallacious. We often see good men with corns and the toothache—conditions utterly destructive of happiness—and it is not hard to find doctors of extensive and profound learning who have not been able to make their learning profitable. Of my own class at college much the most thriving graduate was he whom all the rest of us regarded as one of the most ignorant. The most learned physician I have ever

known, a man whose knowledge of the whole science and art of medicine was a wonder and a terror to his brother practitioners, was so seldom called to practice that I question whether he could have subsisted by his profession. So far as the furtherance of success pecuniarily is concerned certain of the baser elements of character are more potent than the nobler, and a persistent thimblerrigging with the shell of wisdom will dazzle, deceive and capture multitudes who would never see the precious kernel resting in unostentatious richness. It is deplorable that this is so, but so it is. I hope you will not suppose I advise disgraceful arts to evade it. Far from it; for I hold that it is infinitely better to starve honorably than to fatten on dishonor. And, besides, fortunately it is not always so. Somehow merit not infrequently through its inherent virtue comes triumphantly to its own. And then it is that genuine knowledge shows its worth and power by immovably establishing what has been gained and irresistibly augmenting the acquisition.

It is evident that every effort should be bent to the maintaining of any ground that has once been won. This can be done only by being properly equipped for the task. It is a great folly to suppose that this full equipment can be furnished by any college. You are obliged to do a great deal of the furnishing yourself after you have left college. I would not say after you have ended your student life, for this should never end while you have work to do. To cease to study would be to do a serious injustice to those who generously confide in you. One of the most conspicuous traits in the character of famous physicians and other men of science is their studiousness—the unflagging zeal and

the patient industry, often along discouraging and toilsome paths, with which they pursue some dear but evasive fragment of knowledge. You can no doubt recall examples of devotion to science, some of them, too, of a very pathetic kind. I will relate the instance of a distinguished English chemist because it is one which is not generally known, and is, besides, one of the most affecting. The chemist had become profoundly enthralled by a desire to investigate the chemical nature of the products of putrefaction, and had by the assiduous labor of many months gathered a potful of the contents of pus cavities and all manner of putrescent liquids. This precious aggregation he contemplated with the intensest delight and cherished with the most anxious care. One day the laboratory servant came upon it and overwhelmed thereby incontinently threw the whole affair into the sink. He had inflicted a mortal stroke upon the professor. From that moment the distinguished chemist pined away, crushed by his irreparable loss, and not long after died of a broken heart..

It is very probable that you will not have been long in the active prosecution of your profession before you find yourself in the courts—not, I trust, as a culprit, but as an expert witness. As this phase of a physician's activities is one that concerns me as a teacher of medical jurisprudence I may be pardoned for noticing it somewhat particularly. Very possibly you may be made to figure in this character against your will, or, on the other hand, your bent may lie in this direction, and you aspire to the honors and rewards which you fancy pertain to the vocation of the expert witness, and are glad of the opportunity to display your abili-

ties. It is possible, too, that your cupidity may have been excited by the magnitude of the fees of some experts, as of those in the celebrated Thaw case, who demanded an exceedingly substantial compensation for services which consisted chiefly of listening to libidinous details which multitudes of laymen and layladies would have liberally paid to hear—fees ranging from \$190 for a chemist and \$135 for a doctor, on to \$2,297, \$3,102, \$3,987, \$5,315, \$6,300, for five other doctors—the grand total for ten expert listeners being \$23,082. This is extremely alluring and you may well aspire to something like it. But be not deceived. It is Dead Sea fruit to a Virginian. It would be madness for a Virginia doctor to expect from his State a fee of \$6,000, or \$1,000, or \$100, or \$1, or one cent, unless he is a chemist, when he will be paid \$25 for making an analysis in a case of suspected criminal poisoning, or unless he has been required to assist a coroner, when he will get what the judge of a court chooses to regard as “a reasonable compensation,” or unless he examines a supposed lunatic, when, if no petty functionary interferes, he may get \$2.50. For any other expert service the State will not pay the medical man anything. The men of the law, the men who make and manipulate the laws, fare better, and a Virginia lawyer can easily obtain from the public treasury fees rivaling those of a New York doctor. As bearing on this matter let me repeat what I have said about it on a former occasion:

“Recently an eminent physician of Richmond was employed by the public authorities to make an examination in the case of a supposed lunatic. Few of the

inquiries within the province of a medical man are weightier than an inquiry designed to determine the question of sanity; for not only is it of the gravest importance to the suspect, but it involves the examiner himself in very serious legal responsibilities and risks. If the examination is properly conducted it demands, except in the most glaringly obvious cases, a great expenditure of severe thought and the bestowal of much time. No one, therefore, will hesitate to admit that in these cases a compensation should be granted which is somewhat adequate to the services rendered, and many will perhaps be willing to allow that the physician's fee should be fixed at least within measureable distance of the fee which the attending lawyer gets for mechanically filling in certain blank forms. But the Richmond authorities do not fully adopt this view of the matter. They indeed think that adequate compensation should be granted, but they long ago determined that an adequate compensation for a medical man who makes an examination for lunacy is \$2.50. To collect so little pay for so much work from so well-to-do a city as Richmond should apparently offer no great difficulty; but when the physician I have spoken of presented his bill payment of it was refused, the ground of refusal being that he was a city official drawing a salary, although his salary was for services having not the remotest relation to the examination of lunatics. At this writing his bill remains hung up, waiting for a decision as to its legality. Let us all hope that, for the honor and advantage of the profession, he will manfully contest for his \$2.50, even to the employment of a lawyer, who, for a honorarium of from twenty-five to one hundred dollars, will be delighted to help him

scuffle for it. If he will do this I feel that I can almost promise him that the Richmond Academy of Medicine, and possibly the State Medical Society also, can be induced to give him a resolution of thanks by a nearly unanimous vote.

"The manner in which the State treats medical men whom it requests, and in fact requires, to serve it is outrageous, and no body of men but medical men so oppressed and possessed of the power to resist would endure it. Not only is any payment that may be promised almost always absurdly inadequate, but, generally, the most annoying obstacles are put in the way of collecting it. Some of the city and county authorities who control the money which we have earned and which is due to us, are surprisingly unscrupulous in their use of means to evade the payment of these just obligations. Time and again have I been baffled by some of these officers, who, despite the fact that I had endeavored to circumvent their evil bias by obtaining their written guarantee of payment before I would begin the work, yet disregarded their pledge and compelled me to adopt the policy of 'setting a rogue to catch a rogue' by employing a lawyer to collect my bill. It costs these schemers nothing to litigate, for they have at command an attorney employed at the public expense to uphold them against all comers. But it is otherwise with their creditors; and even when I was successful, which was not always, I was a heavy loser by law charges they had obliged me to incur.

"The outrages to which we are subjected appear particularly irritating if we compare the treatment given to us with that which is given to lawyers. No candid and well-informed person will maintain that the labors

of lawyers are as onerous as those of physicians, or that their services are more valuable to the community. On the contrary, the conditions under which they perform their work, directed for the most part to the torment or destruction of some poor soul, are greatly more favorable than those we must encounter as we labor to soothe the sorrowing or repel the destroyer. No spread-eagle orator in the sublimest flight of effulgent exuberance has ever ventured to assault the understanding of his hearers with a suggestion of 'the hard lot of the noble lawyer,' but many and many an honest voice has uttered its commiserating word for the toil-worn doctor, and it has never failed to draw forth a sympathetic response, for all the world knows that it is, unfortunately, too well deserved. And yet, when it comes to compensation, we find that for any service rendered to the public by a lawyer and by a doctor, respectively, which it is possible to estimate as approximately of the same pecuniary value, the pay of the lawyer is almost invariably manyfold greater than that of the doctor. What lawyer of standing would concern himself with duties comparable with those incident to a medical inquiry as to sanity for two dollars and a half? Is it not, indeed, notorious that where we may hope to get tens they can be sure of getting hundreds of dollars? The lawyer's fee is awarded as a matter of course and is gathered in with ease, while the doctor, when he makes his application, is browbeaten, put off, and at last very likely robbed outright.

"Why this scandalous difference in the treatment of the members of the two professions? So far as numbers can command consideration physicians deserve as much of it as lawyers do. In point of merit no one

can for a moment doubt where the superiority lies who can comprehend the distinction between habitually doing evil and habitually doing good to our fellow-man. The answer to my question is, I believe, sufficiently simple. We are thus treated because we ourselves permit it, and, in sober truth, because we ourselves promote it. We permit it, for we are too slothful to organize and resist it. We promote it, for we are jealous of each other and are glad to see each other thwarted. In these respects our conduct is in most marked contrast with that of the lawyers. Not the sodality of the Forty Thieves of Arabia, or Jesse James' Gang of Missouri, labored more systematically and persistently for the general gathering in or more honorably conserved the individual grab of plunder than do the legal fraternity as a body and in their relations with one another. They have their rivalries and jealousies, no doubt, but when one of them has fastened upon his prey the rest do not set upon him and force him to drop it, but flock to him, encouraging him to hold to it with an iron grasp; and piously marveling at his self-denial in contenting himself with such a little—to-wit, all in sight—each hopefully waits his turn, knowing that when he, please Heaven, shall make a swoop, he, too, will in like manner be cheered and protected.

“To demonstrate the supineness and the unfraternal spirit which I charge as besetting faults of our profession, I need not go for evidence beyond my personal experience. At the meeting of our State Society held in 1900 I presented a statement setting forth the facts that the law permitted any lawyer to command the expert evidence of any physician in any case, and to compel him to come any distance to deliver it in court,

with no other compensation than the pittance allowed to witnesses in general; that, even when forced into a case by the State itself for its own behoof, he would be paid nothing unless he was a chemist and had made an analysis for poison, for which he would be entitled to \$25, or had been employed by a coroner, when he would be entitled to the indefinite amount designated 'a reasonable compensation,' and that for none of all the other multifarious expert services he was liable to be called upon to render would he receive a cent, not even though his bill had been approved by the judge in whose court he had testified. That the hardships I named were real I endeavored to make plain by what I conceived to be entirely satisfactory proof—namely, by the fact that I myself had, in spite of protest and resistance, been obliged to endure each one of them. Yet there was shown by some of the members a disposition to controvert my assertions and to deny that such evils as I had pointed out existed, apparently because they themselves had not hitherto been called upon to submit to them. Enough interest was, however, excited to induce the society to appoint a committee to wait upon the Legislature and endeavor to obtain relief. And this was the end of it—the Legislature has come and gone several times since then, but if the committee has ever done anything no one is aware of it.

"Again: For a great many years, and for long before I had been appointed coroner of Richmond, the fee for a post-mortem examination made by the coroner had been fixed by the city at \$25. But after a time a member of the City Council—he was a lawyer—conceived that this fee was altogether too large, and became eager

to have it reduced to \$5. Naturally, I opposed him; and, apart from the personal interests I was defending, I was in this doing a service to the profession generally, for this fee had become the standard to which physicians all over the State were accustomed to appeal in their struggles with their county authorities over charges for autopsies. No doctor came forward to encourage me, but two Richmond doctors voluntarily obtruded themselves before the Council committee having control of the matter to help the lawyer. My two brethren could hope for no direct gain for themselves from their action, for this class of examinations in Richmond was controlled by the coroner exclusively, and all they would be able to effect would be to inflict pecuniary loss on me, and, through the great cutting down of an established and standard fee, do much hurt to the profession at large.

"Could we rouse ourselves from the lethargy into which we are sunk, and subordinate our individual enmities and jealousies to the common welfare, we have the numerical, intellectual, and moral strength that would quickly put us before the State on the height now monopolized by the lawyers. But as long as we are satisfied with grandiloquent talk about the dignity and nobility of the profession, eagerly striving to hide the patent fact that the practice of medicine is a trade as well whereby we win our bread, it is foolish to complain that we receive the treatment merited by futile praters, and that we are overshadowed by an aggregation which, while in public it figures as a profession, yet, within itself, clearly realizes that it is a business concern, and whose members transact business in a business way.

"It has been remarked by some philosophic observer that horses, were they to comprehend their power, would need no longer to submit themselves to be ridden and driven. We doctors are indeed not horses, but among us are not a few who might be profited if they would take to heart the fact that this great truth is no less applicable to asses."

Such general maxims as it is practicable for a teacher to communicate to a pupil to enable him to protect himself against the assaults which our courts, to their shame be it said, permit an unscrupulous and bullying lawyer to make upon an honest witness I set forth in my lectures on medical jurisprudence. I advise you, seeing the great disadvantage at which you are put in these contests by the power and the practice of courts, to endure the nagging and the insults inflicted on you as long as you can, but when endurance has been strained to the snapping point to let fly at the bully with all your energy, so that he and all concerned may realize that you, too, have rights and that you mean to the extent of your ability to maintain them. Very much of the rude treatment to which doctors are subjected by lawyers could be tolerated could we believe for a moment that the lawyers were honestly seeking to get at the facts. But experience of their ways assures us that the idea is preposterous, and that, on the contrary, they are continually damning that physiological functioning of the brain which in others than lawyers we call the soul in the most strenuous efforts to pervert, suppress and reverse the truth; and that, in prosecuting this wicked and shameful scheme, their most valued device is to humiliate and torment men and women whose reverence for truth has itself com-

pelled them, often against their own will and wish, to become adverse witnesses. You may be sure that there are hosts of lawyers who would jump at the opportunity of defending Judas Iscariot, appropriate everyone of his thirty pieces of silver for their fee, and bulldoze and blackguard Saint Peter himself—whose little lapses into ear clipping and fibbing and swearing offer them a fine field—and gloat over their iniquitous triumph should their tricks rescue the arch-villain from the gallows.

The eminent legal luminary Quintilian, whose writings have informed and edified the modern world as they did the ancient, has favored us with some prescriptions for compounding a lawyer. It is interesting to note his advice as to the handling of an opposing witness. Says he: "If he is timid, scare him; if silly, mislead him; if irascible, fret him; if vain, flatter him; if prolix, lead him away from the point. If he is sensible and self-possessed, hastily dismiss him as malicious and obstinate, or confute him, when it cannot be done by formal questioning, by a speech; or, if opportunity offers, humiliate him with a jest; or, if anything can be said against his moral character, destroy his credit by infamous charges." And, still further, Quintilian gives the lawyer instructions for making the most advantageous use of those of his own witnesses who he knows are liars and who have promised him to lie in behalf of his client. Quintilian was inherently virtuous—a high example of an ancient moral man; but, unhappily, he was himself a lawyer. Such are the maxims delivered to the profession in the first century of the Christian era, and such are the maxims approved and applied, wholly or partly, by

most of the lawyers of this present year of Christ. I grant that it is only lawyers of the lower types who furnish the most hateful examples of ethical depravity, but, then, it is a biological law that the lower type greatly outnumber the higher. I know of one law school of the highest repute where the students are taught—and probably it is the teaching in all law schools—that the lawyer is justified in controlling his conduct by the conscience of his client. Conceive, if you can, the moral result of the brain of a Daniel Webster actuated by the heart of a Harry Orchard.

In spite of the odds against him the medical witness, if adequately equipped, may fight lawyers during a long life with reasonable success. While he is young and vivacious and pugnacious he may make himself quite formidable to his enemy. Even when he has grown old his prowess is something not to be too confidently despised. He has, indeed, lost the *gaudium certaminis*, the joy of conflict, but though indisposed to combat he can still fight effectively if driven to it, and may deal a blow which is the more stunning because of its deliberate and concentrated and purposeful character, and its unlikeness to the indiscriminate strokes of his vigorous days. Moreover, in growing physically worse he has become morally better. In the heyday of exuberant enthusiasm the conscience is apt to partake of the universal mobility and resiliency of the physical, mental and moral make-up. But if he has grown old rightly, and thus attained an honorable age, his conscience, participating in the general tendency, has become ossified, and cannot be made to stretch by the strongest tug of the most determined lawyer.

The ethical principles by which lawyers and doctors respectively govern their professional conduct are so unlike, and their notion of truth and the means for attaining it are so opposite that they seldom can be brought to work in complete harmony. And yet their harmonious association is undoubtedly the normal condition, and the doctors have, in fact, shown their great willingness and earnest desire to promote this harmonious relation by establishing in their schools an important department of instruction which they call medical jurisprudence or legal medicine—a department so comprehensive as for its purposes to take tribute from and build itself on every other department of medicine. The object of this instruction is to qualify the doctor to become a medico-legal expert—a character in which every doctor will be obliged at some stage of his career more or less prominently to figure.

The doctor is altogether willing to contribute his knowledge to the elucidation of truth and the maintenance of justice, and to do this in an honest and straightforward way if he is allowed to do so. There are no doubt exceptions among us, but my statement can with propriety be applied to the great body of our profession. Unfortunately it is but too common to treat the doctor on the witness stand, because he has been called by the opposing side, as innately and perversely hostile, and the treatment often is such as turns him, naturally and even rightly, from his neutrality into an aggrieved and aggressive enemy. This practice is greatly to be deprecated, not only because it is grossly unfair to the witness, but because it is also very unwise, for it is likely to be seriously hurtful to the lawyer's case. A doctor versed in his science has many resources

whereby he can inflict great injury upon his enemy's cause and yet keep well within his obligations as a truthful witness. Generally a medical witness is disposed to be very conciliatory, for he fully realizes that he is hampered in many ways by his position and in no condition to solicit trouble.

But in recent times a class of medical and other men affiliated with science has been developed composed of persons who are properly to be regarded as advocates, ready to ally themselves with the side which offers first or most, and prepared to support its contention, whatever it may be. There are even bureaus of this species of experts which make it their business to furnish scientific aid indiscriminately to either or both opposing parties. Experts in bulk are rounded up and secured by one side merely to prevent the other from triumphing over their too easy virtue. It is this despicable spirit of commercialism which has brought about and intensified the scandalous war of the experts now grown so familiar, and which has so greatly degraded science and scientific men in the public estimation as to engender the reasonable belief that the common sense opinion of an honest and intelligent layman is more trustworthy than all the pretentious and showy, but contradictory and barren science of the expert.

An efficient remedy for this state of things it is certainly hard to find and apply. The ideal one is a truth-seeking lawyer and a truth-speaking expert—a conjunction manifestly impossible to effect; for, though such an expert is to be had, where shall such a lawyer be found? The subject has elicited a great amount of thought and many plans have been proposed to suppress what is acknowledged to be a great evil, but so far

nothing very practicable has come of them. Yet, assuming that there were a sincere desire to get at the truth, very much could be accomplished through a free conference of the experts of the opposing sides; or by the selection of an arbiter to hear both sets of experts, and whose judgment should be decisive; or by the selection of an expert by the court to determine for the court itself between opposing views. Assuredly there is great need of an impartial referee, for the jury, in the nature of things, is incapable of composing conflicting technical testimony. The matter is one most worthy of earnest consideration, for it concerns not only the honor of both the legal and the medical professions, but it is most intimately connected with the welfare of the people at large. I dismiss the subject by entreating you never to permit yourself to degenerate into that most disgraceful, despicable and dangerous creature, the hireling expert, who sophisticates science to suit the market and sells his adulterated article to whoever pays his price.

Like every other citizen, the doctor is under obligation to contribute to the general well-being of the community with which he is identified. There are some conspicuous ways in which he may do this; for instance, through an official position. There are positions where his professional abilities are not required, but where other qualities he may possess will render him serviceable. I should, however, advise him to accept such trusts with caution; for while they may give him the opportunity to benefit the public they are very likely to react injuriously on his practice. His more appropriate sphere is where his special knowledge can be made useful. Whatever promotes the public health is specifically his province, and his services are particularly valu-

able as a sanitary officer and as a member of the school board—always provided he is an actual worker, and not a mere prattler and picker-up of perquisites and flaunter of empty honors. In this State it is the custom to bestow the office of coroner upon a physician. As the duties of this position form one of the topics in our course on medical jurisprudence I do not need to discuss them now. Among other public stations reserved for the doctor are those of medical officer of almshouses and prisons, of some municipal departments, police and fire, for instance, and of superintendent of asylums for the insane. To fill these places creditably and acceptably something more than professional ability is required. There are demanded business tact and certain qualifications common enough among people in general, but seemingly not over plentiful among doctors, and the want of which has frequently brought great trouble upon the incumbent.

Probably the grandest and noblest display as a public benefactor the doctor can make is when his city is assailed by a devastating pestilence. He now becomes the most important member of the community, for all others look to him for safety. The peril has imposed upon him the character of a soldier, and, like a soldier, it is his duty to face the enemy unflinchingly. But he must fortify himself with courage of a more exalted kind than that the soldier is commonly required to possess, who is animated by contest with a foe whom he can see and on whom he may inflict a palpable blow. The doctor's enemy, though wasting at noonday, walks in garments of darkness, and far too often the stroke designed for him must be delivered at a venture with an ineffective weapon. And for the doctor there is no retreat.

To others, when they become dismayed by the slaughter, it is permitted to flee. But he must stand and fight till the merciless destroyer is beaten down, or retires, or he himself is slain. It is many years since one of the more formidable epidemics has visited this part of the country. Four times cholera has raged in Richmond, and with three of its visitations I am familiar, and I am proud to say that I do not know of a single doctor of those somber days who deserted his post. The courage of doctors deserves a somewhat emphatic commendation when it is considered that they are by constitution peculiarly averse to being sick or dying themselves. The fact is, they are oppressed by their knowledge. They are altogether too well acquainted with the malicious craftiness and eccentricities of disease, and do not by any means indulge in the abiding confidence in remedies that their patients have. Yet, when the occasion requires it, the doctor confronts his formidable foe, and, though not free from the apprehension that a rational and sensitive being in such circumstances must needs feel, he shows no fear. He who is devoid of failings to which by his nature he does not tend is entitled to claim no more than negative merit; but he who subdues a dishonoring impulse which is innate and rebellious has positive merit, and has earned and should receive high praise. In this class must be put many of the noblest heroes of our race.

In these latter times I regret to perceive what I am obliged to regard as a tendency to somewhat depress the high standard of professional obligation formerly maintained. When I practiced medicine, now many years since, every doctor, the lowliest and the loftiest alike, felt in honor bound to attend any case to which he was

called, without regard to any personal danger it might involve. To refuse would have stamped him as discredibly as a refusal to fight would stamp a soldier. Cholera and smallpox, which smote us heavily, did not prevent; nor would yellow fever, or plague, or leprosy, had it come, have prevented. Some, not all, of the doctors of these days do not feel this obligation, and they abstain from attending cases of disease of which, for one reason or another, they are afraid. Perhaps their reasons are valid, and I do not mean to criticise them. But I can hardly be blamed for more highly esteeming the practice of my contemporaries—to whom I can with justice apply the splendid tribute paid by Macaulay to the heroic devotion to duty of the Jesuit. "When, in our own time," he says, "a new and terrible pestilence passed round the globe, when, in some great cities, fear had dissolved all the ties which hold society together, when the secular clergy had deserted their flocks, when medical succor was not to be purchased by gold, when the strongest natural affections had yielded to the love of life, even then the Jesuit was found by the pallet which bishop and curate, physician and nurse, father and mother, had deserted, bending over infected lips to catch the faint accents of confession, and holding up to the last, before the expiring penitent, the image of the expiring Redeemer." Macaulay is speaking of the cholera of 1831. It would not, however, be the truth of history to say that the Richmond physicians of my time deserted the pallet of a victim, and succor which in Europe could not be purchased by gold was given here for the asking.

Physicians have the distinction of being in a peculiar manner the wise men of the town, and they are expected

to clear up all the strange things which thrust themselves forward for clarification. This is a high honor, which we should strive to deserve by using every opportunity to supply the deficiencies which the exigencies of the early life of many of us have left in our education. This leads me to mention the office of a teacher. While comparatively few can expect to occupy this position, it is one of the worthiest, but, at the same time, one of the most responsible to which you can aspire. It is to some chosen one among you that we who are teachers ourselves entrust the lamp of knowledge we have received from our predecessors, and which we expect him to transmit in like manner with its radiance undimmed, and, we hope, by his cherishing intensified. There is much that might be profitably said on this head, for not seldom the teacher is in as great need of instruction in his province as the pupil is in his. But I do not assume to be competent to give this instruction in any important degree, and will submit only a remark or two. Associate yourself with no school whose methods are not all above reproach. See that your school sacredly observes its engagements and pledges, and that it strictly applies the honor system, but not to its students only. For, whatever may be its display in the number of matriculates or other material advantages, or however vain-glorious it is in self-praise, the school is a disreputable institution if the honor system is not observed also by its faculty and its business corps. To this I will add as to your teaching itself: reverence the truth as your science has revealed it to you, and be its faithful champion despite the numbers and the power of its assailants. For, to teach false science knowingly is morally as much a crime as it is knowingly to teach false religion.

You do not need to be told that you are living in an evolutionary and a revolutionary age. However it may be with the people in your and my contracted spheres, the great outside world is in commotion, and is boldly pondering questions which not long since it was considered not only as politic, but even as moral, to ignore, or else submissively to accept such answers to them as men who probably understood their nature less clearly than we ourselves did, but who claimed to speak by some superhuman authority, dogmatically thrust upon us. The result has been to intensely reinvigorate the conflict which has always existed between science in general, and medical science in especial, on one side and theology—not religion, but theology, and, more specifically, ecclesiasticism—on the other.

In a great number of communities the doctor is the sole representative of enlarged science. At the same time, most of these communities, especially of those in the South, are extremely conservative and rigid in their attachment to the old forms of thought. Any modern conception, the outcome of increased knowledge, should it seem at variance with their traditions, is rejected, and generally is intemperately opposed. In these circumstances the enlightened and conscientious physician occupies an embarrassing position, for his convictions and his interests are antagonistic. He feels that his opinions have the sanction of his science, that they are consonant with truth, and that, as an honest man, he should maintain them. Yet to do this entails great risk of serious injury, not only to his purse, but to his character. In a narrow-minded community, and many such still vegetate, to be known as an infidel or an atheist, appellations which a modern man of science, if he ex-

presses his sentiments freely, can with difficulty escape, is apt to be disastrous to a medical practitioner. My advice to you is to keep quiet, unless there is an actual necessity to be active; but, should the necessity arise, then show yourself to be a man. My counsel may seem to smack of pusillanimity, but it is so only in appearance. I am not recommending cowardice, but prudence, for I assume that you are manly all the while, but that, like a man of sense, you wait the proper time to show your manliness to others. There is no real call for you to make yourself a champion of an obnoxious scientific idea. In these days there is an abundance of defenders both able and willing, and the cause, if founded on truth, will not lack potent support.

I would, at the same time, caution you not to permit yourself to be beguiled by the foolish fallacy of the bigot that belief in some man-made formula or creed is religion. Even an atheist may be a nobly religious man, and the deep-dyed infidel David Hume, to cite a single well-known instance, was as moral as any and ten thousand times more moral than many of the hierarchs who have styled themselves the vicars of Christ. Some of the most shining examples for illustrating the difference between orthodox belief and religion are to be found among our colored friends, and I commend a comparison of their profession and practice as an improving study to those whose minds are still muddled on this subject.

I, of course, recognize the fact that there are many physicians who adhere to the current beliefs and are not prepared to acknowledge the adverse teachings of science. If their opinions are sincerely held and their conduct is consistent with them these physicians are

certainly entitled to as much respect as are those who hold opposing views. But they are not entitled to more, as is so commonly assumed, for conformity with prevalent sentiment does not of itself show one to be wiser nor render him more virtuous than another. In fact, none of us possesses information concerning the disputed matters so full and so precise as to justify dogmatism, and it is the sensible course to tolerate differences and discuss them with decency.

It is most unsafe to judge a man by his creed. His conduct is the real criterion. Yet no doubt the large majority of men would instinctively regard a so-called infidel, in his dealings with his fellow man, as much less moral and trustworthy than a minister of religion. It is, of course, not allowable to draw sweeping conclusions from the experience of one person, but my own experience in this matter is instructive, at least. If to love his neighbor as himself and unsparingly sacrifice his body and his means for the succor of a stranger is the most exalted example of man's goodness, then the best man I have ever known was a very poor and humble infidel, a friend of my early manhood. On the other hand, of all who have basely injured me the sliest, sneakiest, meanest rascals were certain caciques of the congregation and occupiers of the chief seats in the synagogue; while he who surpassed all the rest in abject baseness, whose treatment of me at an important crisis of my life would, could I with propriety relate the circumstances, astonish you by its despicable infamy—he was a minister. And he lived and died a minister in more than ordinarily high repute, while the poor infidel, my friend and the friend of all mankind, could not dare in this city, the city of the minister, to utter aloud

his honest thoughts. But I do not conclude from my partial experience that all believers are bad and all unbelievers good. It would be the extreme of shameful folly to do so. My larger experience has assured me that a virtuous man will act virtuously and a villain act villainously whether he is Christian or pagan, Jew or Gentile, Catholic or Protestant, the head of the Church or the tail of the infidels, and that, in forming my judgment, I must rely on what is done, not on what is said.

And now at length, while the doctor is playing the various parts I have noted, and many others I cannot even name, year after year has passed. One has crept and another has flown, he hardly knows how, though he realizes that somehow many are gone. He finds himself disposed to look backward rather than forward, and sees that the backward view is long and the forward view is short. The doctor is an old man. He has sown, he has reaped; he has garnered his harvest, save for some meager gleanings that yet remain. Perhaps he is one of the favored few whose gatherings have been abundant and rich; far more probably he is one of the multitude who, if blessed at all, have been blessed very moderately. Yet, if he has acted well and his environment has been propitious, he has succeeded at least in acquiring something which, if not showy, is substantial and precious—the confidence and love of those for whom he has labored. Perchance he has developed into that most lovable product of professional life, now becoming increasingly rare in cities and produced in full perfection only in the less thickly peopled places, the old family doctor—the omnipotent friend of the children, the counsellor, the comforter, the ever-welcome guest of the father and mother. The vicissitudes of many years which he and they have

shared have bound them all together. He has ministered at the birth of one after the other of the little group, and, it may be, his art failing, he has had to see the death of one whom this dread stroke has sanctified and made the best beloved of all. He is not for this mischance less trusted nor less loved, for the bereaved ones have seen how anxiously he bestowed all the knowledge and skill he had, and they know that his sorrow is as sincere as theirs. And so he passes on, one of them in their joys and in their griefs, and so away.

I do not know of any character more benignly attractive than that of the old family doctor, nor of any man fit to be likened to him, but the old clergyman, the pastor, the shepherd of the earlier days—such a one as I myself knew and loved when I was a little child. But now the ministry has, like the rest of the professions, become a trade. The gift of a few additional dollars determines the preacher's sphere of action, and affection, gratitude, zeal for the Master's service itself, all yield. The claims of his family we would admit to be valid, but this natural and just reason for going to a more remunerative field seems too worldly to be named, and some spiritual reason is assigned which is too ethereal to impress any but a highly spiritualized intellect. Too often, indeed, it is clear that the impelling force is ambition, the infirmity of minds whose range of choice is less circumscribed than his should be. The preacher I have alluded to, the good shepherd who used to take me to his bosom as one of his little lambs, was of a different order. He had grown old along with the family. He had christened us, he had married us, he had buried us, and nothing in this world could have persuaded him to desert us. Whatever may be my doubts,

I at least can hope that there is some reward for his good life, some compensation for his hard lot, some blessing for the saintly man, who, if he could know how I had fallen away from the faith he taught me, would not denounce me, would not revile me, but would plead with me, would pray for me, would cry over me; and though, perhaps, he could not convert me into a believer, doubting, hesitating, and in some degree hypocritical, his love for me and his compassion for what he thought was my error would surely make me a better and a nobler man.

All generous people love the kind-hearted minister who loves his fellow man. Even though we ourselves may be of those whom, if he could use the rude language of his tribe, he would call infidels, if we are of the right spirit, we venerate him and wish him well. We take no heed of his creed—it is all one to us whether he be Catholic or Protestant, Episcopalian or Presbyterian, Baptist or Methodist, for with us it is not the name but the thing that counts. We revere him for his goodness, we are sorry for the straitened circumstances in which, it is very certain, he must labor. And many of us, though eminently friendly to literature, science and art, do not hesitate to express our disgust with the rich religionists who lavish their wealth on bloated colleges and universities instead of bestowing it to mitigate the hardships of such worthy strugglers as he; or, turning away from him and their own benighted countrymen whom he is striving to enlighten and elevate, waste with worse than useless prodigality enormous sums on the conversion of barbarians from reasonably good heathens into abominably bad Christians, and from friends useful and harmless to us because of their ignorance into ene-

mies most hurtful and dangerous to us because of the knowledge we have heedlessly thrust upon them. Where will you find an honest man who does not respect and honor this humble laborer infinitely more than the sybaritic bishop with his palaces and liveries, his horses and chariots and automobiles, and clothed more ostentatiously with broadcloth, purple and fine linen than with righteousness?

For myself, I can speak more lovingly of the pastor than of the doctor of my childhood. I loved the pastor, I did not love, but feared, the doctor. The family doctor I knew was not of the kind I have depicted, and not of the kind I hope you will aim to be. The doctor who is all brain and no heart is not the ideal family doctor. There is room for both heart and brain in every man, and though knowledge and skill are indispensable, it has often happened that sympathy has won when knowledge and skill both have failed. Many a grateful and self-denying mother has attributed to the learning of the physician the rescue of her child which he himself knew in his heart was owing to her own undying love.

I will conclude my discourse with a slight sketch of a member of our profession whom I knew well, and from whose life and from whose death you may, if you are so minded, gather some precious lessons for your instruction and guidance. Some forty years ago there dwelt and labored in Richmond a physician who deserves in far greater measure than any other physician I have known the praise of an unselfish benefactor of his fellow man. It is not an exaggeration to say of him that he went about continually doing good. He was one of those beings who compel our affection, yet merit our commiseration—those who possess that blessing to oth-

ers, but curse to themselves, a tender heart. No call was disregarded. All times and seasons seemed alike to him. All day long, and, apparently, all night long, too, he was making his rounds. His practice was chiefly among the poor, and largely among such as other doctors shunned as hopelessly unprofitable. The quality and quantity of his clientage led some of the pretentious physicians of the time to opprobriously style him the scavenger of the profession. As happens to the generous constantly, he was the prey of the unscrupulously sordid, who filched services which they were fully able to purchase. Notwithstanding his incessant labors he appeared to be no better off pecuniarily than most of his patrons. He either could not or would not gather enough to supply himself with anything above the ordinary necessities or the simpler comforts of life. We might have detected deficiencies in his learning and his skill, yet they were eminently serviceable; and we might by searching have found in him, as we can find in every man, some ethical flaw. Yet, whatever were his shortcomings, he had the noble qualities of respect for the station of the lowly and pity for the afflicted poor. Had he thought it needful to proclaim the surpassing benevolence and beneficence of the medical art the justice of the ascription would have been at once allowed could his own practice have been taken as a fair example of the practice of medical men.

It is not permitted to a doctor, any more than it is to his patients, to defy the laws of health, not even when it is done in the cause of goodness and mercy. Exhausting labor and inadequate rest are inexorably inimical to life. Very unexpectedly the benevolent doctor died. His death was a great grief to multitudes, and the grief

was real, not simulated. From every part of the town came the grateful poor, and a constant stream of them filed through the scantily furnished room where lay the body of their benefactor, each paying some tribute of respect and affection as he passed. His funeral was conducted at St. John's church in accordance with Protestant rites, but in the innumerable concourse in attendance were great numbers of Catholics, as well as representatives of every other creed, and the Catholic Church itself gave him the extraordinary recognition of a requiem service such as it celebrates over its own dead. A vast procession followed his body to the grave—a long line of carriages, for the most part the voluntary provision of their occupants, and then a long line of men on foot, many of them uncouth in looks and poorly clad, some old and feeble tottering on with sticks through the long streets that reach from Church Hill to Hollywood. There was no sign of the pomp of wealth, but its absence made the sight sink all the deeper into the heart, for in its stead was what the pomp of wealth cannot command, the unobtrusive but unmistakable marks of profound and sincere affection and sorrow. Richmond has witnessed many ostentatious funeral pageants in honor and commemoration of statesmen, warriors and beloved and renowned physicians where reverence, or love, or pride, or wealth has lavished whatever any of these can give, but it has never seen one which in the display of spontaneous, full and genuine feeling approached the one I have described. No doctor, surely, who saw it can ever forget it.

We have in our Capitol Square a monument erected by admiring friends to a famous surgeon who is a type of the higher intellectual product of our profession.

Could it have been done would it not have been well to place there also a memorial of the man I am commemorating, who so worthily represents the less stately, but more appealing, physician to the lowly? But it could not be done. His friends were poor, too poor to aspire to costly bronze, and of too small import in the community to be able to obtain a spot sacred to their benefactor in the precincts of the Capitol. Yet they did not forget him, and they did what they could, and you can see in Hollywood over his grave a granite memorial and can read thereon: "Dr. Lawrence Roane Waring, who devoted his life to the relief of the suffering poor. Died November 4th, 1869, in the 43d year of his age. This monument is erected by grateful and loving friends."

SOME EXPERIENCES OF A CONFEDERATE ASSISTANT SURGEON

An Address to the Society of Alumni

The paper I am to present to you—modified in some unimportant respects to adapt it to this occasion—was prepared in compliance with an invitation from the Philadelphia College of Physicians to address that body as a Confederate surgeon, and was read, on my behalf, at a meeting of the college a few days since. Had the matter been left to me, I should not inflict the paper upon you, for I have no reason to suppose that the subject itself—now become old and somewhat threadbare—will appeal to you, or that I can treat it in a manner to elicit your interest. Some of our alumni, however, have flattered me by thinking differently, and I offer the paper in deference to their better judgment—or their worse, as you, perhaps, may feel when you have heard it.

When I was complimented by a request to give an account of the methods of the medical staff of the Confederate army I was obliged reluctantly to decline because the circumstances under which I served did not enable me to obtain anything approaching an adequate acquaintance with the subject. With the exception of the first six months of the war, during which I was

employed in Richmond hospitals, I served the whole time in the field, practically as an assistant surgeon; for, though I at length became surgeon, I preferred to remain with my old companions and friends in an inferior capacity rather than enjoy my higher rank with strangers, and I was so fortunate as to have my wish gratified. But the position of a Confederate assistant surgeon stationed with the men in the field was one affording only the most limited and meager opportunities for acquiring comprehensive and accurate knowledge of the methods of the medical and surgical service.

Still, the position of an assistant surgeon had its own peculiar features; and, after further consideration, I have concluded to attempt some slight description of an humble phase of a subject whose proper handling is, in its entirety, far beyond my knowledge and abilities. Even this little I shall be obliged to do very imperfectly. The lapse of time has swept much that was once very vivid out of my remembrance. In truth, I have not very greatly encouraged these recollections. Most of them are disagreeable, and even painful, to me. For though I rejoice that I allied myself with what I believed, and yet believe, was a righteous cause, and my conscience tells me that I at least tried to act well my part in the small sphere in which my lot was cast, I was nevertheless altogether out of my element; and I look upon my years frittered away in the army as that much blank, and as waste leaves torn out and thrown away from my book of life.

I must say, too, that, despite my long and intimate association with the army, I have never been able to satisfactorily realize that I was a soldier. The essence of soldiering is fighting, and, while we have fighting

parsons in abundance, I do not know of any fighting surgeons. In common with the assistant surgeons of the Southern side, and, I suppose, of the Northern side also, I may venture to claim a share of whatever military glory is conferred by being often under fire, usually while in sheltered places; still, I have felt some degree of scrupulosity in posing, on this account, as a warrior. I have, therefore, habitually put aside my military career, letting its incidents lie dormant, and reviving them only on peculiarly fitting occasions, and these have been few and far between. This consideration has kept me from joining the military organizations which have been formed by survivors of the war, and thus I have been deprived of that freshening and brightening of old-time reminiscences which these associations foster. My narrative will, therefore, I fear, be notable for the scantiness of the addition it makes to the general stock of knowledge.

I might indeed be able to offer something in the semblance of a real contribution to a memorable history had I not been, like so many of my compatriots, a victim of the disastrous contingencies of war. From time to time I had made notes of many of my experiences and observations, and had gathered a considerable mass of this material. On a furlough home I left a large part of it there for safekeeping, but one day the house caught fire and my papers were consumed. Another portion was in a trunk in a storehouse in Richmond; this was burnt up at the evacuation. The rest was recorded in a notebook kept in my saddlebags. The saddlebags were left in a hospital on the retreat to Appomattox, the hospital was captured and the saddlebags with it, and this finished me up. Never was an ill-starred cultivator of

the fields of knowledge more ruthlessly stripped of the hard-earned fruits of his labor.

I was anxious to improve myself in my profession and endeavored to assimilate all the information that came in my way. In reviewing my acquirements during my three years and a half of service in the field I find that they may be summed up in the statement that I gained an excellent working knowledge of the art of practicing medicine without medicines and surgery without surgical appliances. This knowledge is not to be undervalued, for it was eminently adapted to the time and circumstances; but it has now become rather antiquated, and, I must own, has not stood me in much stead since.

Not only must my account be defective for want of matter, but its manner also will be justly liable, in particular, to the reproach of great discursiveness. For this feature I must crave indulgence. All of value that I can communicate could indeed have been put in a very few paragraphs, but so brief and bald a statement could have elicited no interest, even had it gained a hearer.

Of my brief experience in the Richmond hospitals there is nothing novel to be said. It was at the very beginning of the war, when means and appliances were abundant, and there was no occasion to depart from customary methods. Afterwards I had but little to do with hospitals, and was never connected with one long enough to learn much of its economies. Of the Confederate hospital system and management I am, therefore, not competent to give an account that would be even approximately adequate.

At first the system of the medical and surgical departments of the Confederacy conformed to that of the

United States, and it kept closely parallel with that as long as means permitted. But as these diminished, and exigencies multiplied, wide divergencies became imperative. Radical changes had to be made and substitutions and makeshifts had to be adopted, the details of which my situation prevented me from accurately knowing, and which, consequently, I cannot presume to describe. I must confine my account to the outcome of it all as it showed itself in the service in the field, and, in fact, as it was outside the hospitals.

Our regiment had two medical men, a surgeon and an assistant surgeon. There was also a hospital steward—a kind of apothecary, whose duty it was to take charge of the case of medical and surgical supplies, and to prepare, or dole out, what was prescribed, and to act as general assistant to the surgeons. In addition, there was a man, familiarly styled the knapsack-toter, who carried a knapsack containing small quantities of the most generally useful medicines, bandages, isinglass plaster, etc., and whose special duty it was to be with the assistant surgeon on the battle-field. We also, of course, had stretcher-bearers to convey the wounded to the ambulances. These ambulances were very sad-looking and, for the most part, very uncomfortable vehicles, and their unfortunate passengers were apt to have a dreary ride of it.

When we were on the march, or in camp, and no outside hospital had been established, the surgeon was with the regiment and had supreme charge of all medical and surgical matters. Usually he divided the work with the assistant surgeon very equitably. All the surgeons I was acquainted with were social with their assistant surgeons. In quiet times they exhibited little pride of

place, showing themselves patterns of equality and fraternity. But when a battle was imminent they were prone to become very lordly indeed, cavorting fussily around and ordering us assistant surgeons to move well up to the front, and giving us commands which, if we had obeyed them to the letter, would have been the death of us—after which they retired, or, to speak with accuracy, fled, to the shelter of their field hospitals. Sometimes, however, on these occasions by a miscalculation they would get in range of a shot; and I remember with peculiar satisfaction how we assistant surgeons were once much comforted by seeing a group of our chiefs knocked out by an unexpected cannon-ball which tore off the roof of a house, under whose protection they were chattering in great glee, and gave each one of them a substantial spanking with the shingles.

If much sickness prevailed in a permanent camp it was customary to establish a brigade hospital in some comfortable house at a convenient, or, as the case might be, at an inconvenient distance away. Thither the surgeon would repair, and reside there in enviable ease and freedom, leaving the regiment in charge of his assistant surgeon. In fact, it was the duty of the assistant surgeon to be with the regiment all the time, and thus he was obliged to share many of the hardships and privations and some of the dangers of the men. So far as the meager comforts of military life were concerned he was not greatly better off than they. One great advantage, and on the march an inestimable one, was that he could ride. But the blessing of a horse was always alloyed with much anxiety. Often he would be tied up at night and be gone in the morning—strayed or stolen, and very likely the latter. This was a most dis-

heartening calamity, and I was called upon to endure it several times during my campaigning.

The domestic economy of the assistant surgeon was much the same as that of the privates. Some years since I published an article in which I pointed out that hitherto no systematic account has been given of how the soldier in the field keeps house—how he provides for his dwelling, for his table, for his clothing, for his bed, and for the multitude of conditions which are the elements of housekeeping. I did not pretend to be qualified to give such an account, but I attempted a description of one feature, namely, how the Confederate soldier put himself to bed. As this topic is in some sort related to my theme, and as I have excellent reasons for believing that no one ever knew of my article but myself and the printers who set the type, and, especially, as I have at last got an audience, I will bestow some parts of it on you.

A precept which the soldier speedily learns, or, at any rate, speedily has taught him, is to dispense with superfluities. This species of self-denial is, as is well known, one of the most valued features of various systems of philosophy, and is much preached among civilians, though little practiced by them. The genuine exemplars of it are soldiers; not, indeed, because they are convinced of its eminent moral worth and beauty, but because they cannot help themselves. Accordingly, with these philosophers, even a bed is a superfluity, and they are able to do without it.

Soldiers in the field do not keep very regular hours. Sometimes they sleep like other people, at night; sometimes during the day; not infrequently they sleep neither during the night nor day. In fact, for sleeping, as for

whatever else they may have to do, all times and seasons are alike to them—it is done when and how they can. Still, soldiers are endowed—in some instances very richly endowed—with the frailties of human beings in general, and are thus very susceptible to comfortable surroundings; and they are perfectly willing to deposit their carcasses in civilized beds when they can get them. These, however, are not readily to be had in the field, and there the warriors are obliged to put up with such beds as they may be able to improvise, these being, for the most part, devices which a civilian would at once pronounce to be no beds at all.

In our permanent camps, especially where huts had been built, very admirable beds were fitted up, some of which were, in fact, quite as good as the box bed provided for the dog of a well-regulated family. In these camps, when there was a liability of a sudden outbreak at any time of firing from the confronting enemy, as, for example, was the case on the lines between Richmond and Petersburg, it was generally considered to be conducive to longevity to sleep in a hole in the ground. Fastidious persons, with whom perhaps I should class myself, while retaining the hole, built their beds along its upper border, taking care to have a substantial head-board, consisting of a good thick log. This log was set parallel with the enemy's line, and was meant as a receiver of bullets straying its way.

But it was when on the march that comfortable beds, while most longed for, were hardest to be got. Agreeable camping places were, however, not infrequent. Yet our experience was of infinite variety, and we soon learned to expect anything and to be discouraged by nothing. When on the march our method of going to

bed was always very simple. In general, we placed something between us and the ground, if we had anything suitable, as was not by any means always the case, and covered up with blanket or overcoat. Our trying times came with rainy weather, especially when it was prolonged and chilly. Then, after a day's trudging through mud and water, wet to the bone, and tired through and through, we laid ourselves on the soaked earth, covered up with whatever was available, blanket, overcoat, or bushes, let the rain pour on and endured impassive, till perhaps the accumulated water, submerging mouth and nose, forced us to turn. It is easy to realize that such nights were horrible, yet, so callous to physical hardships like these does the soldier become that, for my part, though I must have passed through scores of wretched nights during my life in the field, not more than four or five of them have left a marked impression on my mind.

It is paradoxical to speak of sleeping while marching all night long. These night marches were truly the times that tried men's souls. Can there be in human experience anything more ineffably dreary than to be dragging one's self on and on, step by step, the livelong night, with men and army wagons moping and blundering through the darkness, and checked every few feet by some disabled team? Yet, even under these distressing conditions, some of us could sleep—becoming veritable somnambulists, creeping and snoring in rhythmic simultaneity.

The crowning event of the soldier's life, of course, is the battle. It would be natural to suppose that the immediate anticipation of this portentous trial would banish sleep. Yet this is not so. He may be deprived, it

is true, by the contingencies of the situation of the opportunity for sleeping, but, should he get the opportunity, he is fully capable of using it. So far as I have observed, on the night before the battle the soldier's slumber is tranquil. As he lays himself down there is a thought of what is impending, an anxious thought, no doubt, but it is not of long duration. Then all is forgotten; he sinks into undisturbed, and, I believe, generally, dreamless sleep; and, unless roused by some physical discomfort, rests till awakened by the appointed signals. He sees no ghosts, no forms of loved ones at home. He is as dead temporarily as, very possibly, in a few hours, he will be permanently. He sleeps like the condemned is said to sleep on the night before his day of execution. What he feels at the moment of waking is a matter of individual temperament. In effect, the summons of the soldier to rise on the morn of battle is that solemn call, "Prepare to meet thy God!" and we cannot deem it derogatory to the bravest if he does not suddenly hear it altogether unmoved. But the depressing emotion, if felt at all, is rapidly dissipated by the stimulating feeling of companionship with friends who are about to tread together the path that leads to glory, if also to the grave.

And when the fateful day has passed over and beyond us, and the night is come, it may be that it does not bring us rest and that we shall not sleep. We may have to follow the fleeing enemy, or, ourselves discomfited, we may have to hasten away, soliciting the darkness to help us to some friendlier place. Or we may be so fortunate as to be privileged to sleep on the field of battle. Every one has often read of soldiers in these circumstances, sleeping among the heaps of slain. Usually,

the phrase "heaps of slain" must be taken as a rhetorical embellishment. The aspect of a battle-field immediately after the battle, hideous as it is, is seldom quite so bad as it is represented to be. Our standard descriptions of these scenes are commonly the idealized pictures of poets and other romantic persons who have assiduously cultivated peace that they might be spared to fitly celebrate war. Their statements, therefore, are often erroneous, or, if true, the truth is not infrequently overcharged with illusory ornament. Heaps of slain cannot easily be formed except under peculiar conditions, as when the fighting is desperate within restricted spaces. Generally, the bodies are scattered far and wide, with intervals, which are often considerable, between them. There is no need to sleep on, or in immediate contact with, the dead, and only a very brutish or callous fellow would do so. In truth, in putting himself to bed on the battle-field the soldier gets at a convenient distance from the corpses, drops down without much preparation or ceremony, and quickly sinks into profound, if not always restful, slumber, for he is sadly worn and very weary.

But the very perfection of repose for the Confederate soldier was to sleep on the grass, on a balmy summer night, beneath the benignant sky, with the bright stars, or, better even, the mildly radiant moon, kindly beaming on him. Then he is lulled into peace with all the world, and grows charitable even towards his enemy. How soft his slumbers are, and, in his later years, how sweet their recollection, if the imminent Destinies, darkly busy, shall spare him.

He does not, at such a time, drop suddenly into oblivion, but lets his fancy stray homeward for awhile; and, be sure, if he is in the flush of youth, as so many

of our soldiers were, his thoughts soon center on some fair being whom he loves and who loves him, too, with affection not purer indeed, but yet firmer, and, to my thinking, sweeter than can nowadays prevail between young men and women; for the love of the Confederate boy and girl was the all-powerful, yet exquisitely tender love that has its birth amid great misfortunes and is nourished by profound sorrows, shared by the lovers, each with the other.

Whatever Sancho Panza, Macbeth, the doctors, or other authorities have said in praise of sleep will be heartily endorsed by the Confederate soldier. It was his one solace when sinking under cold and wet, fatigue and hunger, and, most intolerable of all, under forebodings, too well grounded, of inevitable disaster. Happily, sleeping was one of his innate accomplishments; he had an alacrity for it, and a capacity for securing it which seldom failed him. Mostly, too, the sleep he got was of a gentle and benignant nature, and he slept well. Alas! Alas! for earlier friends whom I saw fall asleep, and who have been sleeping now these forty years and more.

As for our food, while the surgeons during their sojourn in the hospitals may have had fare in some degree sumptuous, when they rejoined their regiments they had to eat what the assistant surgeons ate, which was, except when some lucky chance brought an adventitious addition to the larder, just what everybody else ate. In the early months of the war we fared sufficiently well; but then came scarcity, culminating, from time to time, in what was perilously close to famine. Corn bread and sorghum molasses was one of our luxuries; and, though in the last days of the Confederacy especially we fed

on the fat of the land, it was of the land of Nassau, consisting of hunks of pork, all fat and no, or next to no, lean, which we tempered with hoe-cake. Yet in those days, by some mysterious nutritive process, I myself gathered more flesh on my bones than I ever had before. But I lost nearly every bit of it on the retreat to Appomattox, and I have never been able to get back more than a modicum of it since.

When our medical duties were over for the day we governed ourselves according to circumstances. If the troops were moving we went with them and partook their adventures, whatever they might be. If we were in camp it was always, to me at least, a problem to know what to do to enliven the usually tedious hours. I preferred to read, if there was anything to read, which was only occasionally the case. Any book would do. At one camp I came across a war-worn copy of Shakespeare, and struggled on till I got nearly through the works of the great bard. It was a labor I had never accomplished before and have never ventured on since; and at many of its stages I felt kindly towards the criminal noted by Macaulay, who preferred the galleys to Guicciardini, and could understand the feelings of the military gentleman in the house of correction who chose picking oakum as against the History of Macaulay himself. Other devices for passing the time were playing cards or chess, chatting with one another, and strolling idly about. We were very gossipy, and discussed the news and scandal of the camp just as naturally as if we had been civilians.

When we chanced to be stationed in the neighborhood of families measurably well-to-do camp life became quite agreeable. Then we grew commendably assiduous in the observance of our social duties. By a happy

concurrence of circumstances our most convenient seasons for paying visits coincided with the family's meal times, and we always courteously accepted an invitation to partake of the repast. We endeavored to requite their hospitality by communicating to the old folks all the war-news we could pick up or make up, and by dancing with the girls; and those of us who were gifted with the divine afflatus would sing for them.

I myself was greatly esteemed as a remarkably artistic vocalist, and at these meetings did not churlishly hide my talent. I had but one number in my repertoire—a most mournful ballad made by me to the memory of a camp cat, which, in one of our too frequent starving times, had been caught, cooked and consumed by some of the men. An old man is prone to vaunt the triumphs of his youth, and I trust that you will bear with my vaingloriousness in declaring that the song itself was a marvel of poetic pathos, and that my voice, sweetly strong in lusty melody, was brimful of soul-shattering dolor; and that, in my opinion, I do not unbecomingly overpraise myself by stating my conviction that when I executed the threnody to the tune of "The Mistletoe Bough" and to the accompaniment of the cracked-pot rales of a junk-shop lute, the sorrowing psalmist himself, had he been a listener, would have been tenfold more eager for wings like a dove that he might fly away and be at rest. I was also a notable dancer, and, while I admit that I was not conspicuously expert in the technicalities of dancing, I was gifted with a large share of suppleness, flexibility and endurance, and was renowned for my great feat of dancing full four miles vertically for each mile horizontally.

These gatherings, naturally, were favorable to the de-

velopment and growth of the tenderer feelings, and the boys and girls here formed attachments. For, even in those stern and bitter days, courting and marrying went on in our desolated land much as they were going on under happier skies. Some of these attachments eventuated in the marriage of more than one of my own companions and friends. Of the girls with whom I myself thus became acquainted there was one in especial who comes vividly to my mind now. She married an officer of my regiment not very long before the end of the war, and during the unusually prolonged period we chanced to be stationed near her home her sunny nature showered brightness all about us. Her kind and gentle heart has long been stilled, for it was her fate to pass away amid gloom and anguish in the last days of our humiliation and ruin. As I write of her at this distant time my heart is overflowing with tender recollections and impels me to pay my poor tribute to her memory.

Indeed, for us poor harried men, sorely beset and beaten down, it was indispensable to have the comfort and support that woman is so marvelously fitted to bestow. What would have become of us without our women it is hard to conjecture. The deeper we sunk the closer they clasped us; and when at last we were utterly submerged there they were with us still, nearer and dearer than ever. And it was they who raised us out of the pit. For their sake we proceeded to re-establish our homes and strove to mend our broken fortunes, in which effort they gave inestimable help. From my own home, whose solitude is not lightened by the presence of wife or child, let me waft across the dusty years my benediction on the Confederate women—on the

younger ones who made me happier by their companionship, and on the older ones who were ministering angels to the sick and wounded and despairing—nor shall I ungraciously withhold my blessing from good and loving women, all and everywhere.

These visits to the neighbors often extended quite far into the night, and during one of my nocturnal prowls I had the unspeakable satisfaction of falling in with a collection of jack-o'-lanterns—things I have never seen but this once. As my paper is painfully bare of scientific matter, and jack-o'-lanterns are scientific phenomena, I seize upon them to help out my scanty stock. In common with all the little Southern children before the war I had been fully instructed by my African nurses and playfellows in the mystical lore inherited by them from their fatherland, and which they had assiduously cultivated and added to and improved upon. The jack-o'-lantern was one of their most valued specialties, and they had put me in possession of so much circumstantial information concerning its eccentric and baleful peculiarities that in my earlier years I felt for it the most respectful apprehension. As we grow older, however, most of us grow more or less skeptical, and I had at length come to disbelieve in jack-o'-lanterns almost altogether. But let no man doubt them. There are such apparitions, for I have seen them—at midnight hovering over dead men's graves, under the solemn shadow of a church—just the conditions which had been prescribed by the most able among my African instructors. Moreover, it was asserted by them that the most favorable circumstance for evoking the appearance of a jack-o'-lantern was for the wanderer to be returning from a hen-house attended by its inhabitants. Whether this circum-

stance was in operation on the night in question I will not positively affirm or deny, for in the multiplicity of occurrences of a cognate kind any individual one is but too apt, in the lapse of years, to glide out of the recollection. I can only say that we indeed did not infrequently commingle foraging with our social pleasures.

The church had been used for a temporary hospital, and the men who had died there were buried near it. Not the least melancholy incident associated with warfare is the hurried and uncereemonious sepulture that has often unavoidably to be accorded to soldiers who die while serving in the field. In the exigencies that beset an army actively employed there is but little time or opportunity for observing the elaborate decencies considered by civilians as indispensable at a burial. Indeed, the dead soldier may congratulate himself, supposing he is in condition to do so, if he has been buried at all—though I can say that no instance ever came under my notice during our war where at least this much was not done for him. The graves at the church were a group of five or six. They were, no doubt, very shallow, and perhaps the bodies had been interred without coffins. At any rate, the conditions for rapid decomposition were favorable, and this was going on.

As I approached I saw each grave marked out in its whole extent by a ghastly phosphorescent gleam floating over it. I got off my horse and made as critical an examination as I could. The light did not develop till the exhalation had risen some two feet above the grave. It was of a pronounced blue color, which, though pallid in its tint, was very distinct and conspicuously visible, and of uniform tenuity without glow or coruscation. It was very sensitive to air currents, and I could make it

vanish by a wave of my hand, but in a few seconds it would glide into sight again after a very ghostly fashion. Altogether the spectacle was one of great interest to me, and, though far less awesome than the vision that had been imprinted on my young mind, was not without impressiveness. Certain it is that not one of my old-time colored contemporaries, had he chanced to come upon it, but would have felt his soul shriveling up within him as he gazed. Some few nights after this apparition I passed the haunted spot again, but the jack-o'-lanterns were gone.

In recalling the medical aspects of our life in camp, with the view of imparting something that you might think is of value, I am greatly disappointed at finding that I have scarce anything which is worthy of your attention. As to our methods, I may say, as a general statement, that we aimed to conform to the science of the time, though the restrictions to which our ever-increasing necessities subjected us often forbade the practice of it. We did not do the best we would, but the best we could. And what we knew of military medicine, compared with what is known of it now, seems small and of inferior quality. Particularly, the rigid antiseptic notions of these days did not enter our heads. We had correct ideas as to ordinary cleanliness and decency, and we policed the camp in accordance with them, but there was no excessive care, nor anything approaching the refinements of present-day sanitary science—such as were applied during and after the Spanish war. Yet the contrast in the results accompanying our crude methods to those attained in the later war is most obvious and most remarkable. Perhaps, then, when I say that our knowledge, in some directions, seems to be inferior

to that of this time I use the proper word, and that, in fact, the condition was more seeming than real. It is much the habit of arrogant youth to belittle the knowledge of the old. But inquirers whose researches lead them to study the work of their quite remote predecessors are constantly surprised at the learning and ability of those ancient men, and very well know that to the question so triumphantly propounded, "What would the ancients say?" to this or that modern exploit, that the ancients aforesaid would not seldom be fully authorized to say something crushingly uncomplimentary.

Early in the morning we had sick-call, when those who claimed to be ill or disabled came up to be passed upon. Diagnosis was rapidly made, usually by intuition, and treatment was with such drugs as we chanced to have in the knapsack and were handiest to come at. In serious cases we made an honest effort to bring to bear all the skill and knowledge we possessed, but our science could rarely display itself to the best advantage on account of the paucity of our resources. On the march my own practice was of necessity still further simplified, and was, in fact, reduced to the lowest terms. In one pocket of my trousers I had a ball of blue mass, in another a ball of opium. All complainants were asked the same question, "How are your bowels?" If they were open I administered a plug of opium, if they were shut I gave a plug of blue mass.

The prevailing diseases were intestinal disorders, though we had a share of almost every malady. Occasionally we suffered very seriously from measles. Small-pox was effectively kept in check by vaccination. Intermittent and other malarial fevers at times incapacitated regiments to an extent which was really portentous.

Our management of these various diseases presented, so far as I know, nothing unusual or novel. None of the well-developed cases remained long under my care, for they were sent from the camp to the hospital to be treated by the surgeon. When I have sometimes modestly advanced the statement that, during all my army experience, I never lost a case of fever, or of pneumonia, or, indeed, of anything else, except when the subject had been slain outright, captious members of the profession have said that this was because I sent them off before they could get a chance to die. This explanation seems plausible only because the fact is true. I will not waste time in controverting it, but content myself with saying that my reputation as a successful practitioner was very much higher with the regiment than that of the surgeon, who, it was universally perceived, lost a good many cases that lived as long as I had them, and died only after they fell into his hands.

A modicum of surgical practice was furnished by the accidents that occurred. These were not so numerous, nor, generally, so grave as the inherent carelessness and recklessness of the soldier temperament would warrant us in expecting. One source was the unexploded shells which were apt to be pretty plentifully scattered over the ground after a battle, and particularly so in localities where we were camped for a time in the neighborhood of the enemy. Under these circumstances there was often much artillery firing indulged in for inappreciable reasons. No one minded it much, and, on the whole, the missiles were more dangerous after they had come to rest than in their flight. It was the delight of the men to tinker with the unexploded shells, and opening them to drain out the powder and peck out the balls

with which they were charged. As this operation was not always thoroughly done the discarded shells, which were carelessly thrown aside, could still be very formidable should a spark from a pipe or a fire reach them.

To one of these shells I owed the promise of a case of transcendent surgical interest and instruction, and worthy to be reported in the journals as rivaling, or even surpassing, the celebrated crow-bar case, where the implement passed through the victim's brain without materially damaging him. One afternoon a good old Rebel was making ready to solace himself with the unaccustomed refreshment of a copious mess of apple dumplings, which he was boiling in a pot supported over the fire by help of one of these imperfectly eviscerated shells. In due time the pot was blown up with a report that roused the whole brigade. I hastened to the spot, and on approaching the veteran was astonished at the spectacle he presented. Apparently, all his brains had literally been blown out and bespattered him from head to foot, while, notwithstanding, he was not only erect, but was able to move about and his head was still whole—a marvelous pathological phenomenon. You will fully sympathize, I have no doubt, with the keen disappointment I felt when a minuter investigation showed that it was not his brains, but the apples from his dumplings. As for him, he was unhurt bodily, and mentally was not visibly moved by the grandeur of the blow up of the pot, which all the other beholders agreed was uncommonly sublime, though the loss of the dumplings, which had been scattered to the four winds of heaven, affected him profoundly.

Normally, we were scant of medicines, and, generally, they were of the commoner kinds. At times,

however, we were well supplied, and with excellent preparations. These times would be when captures had been made, or medicines of Northern or European manufacture had come through the blockade. The Confederate pharmaceutical laboratories worked industriously, but under great disadvantages, and their output was, in many directions, not surpassingly excellent. Among other things they made blue mass. This would have been a very satisfactory product could its components have managed to keep themselves in harmonious juxtaposition; but, as it was, it would not be long after the mass reached us before the mercury seceded from the rest and settled off by itself at the bottom of the holder. The loyal residue we used for its appointed ends, and the rebel mercury we sometimes utilized to circumvent the inferior forms of life that trod in hosts with equal foot the general careering on his charger and the private wallowing in his mud-hole.

On the battle-field our stock of medical and surgical supplies was particularly condensed. As for the latter, we had chiefly a pocket-case of instruments, plaster and bandages. Bandages were plentiful, but we seldom had splints. We could usually find some makeshift for these. On one occasion I used a whole fence-rail for a broken arm, being unable to do any better. I had just finished making the rail secure when a turn in affairs forced us to take to flight. My patient started to run with the rest, but the distal end of the heavy rail tilted downward, stuck into the ground, and jerked him up short at every step. I do not precisely know what became of him, but unless he had the sagacity to turn round and retreat backwards I fear I was instrumental in delivering him into the hands of the enemy.

Our most valued medicament was the alcoholic liquors, which were furnished to us sometimes in the form of whiskey and at other times of apple brandy. These preparations were esteemed by the surgical staff very generally as a specific for malaria especially—a condition which was very prevalent, and to which the surgeons with whom I was associated believed themselves to be peculiarly susceptible. Feeling that a breakdown on our part would work irretrievable detriment to the country we patriotically strove to ward off the calamity by instituting a grand sanitary soiree on the night of the day on which the supplies arrived in camp, where we would tone up our systems and corroborate our constitutions by drinking up every drop of the prophylactic before morning.

It is a remarkable circumstance that the medical purveyor, learned as he admittedly was in medical science, was never able to grasp the fact, which was knowledge of the most elementary kind to us, that army surgeons are specially cursed with a malarial idiosyncrasy, and, on the other hand, that they are blessed with a special adaptability to the remedy. He appears to have gone no deeper in the matter than to note that, however large the quantity of whiskey and apple brandy he issued, credit for a surplus had never been known on the records; whereat he marveled much, and in his replies to our requisitions would couple his expressions of wonderment with painfully injurious surmises and commonplace explanations of the deficit suggested in very plain terms.

Apparently, the Federal medical department was troubled with similar perplexities, and it had devised a method for quite effectively obviating them. This con-

sisted in thoroughly embittering its whiskey with quinine, or some equivalent atrocity. I infer that this was their method from the fact that our brigade, on one occasion, captured a large keg of their liquor. Our surgical staff was then in one of its rundown conditions, and undertook to build up on this tonic. It was found to be a very intractable process, and resulted in our formulating the opinion that to mix quinine with whiskey is a pharmaceutical mistake and a practice to be reprehended.

As alcoholic liquors were indispensable on a battlefield it is conceivable that the sudden and complete vanishing to which they were liable might at some time prove to be a very serious matter. And so it would have done but that one of our staff being in tolerably constant communication with his home, where there was a distillery, was able to keep on hand a full keg of his own, from which he would generously supply the rest of us when an exigency required it.

We were devout believers in the old medical aphorism, which declares that "wine is the milk of age"—old age, middle age, any age. We had no wine, only whiskey and apple brandy, but they would do. In these latter days something of a reaction against alcohol as a remedy has come. However it may be in civil practice, where substitutes of equal efficiency may possibly be attainable, I have not the least doubt of its surpassing utility in military practice on the battlefield. In truth, I am constrained to think that the present-day hostility to alcohol is not founded on accurate scientific knowledge so obviously as on infection by the recklessly active crusade against it which is a marked feature of our time. It may be true, as we are

told in the Women's Christian Temperance Association's school physiologies, that alcohol will cause the tissues of warts and corns to degenerate, crumble away and disappear, to the great sorrow of childhood, which is prone to look upon these appendages with pride; and a special appeal has been made to the consciences of such military men themselves as would rather be entombed in the stomach of a buzzard than not be buried at all, by the terrifying statement that these exemplary birds turn with indignant disgust from the bodies of liquor-swilling soldiers dead on the battle-field. These may be formidable objections to the use of alcohol, but the military surgeon of my day would have thought that they were offset by the fact, demonstrated by innumerable instances, that it promptly rallies the deep sunk spirits of the wounded soldier, and snatches him from the jaws of imminent death.

The profound shock induced by severe gunshot wounds, and the tendency of soldiers to vastly exaggerate the gravity of trivial ones, have been constantly noted by writers on military surgery. These injuries are indeed capable of cowing the most courageous soul. During one of the greatest of our battles a Confederate general, deservedly famous for his bravery, hurried to my station on the field in piteous perturbation, convinced that he was mortally wounded. He was copiously treated from our black bottle, and after a rather inordinate quantity of the resuscitator had been taken—for, in deference to his rank, he was allowed to adjust the doses himself—he rallied sufficiently for me to make an examination. He had been struck by a bullet which had made an abrasion of considerable length, but exceedingly superficial, on the right leg of his boot—and

this was all. He would not believe it till he had cleared his intellect by a few more doses of the restorative, when he admitted the correctness of my diagnosis, and returned to his command, where he fought with his accustomed courage to the end of the action.

I may here be permitted to remark that the terror of soldiers is a somewhat curious phenomenon, with peculiarities which might repay investigation. While their intrepidity is displaying itself in deeds of the most exalted courage it can, in the twinkling of an eye, collapse into the most abject cowardice. Julius Cæsar himself, if we can trust the report of Cassius, flunked badly on more than one occasion. Says Cassius:

"I did mark

How he did shake; 'tis true, this god did shake:

His coward lips did from their color fly."

And there is the memorable instance of the Great Frederick, of all warriors perhaps the most consummate, who fled the field already won. Many soldiers, officers and privates, whose courage had been tried and approved by the severest tests on innumerable fields, have told me that there were times when there would come upon them an almost overmastering fear in circumstances in no way peculiar, and which would not adequately account for it. It is a characteristic of the human mind, to which I question if there has ever been a single adverse instance, that its noblest qualities, assiduously cultivated and guarded with the utmost care, will now and then, from some vague cause, become uncontrollable and temporarily give way; and perhaps the most we can in justice require of even the steadiest of our fellow mortals is that these lapses shall be few and not the habit of the mind.

For my own part, I freely admit that I was never in a battle but that I should have felt the most exultant joy had I been out of it. In all, however, I contrived, somehow or other, to bear up more or less satisfactorily except in two of them—the battle of Malvern Hill and the battle of Sailor's Creek. At Malvern Hill I was still ill with a remittent fever which had attacked me a few days before. The battle was raging and we were hurrying forward to take a place in the line when suddenly I felt like Julius Cæsar, shaking all over and my lips and their color parting company. A horrible fear took possession of me and I was in a deplorable state physically, mentally and morally. During a halt I was directed to intercept the stragglers, who were becoming numerous, and send to their commands those who were not demonstrably unfit for fighting. This was a most humiliating duty, for I was painfully conscious that I was lording it over many a man who was worthier than myself. Apart from my illness, which I had not regarded as disqualifying me for service, there was nothing in the circumstances of this battle more formidable than what I had encountered many times before. Yet my dread was extreme, and, as it turned out, was entirely unnecessary, for our brigade did not get into the action after all.

I was afterwards in a great many other battles, but in none did this hideous sensation recur till in my very last battle of all, which was the battle of Sailor's Creek, three days before the surrender at Appomattox. Here my large and varied store of military experiences was enriched with the knowledge of how it feels to be part and parcel of a thoroughgoing panic. Hitherto it had been my inexpressibly good fortune to be with, or,

at any rate, behind, men who, though occasionally compelled to fall back, knew the art of doing it with decent precipitancy. I was now with these men, and on the firing line itself, for they were doomed, and I was resolved to share the fate of my old friends and comrades whatever it was to be. But, though bullets were flying copiously, I felt no extraordinary apprehension. In fact, fear was driven out by despair, for all of us knew that this was our last stand, that overwhelming defeat was certain, and that escape would be well-nigh impossible. Every one of my regiment who was engaged in this battle except myself and a slightly wounded soldier was killed or captured. The somewhat singular manner of my own escape is a story that might be worth telling if this were the place for it.

In the cataclysm that occurred I managed to associate myself with another regiment, which was retreating at a double-quick. Behind us musket-firing, cannonading and yelling were incessant and tremendous. For a while our retreat, though rapid, was remarkably orderly, and I trotted along on foot—for I had lost my horse—in reasonably good spirits. But presently a little unsteadiness manifested itself, which quickly became a decided wobble, and then, in a moment, as though it had exploded, the whole organization flew to pieces. It was a wonderful and startling sight. These heroes of a hundred glorious fields had instantaneously lost their manliness and become reduced to the grade of a flock of terror-stricken children. It did not take long for me to be thoroughly infected, and I got over the ground with amazing celerity, unimpeded by the reflection that I had not the least idea of whither I was going. The fact is, I was in very light marching order, having little

on my outside and nothing at all inside except a few grains of intractably flinty corn, which I had been munching at for the past two days. The risk of being killed was imminent, for, not only did the pursuing enemy keep up their fire, but many of our own men, preserving even in their panic the noble soldierly instinct of returning a fire, as soon as they heard anyone drawing near to their rear would throw their guns back over their shoulders, blaze away, and, casting the weapon from them, would race on with redoubled energy without turning their heads to see what they had fired at. Yet in this, the very presence of death, I had absolutely no fear of it. It was not this that gave wings to my feet—it was the dread of capture. This misfortune had never before presented itself to my mind as something that might not be endured with fortitude, but now, for some reason, the idea of it took complete possession of my soul and overwhelmed it with horror and dismay.

In their headlong flight the men lightened themselves of their arms, knapsacks, blankets, of whatever impediment they could get rid of. And so we plunged along, puffing and blowing, enveloped in all the hideous noises of battle, helter-skelter, higgledy-piggledy, each for himself, God for nobody and the devil take the hindmost—by the nine gods of war, I swear it was a mess. In the maniac rush, though a few dropped out and, cowering behind trees, yielded prematurely to their fate, the great body kept together, and at length coming to a broad road, cheered by its ample and unobstructed track, they turned into it and fled along it pell-mell. In great extremities early religious impressions are apt to force themselves upon the mind, and now I vividly re-

membered that instructive old hymn which admonishes us that

"Broad is the road that leads to death,
And thousands flock together there;
But wisdom shows a narrow path,
With here and there a traveler."

And accordingly I shot across the road into a field, and ran and ran till I fell down gasping for breath and with my tongue hanging out of my mouth. From this lair I saw a troop of Federal cavalry come galloping and yelling down the broad road in hot pursuit of my late companions, whose career in a few minutes thereafter was brought to a disastrous close. But I had escaped, and ultimately got to Appomattox, where I wandered around till the surrender—a vagabond soldier, friendless, starving, and utterly miserable.

The panics of trained soldiers must, however, be regarded as abnormal phenomena, and it would be most unjust to view them as evidences of dishonoring cowardice. The fact is, that in an army courage is as plenty as blackberries, and much more so. It was rare indeed to find a man who failed when the test was applied. On the day of the battle of Gettysburg, whose terrible gravity was foreseen by all of us, a day remarkable for the enervating and sickening heat of the weather, when sick-call was sounded in my regiment not a man responded and not one asked to be excused from duty. And so, too, the surgical staff everywhere and on all occasions displayed all the courage that was necessary, but fully realizing that it was their function to heal wounds, not to receive them, and with minds clarified

and enlightened by the elevating character of their studies and pursuits, very judiciously forbore to exhibit a superfluous amount of it.

But it was on the battle-field that the assistant surgeon was in his own sphere, for it was the method of our service for him to be with the troops when they were in action, that he might render immediate aid to the wounded. Here he did his strenuous work. Abandoned by the surgeon to his fate he had to depend upon himself, and here was sternly tested whatever he possessed of resource, fortitude and self-sacrifice.

It was the custom of the assistant surgeons of our brigade to work together for the benefit of mutual help. As the troops advanced we kept with them and closely scrutinized the locality in the search for places suitable for stations, noting trees, fences, straw-stacks, depressions of the surface, or whatever offered a show of shelter, and especially looking for gullies, which were the most desirable of all. It was necessary for these stations to be near the engaged men, and we could not always find a satisfactory place; and sometimes our only protection while ministering to a wounded man was by sitting, or even lying, with him on the ground. We, however, were blessed with the inestimable privilege of having among us an assistant surgeon who was one of Nature's born topographers. He was intuitively skilled in dynamics and conversant with parabolas and trajectories and the relations of the angles of incidence and reflection, and possessed an instinct for the line of most resistance. He was also an adept in the calculus of probabilities, and, moreover, had an exquisitely developed antipathy to every kind of personal wound or injury. This gifted man took an ener-

getic part in the selection of our stations, and to his opinions and judgment the rest of us paid the greatest deference.

As the men moved forward to get into position they would not infrequently be under heavy fire, and we assistant surgeons had to maneuver against it the best we could. When line of battle was formed it was often the case that we were in it, and there we remained till some one was wounded, and, as a wounded man could not be allowed at the front, we had the opportunity of an honorable retreat with him to our station in the rear. I will not hypocritically assert that in those days I was ostentatiously pious, but when I was under these baptisms of fire it was my wont to pray as devoutly as my religious knowledge and experience qualified me to do that I might be spared merely till some one else got hit—and I was particularly fervent in the aspiration that this might befall right speedily.

During my first battle I was in the thick of it the whole time without shelter, having been ordered by the surgeon in his final injunction, before he decamped, to stay right with the men; and in the novelty of the position I did not know how to care for myself. The shoals of bullets whizzing past me were for a while rather dismaying, but, finding that I still lived, I heartened up gradually, and the longer I lived the greater the assurance I felt that I was not to die, till presently I stood the fire with an equanimity that astonished me. But after the battle, when I betook myself to serious reflection, it occurred to me that to be shot at by innumerable people for indefinite periods was a somewhat risky adventure, and I made a vow that for the future I would indulge in it with frugality—a vow

which I faithfully kept; or, when I broke it, my conscience is clear that it was from no sinful compliance of my own.

We shifted our stations, when it became necessary, to conform to the movements of the fighting line, and it was our good fortune to very seldom have to fall back. Our surgical work was usually very simple, though often there was enough of it to keep us fully and laboriously employed. It consisted chiefly of the application of plaster and bandages and the administration of stimulants, and superintending the placing of the badly wounded in the ambulances for transportation to the field hospital. No elaborate surgical procedure was undertaken unless there was urgent necessity for it. Sometimes a very extended area was fought over, and wounded men, both our own and the enemy's, would be scattered about it, often, if the country was wooded or otherwise difficult, in out-of-the-way places, whither they had wandered. When the battle was ended, if our troops had possession of the field, we had to hunt up these unfortunates—a duty willingly performed, though not infrequently an arduous one.

The army with which our group of assistant surgeons served was long triumphant, and during this time our lot was reasonably endurable; but at last the change came, and our lot changed, too. Our tribulations began the day following the breaking of the Petersburg lines, and a strenuous day it was for us assistant surgeons. Its history was made up of a diversified series of marches, halts, ambushes and sudden attacks, ending late in the afternoon with a breakneck race for a bridge over a protecting stream, and the hottest kind of pursuit thither by the Federal troops. Our staff got over

the bridge safely, but many of our companions were cut off and caught on the other side. It was on this eventful day that I first had experience of the military formation called the hollow square, of which I had a historical recollection from its Napoleonic association with "asses and savants to the center." My judgment of it was that the center was an eminently proper place for an ass, for no one else would put himself where he would be the focus for the shots from every side. The square was formed when attacks were made upon us by unseen enemies as we passed through bodies of thick woods. On these occasions I preferred to remain outside the square and gyrate around a tree.

This day inaugurated a week of unspeakable woe. Of its hardships and perils the assistant surgeons bore an equal share with the fighting men, having no option in the matter. Our surgeons were not with us, for they remained at the field hospital when we began our pilgrimage, and had their independent adventures. I do not remember seeing any of them again till I was approaching Appomattox, where at least one of them eventually arrived with heartbreaking accounts of troubles of his own.

The roll of surgeons slain in the civil war is, I believe, not of impressive length; nor do I know that vast hosts of assistant surgeons perished in the conflict—though I have heard that one or two of them were killed. That they were susceptible, under favorable conditions, to slaughter is, I think, shown by an experience of my own at the battle of Gettysburg. Our station on this field had been selected by our medical topographer with his utmost art, and seemed an ideal one, being a little dell in a grove conveniently in rear

of the troops. Here we had a large collection of apple-butter pots, gathered from the surrounding country, which were filled with water to be used for the wounded. Feeling eminently secure, we lolled and waited for the battle to begin. It began with that furious cannonade which is remembered as the most thunderous that has ever shaken the earth. It was appalling to us, for our topographer had by some strange misapplication of his recondite learning contrived to place us in the very center and focus of the fire. In a moment the air was filled with limbs of trees, scraps of butter-pots and yells of fleeing medical men and knapsack-toters. I undertook to keep company with my companions, but my horse, young and restive, had tangled himself in a tree and I could not immediately extricate him. I was thus for some minutes made an involuntary witness of the impressive spectacle. It is impossible to describe it. I question if in all civilized warfare there can be found anything more sublimely awful than the crash of a broadside of cannon-shot through a stockade of apple-butter pots. I did not, however, linger unduly to contemplate it. Having at last released my horse I moved off with him without mounting, pacing along with the dignity befitting my professional character dashed somewhat with briskness. I had gone only a little way when I suddenly felt what I have seen described in accounts of hangings as a dull thud. Dull as it was it was sufficiently sharp to convince me, for the moment, that I was slain; and I remember that I was much troubled in mind to know whether I had been honorably put to death by a legitimate missile, or had been ignominiously butchered by a butter-pot. It did not take me long to discover that I was still living and in tolerable con-

dition. It is true that one leg had been paralyzed by the shot, but, by way of compensation, the function of the other had been proportionately exalted, and on this I hobbled vigorously away, and at length reached a sheltering gully, where I investigated my injuries. I found that there was nothing more serious than the loss of three or four cubic inches of tissue, which had been scooped out of me; and presently, by slow degrees and with much cautious maneuvering, I retraced my steps towards the field of battle. On the outskirts of the field I encountered the colonel of my regiment with nearly all his teeth neatly and effectively extracted by a bullet received in the mouth. He could, however, speak sufficiently plainly to tell me that I could not go on without being killed, and I understood him very well when he ordered me to go back.

With the pardonable vanity of a veteran who has been battered in the wars it has always been a delight for me to relate this incident. Particularly, when, some years since, I taught science to the boys and girls of the Richmond High School, where I at times relieved the aridity of scientific details with accounts of my military experiences, I was accustomed to narrate this piteous story with much feeling. The girls especially would become deeply touched with sympathy for the sufferings of their teacher, and perceiving no obvious marks of injury anywhere on my person, but full of that kindly curiosity which is so amiable a characteristic of the female sex, these tender-hearted little beings would exclaim, "Oh, poor Doctor Taylor! Where were you wounded?" To this affectionate inquiry I could only reply simply, "At Gettysburg"; for to their untechnical minds it would

have conveyed no information to tell them that it was in the gluteus maximus muscle.

Whenever I speak of the battle of Gettysburg my mind reverts to something of which, though it is hardly pertinent to the subject of my paper, I trust you will not be unwilling to hear—and it is about a parson. Much laudation has been expended on this and that “fighting parson”; but, so far as I have observed, there has been a notable dearth of specification of the feats of arms he did. Perhaps it will not be deemed invidious if I make some mention of a certain praying parson and of a particular prayer he offered up, where I was present and knelt with him. It was on the battle-field of Gettysburg, and just before the battle.

So far as I know the incident was unique in our armies. A great array of war-battered soldiers baring their hearts and pouring out their very souls in united appeal to the God of battles as they were about to march into the jaws of death is something not likely to sink out of the notice of him who was part of it; and yet I have seen no mention of such a thing among the innumerable reminiscences of the war. It has been my fortune to witness much that was grand, that was sublime, that was terrible, but nothing has ever stirred the profoundest feelings of my nature as did this prayer before the battle. I have no language fitting to describe the solemn impressiveness of the occasion. We were then at rest, and all around was a quietude ominous in its stillness. The day was glowing with summer brightness, the landscape was pleasant to look upon, but our circumstances were too fateful to permit even young and ardent men to utterly dismiss foreboding thoughts. Our chaplain asked us to join with him in prayer, and all

of us knelt with him on the ground. He prayed for us, fervently for all of us, and most beseechingly for those to whom it had been appointed to die this day; but most touching of all was his remembrance of the dear ones in our distant homes, who, we knew, were at this hour anxiously thinking of us and mingling their prayers with ours. He ended and turned away weeping, knowing that with some of us he had communed for the last time in this world. He could not foresee how very great the number was to be whose faces he was to behold no more, for whom he was not to be permitted to perform the last rites, but whose burial was to be what the victor deigns to give the vanquished.*

The term "fighting parson" has, I must confess, to me a discordant sound. I cannot say whether this is because I have old-fashioned notions, or, as I think is more probable, because I am a primitive Christian without knowing it. It is certain, however, that all the Confederate chaplains were not fighters, but that some of them left fighting to be done by people whose duty it was to do it, and were mere ministers to the spiritual needs, and often, very often, to the bodily needs, too, of distressed and sorrowing soldiers. This sort of thing was not very glorious, but there were times, as many of us old Rebels can recall, when such ministrations were more grateful than would have been the putting to rout of a whole regiment of Yankees by the chaplain. Very little has ever been said of these humble workers, but I do not clearly see that if the surgeons, who were in safe

*The brigade to which I belonged (Garnett's) lost in Pickett's charge at Gettysburg sixty-five per cent., and every officer of my regiment, from colonel to corporal, was either killed or wounded.

nooks two or three miles away from the turmoil and danger of battle, are to parade as military heroes, why the chaplains, who were in these places with them and shared their safety, should not partake their glory, too.

One of the chaplains of my regiment did transform himself into an actual fighting parson, serving as an aide to a general. One afternoon, in the lull of one of the desperate battles marking General Grant's advance on Richmond, I found him lying dead on the field. He had been shot while on horseback, and his attitude afforded a striking example of the condition known as cadaveric spasm, and was a startling reproduction of one of the Masonic signs.

As a final observation I remark that, from the standpoint of the army surgeon, the horrors of war have been vastly augmented by modern advances. The long-range weapons of these days will compel surgeons to establish their hospitals farther from the battle-field than our surgeons placed theirs, which assuredly were not set up abnormally near. An old Rebel surgeon will be devoutly thankful when he considers that in his times of stress, as the enemy hurried him hither and thither, he was at least spared the anxiety of looking out for his sterilizing plant, his X-ray machinery, his cans of turtle soup, lobster and plum pudding, and his corps of female nurses.

Here I conclude my rambling narrative. In giving my account I have carefully abstained from saying anything calculated to awaken dormant animosities. Time and events have obliterated former asperities. From all that I have ever learned the surgeons both of the Northern and Southern armies adhered sacredly to that principle of our beneficent calling which will not permit us

to classify human misery by race, or creed, or political opinion, but instinctively leads us to extend our succoring hand impartially to any afflicted fellow man. Our own profession, bound together by ideals that pertain to all humanity, could never be much severed by the conflict. The loving memories of the cause for which I made my poor share of sacrifice, which well up from my heart and will not be restrained, are not inconsistent with my profound gladness that my countrymen are again united. While it may well become Southern men and women of the future to regard without vindictiveness the calamities imposed upon their ancestors, it will not be becoming to altogether forget them, or to let sink out of remembrance the dauntless resolution, the vast sacrifices and the unconquerable fortitude with which those calamities were met. Some little relating to them of a special class has now been told to you by one of the few participants yet lagging on the stage, and you have patiently listened to it, though he has presented it in light words, and, he fears, in trivial form. It would be most grateful to him could he think that in the distant years, when you, too, are grown old and are telling the young people stories of the great war, you will be able to gather something to interest and please them from the experiences of the old Rebel surgeon who thanks you for your kind attention to him to-night.

WOMAN

A Lecture to All the College Classes

The poet Pope declares that "the proper study of mankind is man." Some one else has modified this dictum, and perhaps strengthened it, by making it into "the proper study of mankind is woman." That woman offers a problem whose study is of profound interest and importance is shown by the fact that from the earliest recorded times on to the present it has elicited the earnest attention of every class of men, from the most erudite philosopher to the most uncultured clown, from the gravest sage to the lightest trifler. The difficulties which beset it are numerous, diversified and intricate. So far the problem has been only very partially solved, and, indeed, we seem to be obliged to confess that its complete solution is beyond the power of man.

I myself am about to say something of this strange creature, of whom her brother has spoken in the most discordant tones, at one time exalting her among the hosts of heaven, at another depressing her to the grade of the evil demons; whom poets, painters and sculptors have glorified as the symbol of all that is lovely and pure and blessed, whom priests have condemned as that which

"Brought death into the world and all our woe."

I have ventured upon a very hazardous enterprise. My sole defense is that I am expounding my subject to

medical men, to whom, as I have heretofore consistently and pertinaciously contended, the study of whatever pertains to humanity is an inalienable perquisite. Assuredly there is no class of men more considerate of woman than physicians, none who towards her are more forbearing, more tender, more compassionate, more chivalrous. But the physician would grievously fail in his duty to himself, and consequently to her, did he allow sentiment to override fact, or romance to usurp the place of reality, and, blindly yielding to enthusiasm, exalt as a divinity a being who his observation, experience and scientific knowledge plainly tell him is a very imperfect human creature. That medical men thoroughly appreciate the importance of the study of woman is evinced by the station she holds in their curriculum. Every medical school assigns to her a distinct and distinguished place. Our own college devotes two professorships exclusively and another almost exclusively to woman. A vast body of literature, consisting of books and periodicals dealing with gynecology in all its aspects, has grown up. Art, invention and study are lavished incessantly without stint by our brotherhood for her sake.

I must now ask you for the present to suppress your youthful enthusiasm for the other sex, to forget your sweethearts, as I must forget the female friends whose pleasant companionship, whose pitying eyes, whose consoling hands have from time to time enhanced the happiness and lightened the sorrow of my long and secluded life. We have not come together to idealize love, sensual or Platonic. I am not on this occasion addressing a class of sweet girl graduates, and therefore I do not feel under any obligation to tell lies about the female

sex. We are here strictly for business. Our thoughts must fix themselves upon anatomy, physiology and psychology, and we must assume the frigid attitude of the precise and passionless student of facts.

Before I proceed let me entrench myself behind the opinion of a man observant, sagacious and veracious in the highest degree, the great moral philosopher, Dr. Samuel Johnson. Says he: "Ladies set no value on the moral character of men who pay their addresses to them; the greatest profligate will be as well received as the man of the greatest virtue, and this by a very good woman, by a woman who says her prayers three times a day. A lady will take Jonathan Wild as readily as St. Austin, if he has threepence more. Women have a perpetual envy of our vices; they are less vicious than we, not from choice, but because we restrict them; they are the slaves of order and fashion." He said this to a company of ladies, showing that he had the courage of his opinions, and declared that a woman would take one whom she thought a bad man to have the pleasure of vexing her parents, and plainly indicated that she would do this, not merely for the pleasure of marrying, but for the pleasure of sinning. I am myself not likely to say anything about woman worse than this, and, I trust, not anything quite so bad.

When we regard woman abstractly we are constrained to fancy that she is of a more spiritualized or etherealized nature than man, that femininity is something magically elusive and mysterious. Accordingly we find her predominant in all that pertains to the occult, and in constant association with all its forms and manifestations. Women are the witches, the pythonesses, the clairvoyants, the mediums. They are the proper inter-

mediaries between the world of substance and the world of shadow, as was the Witch of Endor of old, and as are Mrs. Piper, Mrs. Eddy, and an innumerable host of similar necromancers and magicians of the present day. So marked is this connection of woman with the occult that, if we ourselves were of a mystical temperament, we might easily regard her with awe, as being, in some incomprehensibly mysterious way, the soul of a dual universe, man being its body. While this seems to be a mere fanciful notion, still there are facts known to us which show that the feminine mind is in a peculiar and singularly close relation with psychological phenomena of a strange order and which are as yet very obscure.

I start with the assertion that, notwithstanding there are conspicuous individual exceptions, woman is inferior physically, mentally and morally to man; that, while approaching the developed man, she has yet missed his standard by enough to approximate her to the child, and that her qualities require us to class her as infantine; and that she has not succeeded in obscuring her descent from the ape to the extent that her brother has done. There will be persons, I suppose, ready to cry out against this characterization of woman as derogatory to her. As it appears to those who view her superficially it may be so, but it is not so to us who are looking at her as we would look at any animal or plant or mineral for the purpose of accurately describing it. Her fascination, that intangible quality which our science cannot grasp, remains with her, and may enthrall even us philosophers, since it has enthralled the most ascetic saints, who tell us that of all the devils

who beset them by far the most seductive and hardest to resist was the devil who assumed the form of woman.

In our study of woman we naturally begin, as we would in the study of man, with an investigation of the physical construction. The untaught regard hers as the perfection of symmetry and beauty. The instructed are of a different opinion. A young girl is perhaps as shapely and good-looking as a young boy—at any rate, there is not much to choose between them. It is difficult to tell their skeletons apart before puberty. Our embryological investigations impress us with the notion that Nature in starting to construct a human being has no determined idea as to whether she will make a male or a female. She begins with a neuter and works on for a considerable time in apparent uncertainty, seeming to find it hard to make up her mind, but at length, reluctantly concluding to differentiate, she capriciously gives a slight twist here and a slight turn there and lays the foundation of a man or a woman, as the case may be. It is believed that her original proclivity was to make the female the predominant sex, but that she thought better, or, possibly, worse, of it, and has allotted the primacy to man.

Immensely important as is the man's contribution to the formation of the prospective child, it is in a manner transient. All connected with the child's development and growth is at once assigned to the woman and, for many months to come, is entrusted to her absolutely. The child is now essentially a part of her body and must participate in its functions. The proportion and the exact character of this participation are as yet imperfectly known to us, but we have learned enough to be assured that it is intimate and profound. Her in-

fluence upon the child physically is obvious, and, putting aside, as perhaps more obscure, her influence upon it mentally, we are hereby very forcibly taught the extremely important practical lesson that the preservation and improvement of the health of our women should be an object of the best care of the physician.

It would be tedious, and it is not necessary, for me to go into anatomical details to show that in structure woman resembles the child. It is demonstrated by the form and measurements of her body and limbs, by the general delicacy of her organization, by her soft and yielding and delicately colored skin, by the quality, quantity and distribution of her hair, and by her rounded contours. Her inferiority to the adult man in structure is similarly shown. Her bones are smaller and, in reference to the whole weight of the body, are lighter than his. She has not his capacity for utilizing oxygen; she has not his strength; she has not his power of easy and long continued movement. Her close kinship, or, at any rate, her resemblance, to the lower organisms appears from the fact, well known to you who have seen her in the surgical amphitheater, that she bears far better than man, and almost with impunity, the terrible cuttings and mutilations authorized by modern surgery.

I have mentioned her inferiority in ease of movement. I must regretfully supplement this statement by adding that she also lacks grace of movement, at least as a natural endowment. The peculiarities of her pelvic formation compel woman to ambulate after a very awkward fashion. Could we see her unclad walking, or speaking more precisely, waddling about, she would be a very sad spectacle. Let us be glad that we are merci-

fully spared the sight, which would be one well calculated to make the angels weep. This exigency has obliged her to adopt the frock or gown style of attire, and with the assistance of this she has contrived with remarkable ingenuity and success to transform an appalling apparition into a phantom of delight flitting along in grace and loveliness.

Most persons would gasp at the audacity which dares to say that man is more beautiful than woman. Yet there are investigators, competent anatomists at that, who have gravely made this assertion. Let the truth be told, and if this is the truth let us face it with as much composure as we may. It is very unpleasant to set forth the counts in the indictment, and some of them I prefer not even to mention. Briefly, then: She is squatty and fatty, and is built up with a variety of exaggerated spheres, cones and cylinders strung together. It is by the studious contemplation of such a forbidding plan and specification that the unimpressible anatomist seeks to clarify his conceptions of the make-up of the organism which everybody else calls lovely woman. Whether these peculiarities are impairments of her beauty is a question on which I do not care to enter. Beauty is a matter of individual opinion, and, so far as I know, has no immutable standard—certainly it has none which is universally regarded. I myself am not a connoisseur. Persons who claim to be connoisseurs assert that these characters are hopelessly at variance with even the most elementary canons of beauty, and they have the boldness, perhaps the presumption, to declare that, taking woman by and large, she is emphatically less comely than man. Yet that philosophy is weak and partial which takes into its

account only the actual and refuses to consider the ideal. Our nature is not satisfied by contemplation of realities alone, the fancy demands to be gratified also. We must therefore credit woman with the substantial benefit she confers on man by her very defects, by her imperfections of stature, of form, of substance, by all the physical characters which so pleasingly ally her with the child.

Unhappily the physical amenities of woman are evanescent, not in the sense that all material things are evanescent, but in that, relatively to man, change for the worse is more rapid and more unpleasingly manifested. The most alluring women I have ever seen were the young women of Spain. They were, I thought, wonderfully attractive, and I had passed the most susceptible age when I saw them. But the decay of their beauty is speedy and its destruction is marked by a reversal so complete that it is painful to look upon. Our own women are spared this to a great extent, but they do not altogether escape, and a grievous alteration in their radiant looks is likely to follow marriage and to be greatly emphasized by childbearing. I occasionally meet ladies who had been pupils of mine, who when I last saw them were blooming girls, and it is with something of a shock that I look upon their altered faces. It is not so with my boy pupils. As men their appearance seems every way improved. I have a photographic picture which I made years and years ago of a company of our High School girls, while I was a teacher at the school, as they strayed about their playground during the midday recess unaware of what I was doing. It is a picture of young womanhood, careless, hopeful, in the sunshine. Now and then in these latter days I have

come upon this picture, and it has brought the tears to my eyes by forcing me to think of what the intervening time has done. Joy, sorrow, age, disastrous change, inexorable death, have visited the sunny girls. What a companion to my picture should I have could I this day photograph their faces, their minds, their hearts!

Woman must yield to man quite as fully in her mental organization as in her physical. It is true that she surpasses him in certain traits, gentleness, tenderness, compassion, which we are accustomed to laud as of a high order; but these are of the weak class, amiable indeed, but only exceptionally adapted for the rough contests of this hard world. I fear that it will have to be admitted that man is not only the stronger, but the nobler animal. Even in some estimable characteristics which are regarded as peculiarly feminine, modesty and generosity, for example, man excels her. What normal minded man would not be ashamed to parade with bare arms and back and breast, or, what is even more enticingly immodest, with the seductive portions of his person alluringly veiled in gauze and netting? And can we think it modest in a woman almost naked to caper lasciviously in the bath with shameless men—for there are shameless men, too—even though such capering is conventionally allowed? Perhaps in these matters I am what is called a back number, and am far behind our present-day notions. It is certain I was brought up by and among people who had very different ideas as to what constitutes modesty in woman. Their ideas still possess me, and to that degree that, should our college drift into the current of the age and admit female students, I will never lecture to them on the plainer topics of our science or utter before them its

plainer words, for I will never speak in an assembly where I am the only person who can blush.

Woman's deficiency in generosity is glaringly shown by her attitude towards other women. We men treat each other with much greater consideration and kindness, and not solely because to do otherwise would subject us to active and hazardous resentment, but because we have a more highly developed sense of justice and magnanimity. Probably we are not much less envious or jealous, but we are more logical. A man tried by a jury of men can reasonably expect justice, and, if at all deserving, justice tempered with mercy, and he has an excellent chance of getting it. A woman tried by women has no reason to expect it, and a very poor chance of getting it. It is of a man, of our most exalted example of a holy man, that it is related (I wish that the revisers of the New Testament had not told me that the noble story is not true) that when he was asked to judge a woman heinously guilty he said to her, "Did no man condemn thee?" and when she said, "No man, Lord," he replied, "Neither do I condemn thee."

The nucleus of this discourse is the proposition that woman is man of an inferior order, arrested in development and remaining infantine. This is my text, and my sermon is, for the most part, an elaboration of it. I have already pointed out some of her physical resemblances to the child. She has many mental resemblances to it likewise, for she is emotional, perverse, illogical, fond of toys, cunning—her veridical faculty is rudimentary, and so forth; I have no heart to continue with the list. Of most of these perhaps the worst we might care to say is that they are provoking, though her cunning cannot be passed by so lightly. This, the

potent defensive weapon of the weak, woman uses most skilfully and efficiently. Did she use it only in her just defense we might charitably allow it to her, but too often she wields it as a weapon of offense, unscrupulously and mercilessly. And sometimes, alas, to perpetrate great crimes—to murder, and, what is worse than murder, to destroy her own home and the homes of others.

The association of woman with murder is excessively repugnant, and yet, as all know, she can kill, and kill in the most cruel way. My own experience has shown me a woman who could administer strychnine to her husband, look upon him pleading in the unspeakable agony and terror which mark the action of this horrible poison, and when he did not die, undismayed and undaunted, give him a larger and a fatal dose. It was a Roman maxim that every adulteress is capable of poisoning her husband, and I myself, as a toxicologist, can produce many instances which might justify it. The poisoners illustrious for the number of their victims and for making poisoning a trade have been women. Of all murders the murder of a child, it should seem, would be that most foreign to the nature of woman. Yet the number of new-born children cast away into the streets of Richmond will average close to three a month. It is right to say that of these negro children are greatly in excess, but during the last thirty-five years, of those whose color could be ascertained, one-sixth were white. Women can kill themselves, too, though this they do less frequently and less heroically than men. They seldom use the pistol, the ruling passion strong in death, regard for their looks, forbidding. They resort to poisons chiefly, and, commonly, to the painless

ones; and, what seems curious, they do not kill themselves for love, it is said, as often as men do.

I do not need to impress upon any honorable man, nor upon any dishonorable man either, that the crowning attribute of true womanhood is chastity. It is inseparable from our ideal woman, and we cannot image her apart from it. Among men the honor of a soldier is regarded as of the highest type, but history shows how uncertain a thing this species of honor is. Run over the catalogue of distinguished warriors and be surprised at the number of them who, when the cause they had espoused was weak or lost, have turned their backs upon it and impetuously embraced the strong or winning side. Can we not gather some examples from the war between the States? Woman, too, is sometimes unmindful of her honor. But the slough into which the recreant soldier drops is hopeful indeed in comparison with the dark abyss into which she sinks and where she is forever lost. She well knows the priceless value of her chastity. To preserve it many a chaste woman has slain herself; to preserve the appearance of it many an unchaste woman has slain her new-born babe.

The extraordinary, but by no means extravagant, esteem in which men hold the chastity of woman endows her with an enormous and an appalling power. She holds our honor and our lives in the hollow of her hand. Her supersensitive virtue alarmed without just cause or a morbid yearning to display it, her selfish fear or her malice, may bring forth a groundless accusation which may be fatal to her victim, or impress a stain that vindicated innocence itself cannot entirely efface. Circumstances may readily make it impossible to disprove the charge, and there are always but a few un-

willing to believe it. Indeed, shocking as it is to the plainest promptings of humanity and justice, our very courts sternly restrain the hand that could obliterate the blot, and thus, it may be, connive with the liar and murderess to fix it indelibly on the memory of the outraged dead. Sad illustrations of all this have many times been seen, and some of them in Richmond.*

It is generally considered that the same code of sexual morality should apply to both sexes. Admitting that this view is correct ethically, nevertheless there are weighty reasons relating to society and the family, with which certain physiological conditions are also connected, why woman should be held more rigidly to account than man.

Among us of the South womanly honor is almost a fetish, and we cherish it with knightly devotion. The loss of it, when it touches one of us nearly, bends low the spirit and not seldom breaks the heart. At present the South is markedly behind the North in wealth and many of the other evidences of prosperity in material things, but, on the other hand, it is far in advance of the North in the things which by universal consent make for morality and nobility of character. It is the con-

*While the statelier tribunals are thus cruel there is a chance for some redress in the humble court of the coroner. This court is, in fact, the only one where the whole truth and the exact truth is allowed to show itself, for its inquiries are conducted in accordance with the methods of common sense and not under the heavy burden of the absurdly finical procedures and obstructive practices by which other courts suffer themselves to be hampered and beclouded. Unfortunately, however, the inquest must be held so soon after the tragedy that many of the most illuminating facts may not then have come to light.

servator of the best of our racial traits and their last refuge. An irruption of immigrants could put us in material success on an equality with the North, and this could be accomplished by the numbers of the immigrants merely and without regard to their characters. They would soon make for us a small class of rich, sensual and despicable upstarts, reveling in wickedness at the expense of the rest, as is now the case in the North. And the chastity of woman, which we now regard with such reverence, would sink into as low esteem here as it has fallen into extensively there; and with the fall would come that most abominable example of degradation, the venal clergyman, eager for a few dollars to consecrate the cohabitation of a filthy and faithless man with an impure and faithless woman by a Christian benediction. Desirous as I am to see the South flourish, if this state of moral degeneracy is to be the concomitant, as would probably be the case, I far prefer that we should remain as we are, and continue to enjoy homely blessings along with homely virtues. Surely we should heartily welcome all worthy people who come to cast their lot with ours, but quantity at the expense of quality is to be deprecated.

The gentler qualities of woman, powerful through their very weakness, make her the conservator of our social welfare and of our civilization, for no people surpasses in character the standard set up by its women. Her extensive degeneracy would be fatal to man himself. Even the partial degeneracy which exists is a serious obstacle to the upward progress of the race. Yet so ingrained are her tenderer womanly characteristics that even the woman whose flagrant offenses against the decent conventions of society have sunk her in the

shameful depths retains the gentler virtues of her sex and still can show sympathy and compassion. These qualities are, indeed, apt to be intensified by the narrowness of the sphere to which the rational condemnation of the normally virtuous and the savage animosity of the superhumanly virtuous restrict her. I, in performing my duty as coroner, have witnessed, and you, in performing your duty as physicians, will witness many instances of these pre-eminently Christian graces among the outcast sinner-women. I once had the opportunity of enlightening from my experience the mind of a distinguished clergyman of this city in respect to this outcast tribe. He was engaged in efforts to reclaim them, and was pleased to know that they were not so utterly bad as he had thought. He possessed a liberal mind and a feeling heart, and could realize that there was a better way of dealing with them than refusing them a house to live in and driving them forth to wander shelterless and starving, as some other clergymen of our city have strenuously advised—clergymen urgent that the sharp laws made against them by men, many of whom were their sinful partners, should be strictly enforced—laws whose rigor our police authorities, wiser and more merciful than these ministers of the religion of mercy, have found a way to temper. The detestation in which the deplorable trade of these women is held ought, it should seem, to embitter their hearts against the rest of the world, so insulting in its self-righteousness and hypocrisy. Yet what I have learned about their characteristics constrains me to say that were I hungry and sick and friendless, old and ugly as I am, with not one physical grace alluring to a female heart, there is no refuge whither I would creep

with a surer hope of sympathy and help than the habitation of even the poorest among these daughters of sin and shame. But let not my commendation be rated at more than its worth. Compassion is a noble attribute, but it is only one of the many elements of character, and a woman, however compassionate she may be, if she has not chastity, though circumstances may make her deserving of our pity or gratitude, can never be deserving of our approbation.

In a discourse which relates to woman it would seem most anomalous to omit a disquisition on marriage. But, in truth, I am able to say very little authoritatively about it. I know nothing of marriage by experience and shall never learn anything of it in this way, for I have at length attained to that enviable stage of existence where I neither hope nor fear it. What little I know of it has come from observation and reflection. As coroner I have had to take cognizance of the premature departure of many husbands and sons-in-law. How far marriage was implicated in these untimely endings I am not fully prepared to reveal, but the coincidence has exercised upon me a discouraging influence. Moreover, I have had to confront the indisputable fact that of the children born during any year a certain very definite fraction is inexorably allotted to the poorhouse, another to the penitentiary, and another to the gallows. This is a law of human existence almost as constant and unerring as the law of gravitation. The supply for these institutions must inevitably be forthcoming, and I have never been able to secure any satisfactory guarantee that, were I married, I should not be called upon to furnish my quota. The net result of my reflections on matrimony may be stated in the

opinion that all women should marry, but no men. Like social philosophers in general I content myself with propounding my maxim and leave those who are concerned to apply it the best they can.

When woman unsexes herself, and many women have been capable of doing this, the transformation is often most remarkable. She is then able to equal man, and even greatly to surpass him, both at his best and at his worst. Historical instances are abundant. There is no part in the wonderful drama she has not played, from that of the sublimest hero to that of the most blood-curdling villain. She has necessarily been most conspicuous when circumstances have made her the ruler of a people, as, let us say, culling a few examples here and there, was the Egyptian Cleopatra, the Byzantine Theodora, the Russian Catherine, all of them infamously depraved and incredibly cruel; or, confining our view to the products of our own race, the intrepid Boadicea, the bloody Mary, the dauntless Elizabeth, the good Victoria. With what varied feelings we recall the stories of these several women. Unspeakable disgust, profound horror, unbounded admiration, each is awakened in our minds. Natives of a land which has bred heroes to whom friend and foe alike have ungrudgingly assigned the lofty name of patriot, how our hearts swell with pride at the thought that we are of the kindred of the two heroic female defenders of their invaded country, the British queen Boadicea, who did not fear to lead her unskilled horde against the veteran legions of invincible Rome, and of the English queen Elizabeth, who at the head of her uncouth army hurled foul scorn at the gigantic power of Parma and Spain. And, turning to a softer phase, to those gracious habi-

tudes which make an Englishman's and an American's home the dearest spot on earth to him, how pleased we are that we are peculiarly entitled to join in the homage due to Victoria, wife and mother, as the exalted exemplar and patroness of the domestic virtues.

On a previous occasion I made a passing allusion to the rebelliousness of woman as an innate trait. When the fitting opportunity is afforded this trait can be developed till she becomes, not the mere mistress of her subjects, but their master—and a hard master she commonly proves to be. This fact is well known in a small way to innumerable men who have been so unlucky as to become subjugated by their wives and mothers-in-law. But it has been repeatedly shown on a grander scale and in a more glorious way. There are women who can command, and who have the right to command as a masculine hero has, by sheer force of character, of whom Boadicea and Elizabeth are illustrious examples. When in authority women have commonly exhibited many of the most reprehensible qualities of odious kings intensified, especially unworthy favoritism and reckless cruelty—dominated still, it should seem, by their affinity to children, who are notably capricious and wrong-headed in their likings and unfeeling in their actions.

We must regard it as a glorious act of devotion when a woman bestows her hair, her crowning adornment, for her country, as the Carthaginian women did to make bowstrings. But when she parts with her looking-glass, as the Sicilian women did to enable Archimedes to burn up the enemy's ships we are struck dumb by the enormity of the sacrifice. The looking-glass story, it is true, has been strongly doubted, and it does seem

incredible; yet, on the other hand, women have ever been great encouragers of wars, and are renowned for keeping up a wordy warfare long after the men have ceased hostilities, so that the story may have a basis of fact after all. Indeed, the women of every country are intensely patriotic. American women have shown themselves the equals of any. They gave up in our dreadful war between the States the dearest objects of their affection. This was so, let us Southern men freely testify, in the North as in the South. The mother sent her son and the daughter sent her sweetheart to the battle. Yet there was a difference. For their land was strong and our land was weak. The Northern mother girded her proud boy for victory; the Southern mother garlanded her darling child for sacrifice.

From time immemorial it has been held, not only by men, but by women themselves, that woman's sphere is primarily and pre-eminently within the household. It was her glory to be the maker and preserver of man's home, and her highest ambition was to be a loving wife, a devoted mother, a dutiful daughter and an affectionate sister. But a few years ago she either made the discovery herself, or had it made for her by a mollicoddle, that this state of domesticity was slavery, and slavery disgraceful and intolerable, and she straightway proceeded to emancipate herself. We are now, accordingly, in the era of the new woman.

It is a strange and impressive sight to see in actual evolution the enfranchisement of a subject people; to see the slave enduing himself with freedom. There is in the process much which assimilates it to a parturition; the travail, the sordid concomitants, the unreasoning joy, the hope that is to make the heart sick.

It is a sight which is predominantly melancholy, as I can testify, for I have been a near witness of it. I was a close observer when the Southern slaves were suddenly freed upon the downfall of the Southern Confederacy. Men, women and children who had been forcibly kept under the restrictive influences of civilization at once threw off all these restraints and retrogressed towards barbarism so rapidly and so disastrously that their liberators themselves were obliged to intervene and sternly suppress their offenses against society. Their most exalted conception of liberty was that it conferred the right to violate every propriety and decency of social life. They knew no better way of showing their imaginary equality with the white man than, when he chanced to come within the range of their voices, to insolently bawl out a torrent of the vilest words their filthy vocabulary could afford. Such outbursts we Southerners at that period were constantly subjected to and had helplessly to endure, passing on disgusted, contemptuous, pitying, and saddened to see a man or woman whom slavery had bred into a fine mannered colored gentleman or lady transmuted by freedom into an African brute.

Has the emancipation of that other great people, the women, wrought a change like this? There are quick-tempered persons ready to regard it as an insult even to ask such a question. But let us not be frightened from our inquiry by the clamors of those whose exaggerated gallantry will not allow them to contemplate any female imperfection, and who proclaim the thoroughly absurd dogma that every one who wears a petticoat deserves on this account of itself to be treated with tenderness and respect. We are not now parading as gallants, but

working as students of anthropology, and for us and our purposes the question is entirely pertinent and void of intentional offense. With this explanation, or apology, if this is a more satisfactory term, I proceed to say that the question must be answered affirmatively, with qualifications. Assuredly the emancipation of woman effected no such radical change in her manner and language as the emancipation of the negro effected in his.. Nothing short of insanity could do that to her. Yet there has been an approach to it, and it has been especially manifested, not in the spoken, but in the written word.

Release has shown that woman's stock of forbidden knowledge is unexpectedly copious, and we are shocked to find so many of the rank crop of female writers which now flourishes exploiting themes which it pains us to think a woman would revolve in her mind. Too often they hinge on ethical depravity and physical grossness. Of these offenders the most repulsive are some of the female physicians, who, abusing the latitude allowed in their profession, and foolishly believing that indecency will make them manly, contrive to foul the most innocent topic with expressions which the male physician knows are unnecessary, and for whose appearance he sees little excuse other than that it is the prompting of an impure mind. Nevertheless, we need not hesitate to believe that female writers, when the novelty of their situation wears off and they fully comprehend their new surroundings, will not constitute an exception to the rule that the ascent from barbarism to civilization is attended with a refinement of ideas, and that they will cease to erotically select themes and rollick in fancies which self-respecting males avoid.

It would be uncandid to deny that among the mob of female scribblers there are several who display much literary smartness as well as intellectual brightness. There are, however, cynical men who are so ungenerous as to liken their achievements to the extraordinary performances of the educated pig, which are marvelous simply in comparison with the attainments of the commonalty of the pen. I myself by no means go to this extravagant extent, but, on the contrary, gladly own that I have derived much of both pleasure and instruction from some of the writings of female authors. Still, I fear that, if the acknowledged rules of criticism were applied impartially to literary women, they, as a class, would fare badly. I have no wish to disparage the merits which many of them conspicuously possess, but I cannot doubt that gallantry and favoritism have done very much for them, enabling some, indeed, whom scarce any one outside their own little coterie of second- and third-rate admirers has ever heard of, to crowd illustrious men out of Halls of Fame. And here my mind reverts to a noted English female novelist of the last century, greatly praised and overpraised by the makers of literary reputations of the time, with whom she associated. Misled by such unusual talent in a woman they ranked her far higher than she deserved and raised her to a place she has not been able to maintain. When she died it was designed to inter her among her nation's intellectual worthies in Westminster Abbey, and though, for a highly creditable reason, the design was not consummated, it was not from default of her literary reputation that she missed this great honor. Unquestionably she was a woman of eminent ability, but her elevation, exalted yet temporary, was largely due to the circum-

stances that she was a woman, that she was a member of a mutual admiration society, and that she was, to use the vulgar idiom, in the ring.

Permit me to digress awhile to bewail the state of literature in the South as compared with the North. We have had, and still have, meritorious writers. It is constantly asserted by copybooks and sentimental moralizers that merit is self-potent and will always vindicate itself. The assertion is folly. Very often indeed merit perishes for want of external help. Unfortunately, here literature has no mutual admiration society and no ring, nor are all Southern writers women. In order that a Southern author shall succeed it is necessary for him to have Northern endorsement, as formerly it was necessary for Northern authors, even such a master as Washington Irving, for example, to have English endorsement. Very rarely has any Southern literary man, even among the most deserving, who had not effected a lodgment in the Northern ring, achieved distinction. Even Edgar Allan Poe, who to-day occupies one of the lofty niches in Fame's temple, has been placed there by foreign hands. He was regarded as a Southern author, and consequently during his life and long after his death his countrymen stinted him in praise, as they had, while he was living, stinted him in bread. Our own Southern people, if they appreciate their writers, do not encourage them. Here in Richmond we have had two striking examples, John R. Thompson, elegant and masterful in both prose and poetry, and Dr. George W. Bagby, who was capable of writing in the manner of Washington Irving himself. Do you Virginians know anything of their writings? Were you ever told anything about them by your school-teachers? Did you

ever see a quotation from their works in any school-book from which Virginia children are taught? I guess not. And why do I liken Dr. Bagby to Washington Irving, when this charming writer, one of the most delightful companions a library can bestow, is himself almost unknown to the drove of readers of our time, who swallow down their intellectual swill while wallowing in the cataracts of hog-wash that are nowadays shot out as literature.

The very advanced woman of the present epoch has fully assured herself not only that all women, like all men, are created equal, but she has saturated her mind with the venerable absurdity that one man is as good as another, with the addendum that one woman is better than both of them put together. She bases her conviction on the fact—as she complacently takes it to be, though there are stubborn thinkers who are disposed to regard it as no more than a specious assumption—that woman excels man morally; and that therefore she is not less superior to him intellectually, and, for all essential purposes, physically. If, for the sake of peace, you admit the equality of the sexes intellectually, and, *mutatis mutandis*, their equality physically, she may graciously abate her contention of female superiority to this degree, but not a step lower; and should she be of amazonian body and spirit, as most very advanced women are, you would find it dangerous to suggest the idea that the superior morality of the female sex is possibly only a phantom, the effect of certain compelling circumstances, rather than of an inherent difference in either the quality or quantity of the male variety. In her opinion the only valid distinction between man and woman is that woman bears children and man does not.

To wipe out the distinction she therefore refuses, to quote the refined phraseology of Miss Marie Corelli, to be "a producer of babies," and when she has accomplished this rather heroic feat she believes she is a man. To demonstrate her masculinity in the most effective manner the very advanced woman is prone to copy the most objectionable features of the masculine character, such as self-respecting manhood sedulously strives to efface or hide. Such imitation appeals to her because she does not know how to distinguish glare from solid worth, and is the sure sign of both moral and intellectual inferiority.

The intense desire of woman to be man has impelled her, influenced by the mimetic instinct, to devise those singular aggregations, the woman's clubs. On this comprehensive stage woman displays her strength and her weakness. In these caravansaries everything conceivable and inconceivable is brought under review by the sisterhood, from the abstrusest points of metaphysical philosophy to the most elementary details of the nursery and the kitchen. Here literature, art and science are set to rights, and regulations are formulated for the government of the universe in general and man in particular. In the meantime, man himself, hard-headed and careless, looks on, every now and then admiring some scintillation that looks like wisdom, more frequently smiling at something that is palpably folly, and all the time wondering at the fate of the abandoned husbands and children whom blind Fortune may have allotted to these too accomplished wives and mothers.

But woman cannot be man. There is a great gulf fixed which nothing can bridge; not her yearnings, nor her strivings; not co-education, nor an equal education,

nor a superior education. It is vain to try to put a quart of liquor into a pint bottle—the bottle will not hold the liquor, and persistence results in a slopping over or a fracture. Nature is unrelenting. Artifice may thwart but cannot extirpate it. Our devices can destroy the ideal woman, but they cannot transmute her; they can radically alter her attributes, but they cannot change her sex.

The advanced woman is very sure to be possessed of what is unctuously styled in the jargon of the day “a message,” which she is determined to proclaim by tongue and pen to an unregenerate world. The female sex in general has a powerful propensity to figure as reformers. As these do not lack self-sufficiency whatever can be done by writing they commonly do themselves. As, however, in communities of refined taste a woman screeching on a platform is an objectionable spectacle, female reformers who have delicacy sufficient to appreciate this fact get a femininized man to deliver their oral messages. Reasoning on the circumstance that they are allowed without restraint or question to dominate children, women, with characteristic heedlessness of ratiocination, have flown to the conclusion that there is no limit to their disciplinary authority. Hence their incorrigible disposition to meddle with the affairs of men, especially for the purpose of regulating or extirpating man’s personal habits. This is manifested markedly nowadays by the pragmatistical intrusions of the Woman’s Temperance Associations, which, in order to further ideas rashly conceived and schemes tyrannical in operation, have not scrupled to cajole or terrify demagogic lawmakers, and to force into schools books written to teach a physiology and pathology which are not only

absurd, but which are purposely falsified. That intemperance is an evil of vast magnitude meriting every legitimate exertion for its subversion is most certain. Yet men may venture respectfully to intimate that there is a greater evil to which the reforming efforts of women may be more profitably and more naturally directed. When compared with the calamities caused by women themselves in their sexual relations the evils of intemperance become almost negligible. Many thoughtful persons, contemplating the illogical, reckless and destructive impulses of these reformers, and the disregard of the comfort, the tastes, the feelings, the privileges and the rights of others, are driven to stand aloof, and even to actively oppose all their projects, even when they are intrinsically meritorious. For it is realized that these enthusiasts are a class of people who, when you give them an inch will take an ell, who, when they have suppressed, that is, driven out of sight, the drinking of alcohol, will war on tea and coffee, and will then prohibit the eating of meat and turn the community into a set of Nebuchadnezzars driven to grass by the cowboys of the law.

The reformers and the reformed are people whom, as a rule, it is well to be shy of. In their holy zeal they insist on converting everybody else, at once and whether or not. Hence their plentiful lack of rationality and their overabundance of malicious offensiveness. It is this narrow and sour fanaticism that urges them and their colleagues to deform Sunday, which should be a day of refreshment for the weary and heavy laden, into an odious ecclesiastical holy day. If they were penetrable by reason they would understand that really it would be more rational for them to perpetrate the out-

rageous folly of prohibiting work and recreation of nights than to forbid them on Sundays, since night is a season of rest suggested by Nature, while Sunday is purely a device of man's. But Moses has pronounced. He has not appointed rest for the night. There was no need for him to do it. In his age and region there was no earthly inducement to stay out of bed except to plunder and murder the people whose land he was ravaging, and he and his whole predatory gang of scoundrel carpetbaggers went to roost at sundown with the other hawks and vultures. It is true that the regulators have not scrupled to insult Moses by transferring—and out of animosity to his race, in fact—the Sabbath he solemnly ordained from the last day of the week to the first; but they have tried to placate him by making their Sabbath as onerous and withering as his by invoking the law to punish as crimes the doing on Sunday of what is regarded as innocent and salutary when done on any other day—such things as taking a refreshing drink, bathing in a pool, sailing in a boat, riding on a hobby-horse. Were these self-constituted champions of virtue and religion capable of analyzing their motives they would discover that they were actuated less by unaffected love of righteousness than by envious hate of another's enjoyment. Whatever affords pleasure galls their surly souls, and their own petty and despicable summit of happiness is attained when they have destroyed the small and transient pleasure of some one else.

No system, however firmly grounded or essential it may be to the stability of the social fabric, is respected by women if it seems to stand in the way of a darling project. And so infantine is the texture of their minds

that, in the headlong chase of a bubble, they are unable to appreciate the injustice they do to individuals or the peril to which they subject the public welfare. But, though their fervor is kindled and is kept glowing by a consuming longing to adjust other people's concerns to their own standard, we cannot doubt their sincerity, and we should be willing to admit that they are actuated by a spirit of virtue and wisdom quite as admirable as that which possessed the illustrious Moslem philanthropist Abou Ben Adhem Vhool, who, impoverished by his unremitting almsgiving, generously sold his daughter to the Bishop of Alexandria that he might purchase a cashmere shawl to clothe a ragged Bagdad beggar.

In their extravagant desire to impose upon society some illusory blessing that society does not yearn for and can well do without the women ally themselves with men moral, like they are, in theory, but too silly to know good from bad in practice, and with a horde of hypocrites who swarm conspicuously on election day, hoping to hide with an ostentatious vote in behalf of pinchbeck morality a daily life of general rascality and a nightly life of secret sins. They marshal, too, the children in the cause, who, with sagacity and prudence possibly little inferior to their own, exhibit enthusiasm which is even greater than theirs. Under this stimulus virtue wakes and rises. Virtue fully aroused is a fearful thing. It sweeps on like the waves of the sea, unregardful of what is in its way, indiscriminately engulfing good and bad, cruel as the grave. Whoever from some safe retreat beholds its headlong, heedless, destroying onrush realizes the tremendous meaning in the Miltonic phrase: "How awful goodness is!" History and our own observation assure us that the hostility of the abnormally

virtuous is virulently malevolent, dealing with a hated institution, or vocation, or person without regard to reason, or justice, or mercy. Many are the instances of the meeting of extremes, where the destruction wrought by the children of light is indistinguishable from the havoc made by the children of darkness. When we take note of this we are driven to fear that there is some strangely sinister alliance existing naturally between goodness and fatuousness and malice.

No man who is healthy in body and mind wants a combine of women, children, and mollicoddles, to forcibly prescribe for him what he shall drink, eat or wear, or how or when he shall recruit his exhausted powers; and he indignantly resents the insolence of one fraction of the community in assuming the authority of fathers, mothers, and wet and dry nurses over the rest. For my own part, there are certain classes of superior people with whom I do not readily coalesce. Your devoted patriot and your zealous philanthropist I distrust, and your superhumanly good man or woman I fear. For one thing, the code of morals which governs the actions of the superhumanly good does not fully accord with mine; for, among the rest, I perceive that it rates the telling of lies about an adverse individual as a frailty that leans to virtue's side. The end justifies the means, and your proper liar is a highly valued auxiliary in the good cause. Nor is it invariably held to be base to solicit base men to do base deeds for righteousness' sake. In every age the extravagant votaries of virtue, whenever their goodness was backed by power, have made themselves illustrious for acts of shameful injustice and savage cruelty. Far preferable would it be to me to dwell in a city where its rulers were

chiefs of sinners with their genuine human hearts, than where they were the saintliest saints with their wrathful parodies of celestial minds.

Women, with all their eagerness to rush when they had better go slow, are, in some ways, the most steadfastly conservative where reform would be really advantageous. With a longing eye intent upon the new they are unable to let go their hold upon the old. This is notably so in matters of religion. Women cling tenaciously to the ancient beliefs, the ancient superstitions, the ancient modes and manners. There is everywhere in Christendom a society which is the analogue of our Society for the Preservation of Virginia Antiquities, and which may be styled the Society for the Preservation of Palestine Antiquities. This society aims to preserve the ancient modes of thought as to the business and pleasures of life, and seeks to force the complex conditions of modern civilization to adapt themselves to the simple conditions of ancient semi-civilization. Nearly every woman is an active member of this society and helps it in its vexing and clogging work. In this day they maintain our religious system, and, through their control over the mind of the child, they propagate influences which seriously retard changes such as religious men capable of rational thinking know to be salutary.

When we consider that woman has done much more for the religious idea than anybody else, that she keeps it vigorously alive and is its chief exemplar, we feel that her treatment by both pagan and Christian ecclesiasticism has been very ungenerous. The Mohammedans minify the importance of her soul and will not let her do her bit of worship along with the men; and I under-

stand that formerly the Established Church forbade her to partake of the communion with her brother. She is made to do all the drudgery of the Church and gets no more substantial reward for it than the adornment with pretty little labels, such as "The Queen's Daughters," "Ladies of the Covenant," and "Little Mothers-in-law." However, this abundantly compensates her. Her infantine nature is pleased and gratified; the things of children satisfy the child.

It is claimed that Christianity has been the special instrument in the elevation of woman, and, to a considerable extent, this is doubtless so. Still, she was used very badly in the ages of faith. A woman captive in the innumerable and savage wars attending the growth of Christianity generally fared the same in the hands of believers and unbelievers. Very often the Head of the Church himself was a fornicator and adulterer, and kept his concubines, and occasionally he was a ravisher. We learn from the historian of the fall of the Roman empire that when John XII. was pope the female pilgrims were deterred from visiting the tomb of St. Peter, lest, in the devout act, they should be violated by his successor. I have wondered what the women of those horrid times really thought of the state of affairs. According to my reading of that painful history they seem to have accepted the situation, not only with composure, but even with cheerfulness. They appear to have thoroughly satisfied themselves that they were created solely to be the servants and concubines of men indiscriminately, and passed with indifference from their fathers and husbands into the arms of strangers. Such is the impression of their character which has been forced upon me. But to a man of our time it is almost

incredible that such a state of degraded femininity could exist, and, in spite of the testimonies, I am most unwilling to believe that it did. It has taken long to put woman approximately on the same level with man in respect to social and civil rights. She has progressed as civilization has progressed, and the progress of civilization has sometimes been accelerated and sometimes retarded by Christianity, for Christianity has during long periods been much more political in its aims than ethical. It ought not to be overlooked by Christians that there are many of those they stigmatize as infidels who dislike an infidel woman. Somehow unbelief seems unnatural to woman, and a blatant female infidel is an abomination.

I am constrained to mention a defect very prevalent among women, which, though it is not one of the most important, is yet one which is exceedingly derogatory. It is the lack of courtesy. Men rightly are highly considerate of women. We have praised them and flattered them and fed their vanity till they have persuaded themselves that they are superior to the requirements of politeness and good manners. Their infantine nature impels them to respond to our kindness as the pampered child does, with ungracious pertness and provoking insolence. This unlovely trait they exhibit everywhere except perhaps at their own homes. All of us have witnessed it, and many of us have been its victims. Of course they have method in their discourtesy. For instance, I have seen a young and handsome and agile woman, when passing a young and handsome and agile man on a narrow and muddy crossing, flutter and smirk and yield the way to him. But when she met an old and unattractive man, whose age and infirmities it would be graceful in

any one to consider, and most graceful in a woman blooming in youth and vigor, I have seen her force him to laboriously exercise his own politeness and scramble off into the mud to let the haughty mass of splendidly disguised squat and fat disdainfully strut on.

In taking a survey of woman we will very naturally ask: Have feminine characteristics in the lapse of centuries altered for the better? To this question, which skeptics have often asked, it has been the custom to give an offhand answer in the affirmative. I do not intend to deny that it is so, but, on the other hand, I shall not affirm it till I shall have given the matter a fuller investigation than I have yet cared to bestow upon it, for it is not so plain as it seems to be. Women certainly appear more unspotted now than they did in olden times. But so would the leopard appear if he were whitewashed. Are the spots gone from the fair-looking creature, or have they only been washed over?

When I was at school I read, or tried to read, Juvenal's remarks on women. Juvenal is a classical author. Much of that classical literature of whose incomparable character we hear such eulogies has among its incomparabilities that of being incomparably coarse and vile, and I read Juvenal from a text on which an editor had attempted the Augean labor of expurgation. Like Lord Macaulay, I despise an expurgated book. If the expurgating editor, who is obliged to read the text, can stand it I conceive that I can stand it, too. Certainly a doctor has no call to be squeamish. The expurgation is rarely done with discretion, and, at any rate, I claim the right to know all that the author has said and exactly how he said it. I incur no obligation to uphold him in his vileness, but, on the contrary, am put in

position to denounce him with justice, having precise knowledge of his offense. I speak from the standpoint of an adult. But, even as to children, I am inclined to think that we restrict them too rigidly as to the information we are willing for them to possess. We leave our boys and girls to gather irregularly knowledge they are entitled to have, but which, as they obtain it, is often erroneous and mischievous, and which, it seems, parents themselves ought to communicate. But this is a large and difficult question, on which I am not at present prepared to enter. Anyhow, when very young, I read what Juvenal had to say on the subject of woman in an expurgated edition, and, at a later period, with the connivance of a Latin dictionary, a grammar and an English translation, I have mastered the unexpurgated text. He describes the women of nineteen hundred years ago. They were very bad, if his account of them is to be trusted. When I was first made acquainted with his views I was not qualified to differentiate an ancient Roman woman from a modern American woman, and thought, with old Mr. Weller, that all women were alike. I do not know that I was seriously and permanently prejudiced by my classical studies, but as my teacher did not trouble himself to correct my conceptions of the author except as to the construing of the text, or condescend to vindicate the sex, it is within the range of possibility that I may have been biased by the opinions of Juvenal. But I should have been a very dull scholar had I not soon discovered that all his countrywomen were not like those he pictured, but that among them were some who have glorified womanhood and human nature.

Leaving antiquity and coming to recent days, it is

evident to men who are as old as I am that very decided changes, so far as they can be judged by outward manifestations, have taken place in the bearing of women during the past fifty years or so. In the time of my youth they were far more obedient. Obedience is a virtue they jeer and laugh at now; yet, like the voice soft, gentle, and low, it is an excellent thing in woman. Perhaps, after all, it was not the sign of respect and affection, as it seemed to be, but only the badge of subjugation by their husbands. They possessed more modesty, or, at least, made a greater show of it. Their relation to the child was very much nearer the normal. Practicing physicians can tell you how wide-spread and intense among the wives of the present day is the hostility to pregnancy, and any inquiring person may discover that the nurture of children, woman's peculiar service, toilsome, but sweet to her, and once cheerfully borne, is now becoming an intolerable burden. Every man of sense knows that the worthiest position to which a woman can aspire is that of a homemaker. She may make herself a musician, a painter, a poet, or a philosopher, but if she does not know how to keep house she is a feminine failure and ought not to afflict any man by marrying him. But this is not a prevalent ambition of the time; it is an acquisition too homely to fit into the curriculum of the higher education. Formerly the mother, whatever else others were called upon to teach her daughters, herself carefully instructed them in all the domestic arts. The result of this training was splendidly shown at the end of the Civil War. Almost every Southern woman, high and low, was driven by the universal destruction and chaos to do her housework herself. She could do it. And so it came to pass that

the poor old Rebel trudging back battered and broken, if he often found only a hovel, always found a home.

So far as the inherent or natural qualities of woman are concerned she does not appear to have materially changed during a great lapse of time. Till recently she was under subjection to man, to her husband especially, and with a certain tincture of stolidity she submitted. This submission, as well also as the exuberant rebound signalizing her emancipation, was in accordance with her infantine stamp. The same nobility of character and the same splendid virtues which have adorned many women of modern times have beautified many women of antiquity, and the women of antiquity afford examples of the same immodesty, effrontery, cruelty and depravity which occasionally shock us in our own age, indicating an identity of disposition and propensity when restraint is withdrawn. Apparently, femininity glides through the corridors of time a unity with diversity. We find no difficulty in matching any antique woman conspicuously noble or ignoble with her modern counterpart—the Roman Cornelia with the English Victoria, the Grecian Lais with the American Evelyn Nesbit Thaw.

It may very plausibly be asked: Can a man who remembers a mother's care or a sister's love have the heart and the face to speak as I have spoken about woman? Well, I frankly say, for myself, that I could not were I not a man of science speaking in my scientific capacity. To the honest man of science a fact is a sacred thing, and he cannot pervert it or gloss it even to gratify his tenderest affections. But while I have told the truth, as I perceive it, I have not so far told all the truth. I have unsparingly pointed

out the defects of woman and said very little of her merits. Who is there among all men who knows these merits so well as the doctor, and who can appreciate them as he does? In justice to her I must say something about them. But now a great troop of surpassingly noble images radiant with ineffable tenderness, with love divinely pure, with devotion that defies the grave, comes overwhelmingly upon me and my language can no longer adequately express my thoughts.

We are parts of a majestic system whose evolution, for some awfully inscrutable reason, is effecting itself by antagonisms and conflicts mercilessly destructive. We fondly try to persuade ourselves that this is for the best, and that the end will be universal and perfect good. But, in the meanwhile, we ourselves are inextricably entangled in its turmoil and agony and made to realize that much of life is tragedy. Whether good or evil predominates in the world is a question which has been much debated. The inquiry does not appear to be very practical, for the question belongs to that ambiguous class which admits of contradictory answers, and which, indeed, the same speculator may answer oppositely under the varying circumstances of his own experience. It is certain, however, that a little pain can overbalance a great deal of pleasure, and that we are supplied with misery far more than enough to satisfy the most pessimistic philosopher.

In this afflicted world woman is pre-eminently the comforter. As the embodiment of this supreme blessing I shall not hesitate to rate a good and loving woman over every form even of supernatural religion, though, in saying this, I shall excite the anger of those who are influenced by what they cannot know more than by

what they know. Certainly she should not be put in the place of religion, but, as material beings, in a state of material existence, our chiefest need is material help, and a bodily presence ineffably compassionate is capable of affording it far more satisfactorily than any intangible and mystical agency whose sphere is but vaguely understood. In our extremity of wretchedness we can see her; we can hear her; we can touch her; she is altogether intelligible to us, and we obtain the inexpressible comfort that comes from a communion devoid of doubt or awe or fear. Whoever is sorrowing and is allied with a being so divine as woman can be, and so often is, has, as I believe, the supremest solace this world can give. She will watch over her afflicted one incessantly; she will cherish him; she will toil for him; she will die for him; while no angel, no glorified spirit, that I can ascertain, has ever responded with one deed of pity to man's most agonizing prayer.

It is when woman acts as nurse that she attains the acme of femininity—not necessarily as the artificially constructed trained nurse, but as the naturally endowed mother or sister or wife or loving friend; or the matron or maid who tends the stricken soldier in the hard days and nights of adverse war. How gloriously she then shines! Man has no qualities that enable him to approach her in this service. Her instinct perceives what his intelligence, whose massiness has crushed its delicacy, is unable to note; her eye discerns what his cannot see; his touch, the gentlest he can impose, is a rude shock compared with hers; and even his strength is overmatched by her aptness. Willing and earnest in his help though he may be he can rarely succeed, for he does not know how. In the poverty of our speech we call her an

angel. The term is a disparagement to her. No angel has ever shown to man the tenderness of his woman nurse. No angel can, for, so authorities declare, the angels are all males.

The system of trained female nursing, admirable in theory and, at its inception, admirable in practice, was based on the inherent compassion, gentleness and loving-kindness of woman. But it is now likely to be overwhelmed by an excess of science and ethics, and to degenerate into a sheer money-making trade with its sordid accompaniments, and with the dulling of that instinctive, intense and practical sympathy which normally distinguishes a woman's nursing from a man's. To be true to her nature and fully effective in her divine ministrations a woman should nurse not for money, but for love.

I am now about to take leave of my subject, and it is no more than simple justice to myself to say that I have no animosity towards women. Their treatment of me personally, while it has been devoid of an approach to fanatical admiration, has almost always been kind and considerate. Above all, none of them has ever married me, so that I have had no reason to look upon them as personal enemies. And, though the frankness of my discourse has compelled me to say something about them which is not complimentary, I have said nothing malevolently. In my anatomization I have felt no less tenderly towards them than my ancient preceptor Brown-Sequard felt towards the possums, coons, terrapins and ducks whose backs he fondly patted while he cut them up. It must not be supposed that my criticism of woman implies a commendation by contrast of man. Far from it. I am too well aware that the character of our own

sex will not bear a minute examination. But I am considering woman as an independent proposition, and leave man to be dealt with by the female critics themselves. They have always known how to talk, they have recently learned how to write, and I can safely entrust him to their avenging tongues and pens.

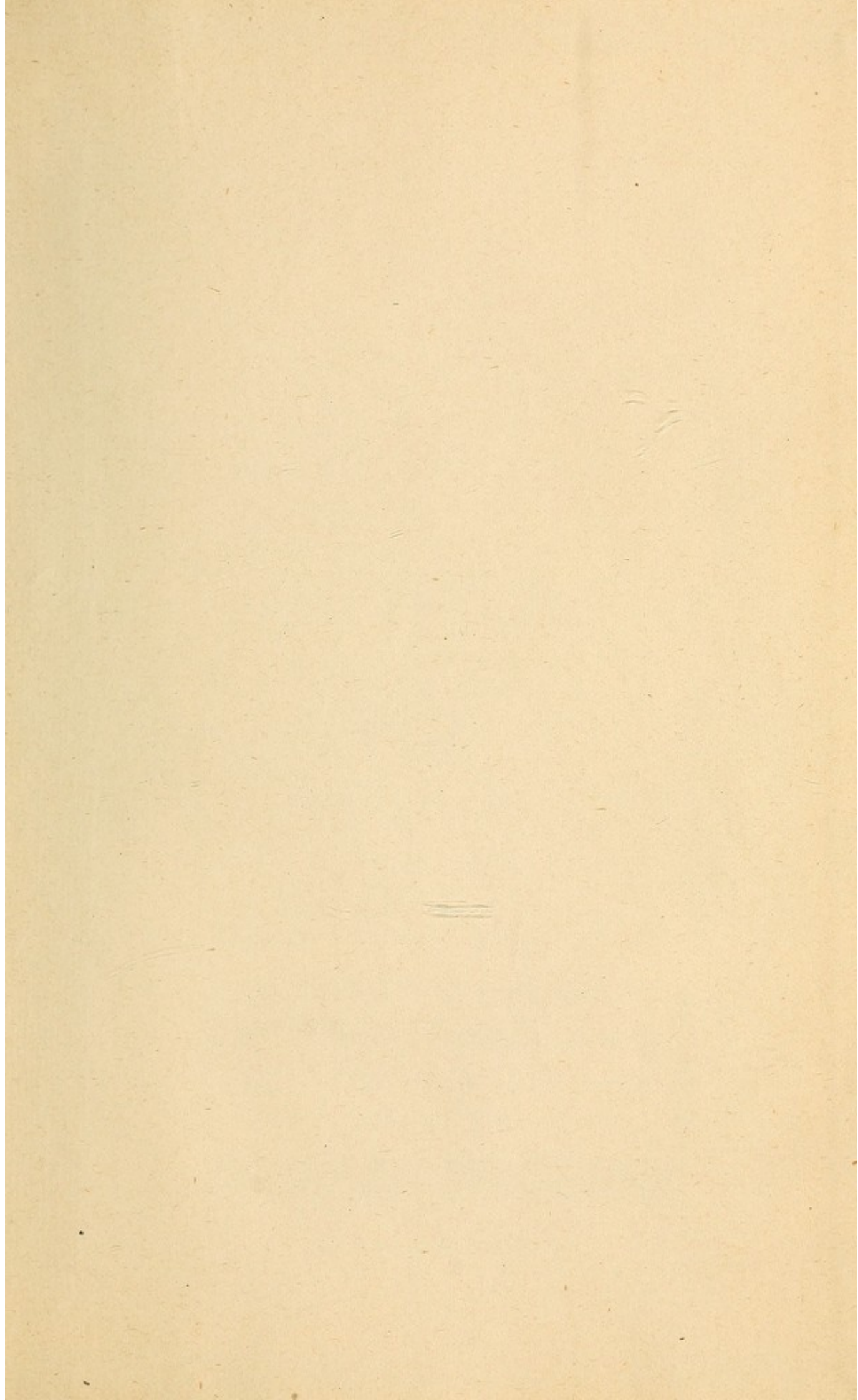
I remember seeing long ago a jocular comparison of woman to Pope's personification of Vice, which, seen too oft, "we first endure, then pity, then embrace." I believe there is some truth in the analogy—at least, when I was a little boy at school I endured the little girls, though I thought them an obnoxious lot; when I grew older I pitied them for their bodily inferiority and the restrictions imposed by their sex; when I grew yet older—it is not impossible but that I found the analogy still holding good. Indeed, it is not in the power of the normal-minded man to regard with indifference his ideal woman. He bestows upon her his respect, his admiration, his love, because she is worthy of them, and to see her in any degree degraded is a great shock and grief to him. The magnificent king of Israel, renowned as a voluptuary, an apostate, and a moralizer, and venerated as a sage, in drawing a noble portrait of a virtuous woman has the cynical audacity to ask: Who can find her? I doubt that he ever looked for such a one, for she was not the kind he sought. But inquiring men know that she has always existed, and the decent man can always find her. She was not lacking in the rudest and most degenerate ages, and she is to be had even in our loose time. You yourselves can find her, and it is more to the purpose to ask: Are you fit to mate with her?—for all of us are not. Have you char-

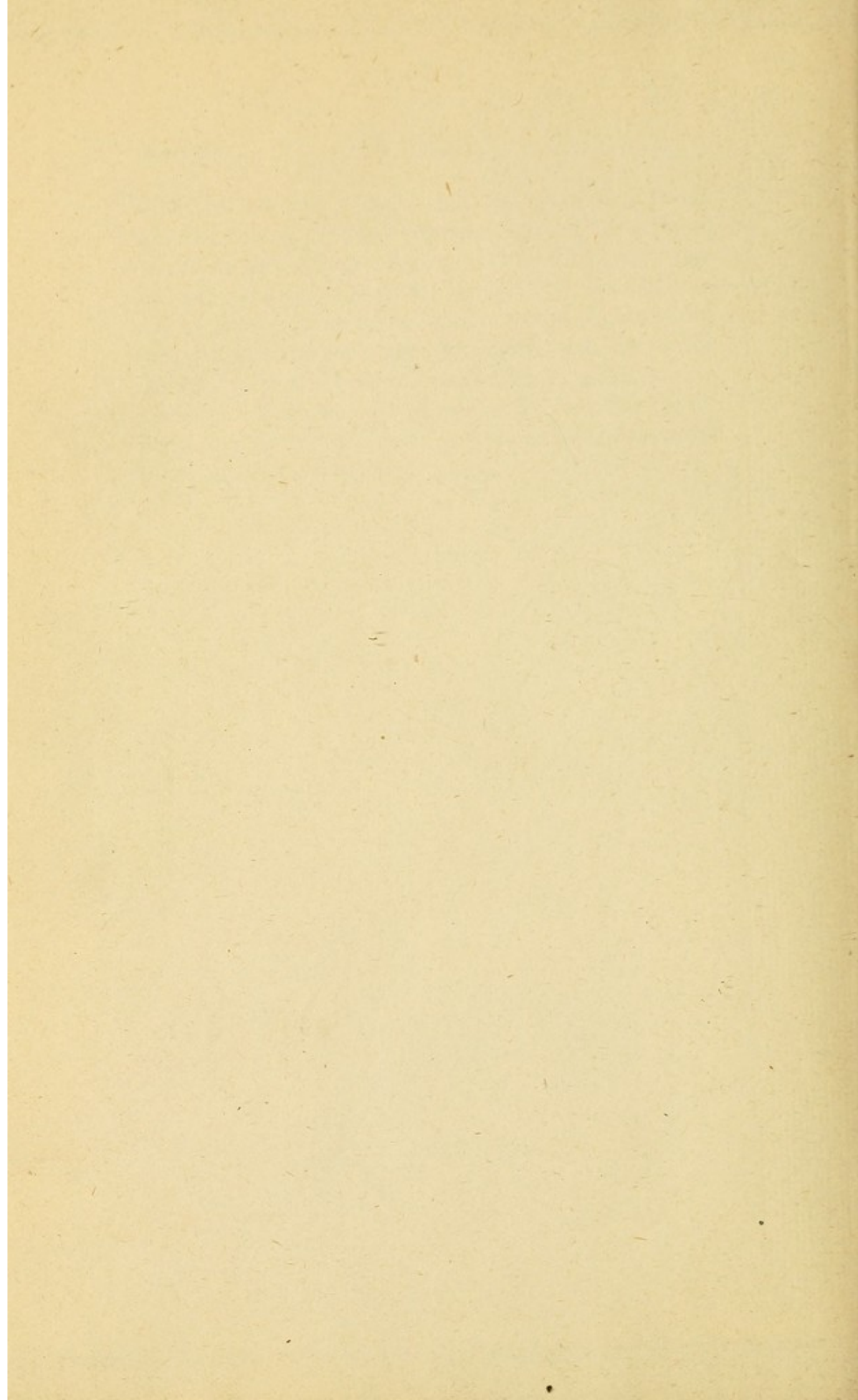
acter refined and pure enough to meet the price of her? —which is, as Solomon truly says, far above rubies.

I shall not err if I predict that when we shall have sent you forth, and you shall become engaged in the battle of life, it is the destiny of much the largest number of your young and buoyant band to face many a disheartening difficulty, to see many a bright hope dissipated, and to deplore many a fair ambition baffled and unfulfilled. What is to uplift and sustain you against these hard trials? From generation to generation afflicted man has sought consolation from religion and philosophy. It is far from my intention to depreciate these precious helps. But religion, as it is commonly professed, brings its succor from an external supermundane sphere beyond the compass of mortal capacities, and with which but few can get in complete unison; and philosophy operates within us through a mechanism which the event itself so disarranges that not seldom it almost altogether fails. Experience, long and trying, has taught our race that its surest solace and most efficient relief come from a human friend, and that for man the friend far surpassing all other friends is woman. Shall I not do well, then, if I tell you to recruit, if it be possible, your religion and your philosophy with such a friend as this?

It is but too evident that in my discussion of woman I have not much concealed or unduly palliated her imperfections. The candor of truth has caused me to appear so harsh towards her that the charge that I am her enemy can with seeming justice be brought against me. Let it be so, if you choose. What I am about to say further of her, in conclusion, is no less sincere. I say, then, that infinitely the highest achievement cosmic

evolution has yet wrought out is a good and loving woman; that on her our race must depend for strength to endure successfully the great and manifold afflictions the ages have yet in store for it; that it is she who is to wipe away the stains which disfigure and obliterate the sin and crime which debase humanity; and that to the attainment of the ultimate perfection of which science gives the assurance, but which as yet only the eye of Faith can discern, the world is to be guided by woman's heart and led by woman's hand.






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