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DISCOURSE
ON THE IMPORTANCE OF THE
STUDY OF PHYSIOLOGY

AS A
BRANCH OF POPULAR EDUCATION,

DELIVERED AT EDINBURGH ON THE 5TH, AND REPEATED ON THE
10TH OF MARCH 1836,

AS INTRODUCTORY TO A SHORT
SERIES OF LECTURES ON THAT SUBJECT.

BY
JOHN FLETCHER, M. D. F. R. C. S. E.
LECTURER ON PHYSIOLOGY, AND ON MEDICAL JURISPRUDENCE,
IN THE ARGYLE SQUARE SCHOOL OF MEDICINE.

EDINBURGH :
ADAM AND CHARLES BLACK ;
JOHN ANDERSON JUN. ; AND CARFRAE & SON.

1836.

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EDINBURGH, 15th March 1836.

TO DR FLETCHER, F. R. C. S. E.

SIR,

We, the undersigned, having heard with much pleasure the Discourse delivered by you introductory to your Popular Lectures on Physiology, and being convinced that its publication would greatly subserve the cause of popular enlightenment, beg to request your permission to have it immediately printed in such a form as will render it easily accessible to all classes of the community.

We have the honour to be,

SIR,

Your most obedient servants,

JAMES SIMPSON, Advocate.

JOHN ANDERSON Jun.

WILLIAM RHIND.

ROBT. COX.

ALEX. BRODIE.

GEORGE BRODIE.

WM. FORRESTER.

WALTER NEWALL.

WILLIAM NICHOL.

EDINBURGH, 16th March 1836.

GENTLEMEN,

If you will accept of the rough MS. of my Introductory Lecture—"with all its imperfections on its head"—verbatim as it was delivered, you are heartily welcome to it. I should have been exceedingly happy, at any other time, to attempt to render it more fit to meet the public eye, which is, in these matters, so much more fastidious than the ear; but I regret that I have not, at present, sufficient leisure for the purpose.

I remain,

GENTLEMEN,

Your most obedient servant,

JOHN FLETCHER.

DISCOURSE, &c.

It is my intention, Ladies and Gentlemen, to attempt, in the following Course of Lectures, an epitomised description of the principal phenomena, the consideration of which constitutes the business of Animal Physiology, or the Science of Animal Life. Invited as we are on every side by subjects of reflection intensely interesting to an inquiring mind, what subject can be—what ought to be—so interesting to us as the investigation of ourselves—of our own structure and that of beings like ourselves—and of the various and wonderful uses to which that structure is subservient? If the actions of lifeless matter, such as it is the business of chemical and mechanical philosophy to investigate, be worthy of the attention which they everywhere receive, how far more worthy of such attention are those of living beings—those in which life itself consists—and which it is the province of Physiology to explain to us? If the laws of mere attraction and repulsion, by which alone the actions of the particles or masses of inert matter are regulated, be entitled to our regard, how infinitely more so are those of life; the phenomena of which, even in its lowest manifestations, so immeasurably exceed in dignity all others, while, in its highest, they are such as would infallibly crush us in the attempt to contemplate them, did not our faculty for contemplation (itself an attribute of life) partake of the greatness which threatens to overwhelm it?

And yet by some fatality the study of ourselves, and of beings like ourselves, has hitherto been generally the last in which we have engaged, if indeed we have en-

gaged in it at all. With the hackneyed quotations continually on our lips, that "the proper study of mankind is man," and that "all our knowledge is ourselves to know," we have been content for the most part to study anything and everything, rather than the mechanism and actions of that fabric by which we live and move and have our being. From our earliest years we have been inured to the mysteries of grammar and language; we have been instructed in the system of the heavens and the boundaries of the earth; we have been taught all the principalities and powers, ancient and modern—the kingdoms of the earth and the glories of them; we can tell, perhaps, the year in which every king of every nation began to reign—the era in which every hero was permitted to lay waste the fair face of nature; we afterwards, probably, make some progress in mineralogy, in chemical and mechanical philosophy, and even in botany and zoology—at least we are familiarized with the outward visible signs of plants and animals, "from the cedar-tree that is in Lebanon, even to the hyssop that springeth out of the wall," and from the "huge Leviathan that taketh his pastime in the deep," to "the lowest creeping thing that creepeth upon the earth,"—but of these as organized and living beings, and of ourselves in the same capacity, we generally remain all this time absolutely and profoundly ignorant. "Those who hang with ecstasy," says a late able reviewer, "over stamens and pistils, and over fragments of granite and spar, never seem to consider how noble and useful a subject for contemplation exists in their own frames." They may understand numerous languages, but they are careless of the origin of a single idea of which language is but the symbol, or of the movements of those organs by which one word is articulated; they may be acquainted with the laws which regulate the motions of the stars through the boundless regions of space, but they are totally ignorant of those which direct the movements of the little globe of the eye through the tiny segment of a circle, which it describes in following their course; they may know the limits of the earth, but with respect to the

means by which they traverse one foot of its surface, they are utterly in the dark ; they may be able to describe the changes which have come over empires from the creation of the world, but of those which take place in their own bodies between infancy and old age, or even between summer and winter, or morning and evening, they know nothing ; they may comprehend all the mysteries of the mutual actions of acids and alkalies, but the manner in which the air which they breathe, or the food which they swallow, acts upon their own frames, never crosses their mind ; and many can descant for hours upon the machinery of a steam-engine, who would be puzzled to answer the most simple question respecting that of the little hand which constructed it.

Whence can have arisen this singular apathy with respect to a study confessedly one of the most absorbing which can occupy the mind of man ? In part probably from our early familiarity with the objects of which it treats. Before reason dawned, we were accustomed to see the animal machine in constant and harmonious motion—the same motions continue as our reasoning power advances to perfection—they continue when it is at its height ; but there is no point at which they attract our especial regard, and phenomena with which we are from the first familiarized, we are apt to look upon as something as it were inherent in the beings presenting them, and too trite to merit any particular consideration. Could we fancy, however, an intelligence abstracted from the body—not “growing with its growth, and strengthening with its strength,”—but brought all at once into view of the various things of this globe, how infinitely would the structure and actions of organized beings appear to surpass in excellence the most wonderful of those of inert matter—how insignificant would every thing seem as a subject for contemplation, in comparison with the self-nourishing, the sentient, the intelligent, and the spontaneously moving things called living creatures ! But familiarized as we have always been with them, it is only by an effort that we can bring ourselves to look upon them as offering any thing re-

markable; and long before we are capable of making this effort, we have in general imbibed the idea, that the business of Physiology is a part of a particular profession with which people in general have nothing whatever to do.

But admitting that Physiology is the essential luminary of medicine, does that circumstance furnish a sufficient reason why a few of its rays should not diffuse themselves a little more extensively? What should we think of the man who, because the law constitutes a particular profession, omitted to make himself master of the value of property and the general rights and privileges of a citizen of the state, to the laws of which he is amenable; or who, because theology is the proper business of another, was content to remain in ignorance of the common tenets of that religion of which he professes himself a member? It is one thing to prosecute the study of Physiology in all its more abstruse departments, with the intention of making it conducive to the elucidation and treatment of intricate diseases; but it is another to take it up merely in its more obvious and established relations, and for the purpose of attaining at least a little insight into the structure and offices of a fabric which we are continually carrying about with us, and of which a well educated person cannot, with any degree of consistency, be entirely ignorant. It is surely a very inadequate reason for remaining utterly unacquainted with the structure and motions of a watch, that we are not destined to be all watchmakers or repairers of watches. Moreover Physiology is certainly no more proper to medicine than chemistry or botany; and who in the present day is deterred by this pretext from undertaking the study of either of these branches of knowledge, or does not consider it a reproach to be quite ignorant of at least the rudiments of sciences which are very far from coming any thing like so home to every man's business and bosom as the one in question? But it may be said it is impossible to understand Physiology without a perfect knowledge of anatomy—we cannot investigate the actions of a machine before we are fully ac-

quainted with its structure, and to attain such a knowledge of anatomy is to people in general quite impracticable. The objection is an unfounded and a frivolous one. "Will it be said," asks Professor Drummond, "that the great truths of astronomy can be made plain to the understanding only of those who are profound mathematicians and philosophers? There are lengths in every science, indeed, which can be gained only by powerful talent and long and deep study; but although it required a Newton to unfold the mysteries of the planetary motions, as guided and controlled by the law of gravitation, still these motions, and most of the sublime facts of astronomy, can be comprehended by the bulk of the people, from plain illustrations given in plain and perspicuous language." In like manner, in order to make discoveries in Physiology, it is unquestionably necessary to be an accomplished anatomist; but a single glance at the general structure of the chest and lungs, for example, or of the heart and bloodvessels, in almost any animal, or even a cursory description of these organs, assisted by the rudest delineations, is quite sufficient to render abundantly intelligible to any body all the principal facts connected with respiration and the circulation of the blood in our own bodies. And the same remark may be extended to most of the other functions, very little more anatomy being requisite to enable us to comprehend a general description of them, than may be acquired by a few walks through the market, or even by our daily experience at the dinner or supper-table, provided we choose to pay attention to what is presented to our observation. An oyster or a mussel will serve to initiate us into most of the mysteries of the soft-bodied animals, and a lobster or a crab into those of such as are jointed. The never-failing haddock and the common skate may be taken as specimens of the general economy of fishes, bony and gristly, the fowl or goose of that of birds, and the rabbit or hare of that of quadrupeds. It is the loathsome reptiles alone that we are required to go a little out of our way for as objects of actual observation, and fortunately every thing

essential in their structure may be easily learned from the most common preparations or diagrams. Whoever, therefore, is not anatomist enough to undertake the study of Physiology, must have lived hitherto either with his eyes shut, or with his understanding closed to what they might convey to it.

Nor is the reproach sometimes thrown on physiological pursuits, that they are cruel, indelicate and disgusting, in any degree better founded. That the charge of inhumanity has been preferred with some shew of justice against the practice of some physiologists, in the prosecution of their *discoveries* in the science, I am ready to admit; but I cannot help repeating an observation which has been often made, that such reproaches come with a very bad grace from persons who, in all probability, countenance and even practise the most cruel sports for no other purpose than their selfish amusement. What must we think of the consistency of the hero who hooks without scruple a struggling fish out of its native element, and exposes it to an agonizing death, who shatters the limbs of a fluttering bird, or worries to death a timid and panting quadruped, in his mere wantonness of power to inflict pain, and even of the delicate lady who smiles in approbation of such exploits, while both descant with mawkish sentimentality on the experiments of physiologists, the direct end of which is the advancement of science, and the indirect end the alleviation of human suffering? Whether or not the end in these instances has always justified the means resorted to to attain it, I shall not stop at present to inquire, but we may at least avail ourselves of the knowledge so gained, without sharing in any imputation to which these means may be amenable, and certainly no cruelty is requisite in conveying, whatever may have been practised in acquiring this knowledge. None of the functions of animals need be seen in action, in order to be perfectly well understood: they may be abundantly well fancied from preparations and representations of the organs engaged in performing them—and none certainly will be exhibited in action in the present Lectures. During many years'

experience in lecturing on this subject, and in delivering courses of more than ten or twelve times the duration proposed at present, I have never yet found it necessary, in a single instance, to expose a suffering animal even to students of medicine (who are necessarily, in some degree, familiarized with sights of horror), for the purpose of elucidating any point of Physiology, and I certainly shall not begin now; nor can I refrain from stating my belief that experiments on living animals are much less necessary even to the advancement of this science, than has been sometimes imagined. I am perfectly aware how much this plan of interrogating Nature has done, in modern times, for every branch of physical science; but I am equally persuaded that these advantages have been in general overrated—at any rate that students, in this respect, generally begin at the wrong end, and are often engaged in experimenting on animals, in hopes of finding out some one thing or other, on which to found some new and surprising doctrine, while they take no manner of notice of the great number of things continually going on in their own bodies, of the rationale of which they are as ignorant as the child unborn. It was a precept which I learned from my first teacher in medicine, the late venerable Abernethy, constantly to remember that I carried always about with me the best subject for observation and experiment—one the most easily to be consulted, since it was quite in my power, and one the phenomena of which should be the most interesting to me, since it was with similar beings alone that I should in future have any immediate concern; and this precept I have never lost sight of. We ought never to forget that the best subject for analysis is ourselves, and the most useful contemplation that which relates to the most common processes; and that, till we understand all which can be readily understood, with a little reflection, about ourselves, and know the rationalia of all familiar phenomena, it is preposterous to pore over the warm and quivering limbs of other animals, in search of things recondite and comparatively useless.

And with respect to the alleged indelicate and repul-

sive nature of physiological studies, the time is fortunately past—although not long past—when it was necessary to refute the calumnious charge. We can all remember the idle and inflated opposition made, on this ground, to the introduction of this branch of study as a subject of general education, when it was first proposed to be taught as such in this city; and we all know how satisfactorily this charge was met—not by wordy denunciations of its injustice—but by practical illustrations of its fallacy and illiberality. Few of my hearers probably are ignorant that many enlightened and successful courses on this subject have been already delivered, to mixed audiences, both here and elsewhere—courses which have amply demonstrated the possibility of teaching all the most important doctrines of Physiology without a shadow of offence to the most scrupulous delicacy or the most fastidious prejudices. For my own part, although in teaching this science as a branch of a medical education, I have never withheld from my hearers any fact with which it was incumbent on them as medical men to be acquainted, nor refrained from any illustration which I considered calculated, either to arrest the attention, or make an impression on the memory, I hope and trust I shall never forget that while in this place I am not in a theatre of medicine, nor addressing those whose business it is to know *every thing* relating to the physiological department of that profession. The privilege of selection is here allowed me; and I must very much fail in my object if I shall have occasion to see a single cheek for a moment suffused, or a single eye cast down or averted from any thing that I shall utter or exhibit within these walls. There is no manner of necessity for using one word that can infringe, in the slightest degree, on the fine enamel, as it has been beautifully called, of the purest mind—for displaying one object which the most sensitive may not contemplate without offence—and heaven forbid that I should wantonly seek occasion for doing either. I hope also that I can make every allowance even for the natural weaknesses of the uninitiated; and as many such persons would perhaps shudder at the

exhibition of any actual part taken from the human frame, I shall scrupulously abstain from introducing such parts, the organs of the lower animals, assisted occasionally by casts or delineations of the corresponding parts in man, being for the most part quite sufficient for the purpose of explaining any function of the human economy. The goddess of Purity and the god of Prejudice (if there happen to be such a personage) may look every day with equal boldness on my walls and tables.

And while the objections to the study of Physiology are so unfair and untenable, how great and numerous, on the other hand, are the inducements to engage in it!

Is it not, in the first place, a tribute that we owe to the Great Author of Nature, who has made all his works so admirable, and endowed us with faculties for admiring them, to pay attention to these works, and thus to rise through Nature up to Nature's God? Were we given our faculties in vain, or that we should employ them in praise of his power, wisdom and goodness; and how can we praise what we do not appreciate? We may use, like parrots, the words of praise, as a man ignorant of painting or of sculpture may repeat what he has heard others say in praise of the author of a picture or a statue, but we cannot be actuated by the soul which should inspire these words, unless we know and feel how infinite are the merits of those works on which alone our admiration can be founded. The blindest savage may be instructed to mumble lip-service to the Creator of the Universe, but it is the man of intelligence alone whose mouth can speak his praises from the fulness of his heart. We may say "How manifold are thy works, O Lord," but it is almost scornful to say so, if we have taken no pains to know these works; we may add, "in wisdom hast thou made them all," but the addition is mere mockery, if we have neglected to search for the evidences of this wisdom. A wilfully ignorant man may be superstitious, but he can hardly be religious. He may believe that he reverences his Creator, but he cannot reverence him as a thinking and a rational being, and one liable to give an account of the talents entrusted

to his keeping, and at the same time remain indifferent to his works. And which of these works is so well adapted to inspire admiration of their omnipotent Author, as the structure and actions of animals in general, and of man in particular? It is on the evidences afforded by Physiology, of the wisdom, the power and the goodness of God, that the greatest men of every age have principally relied for inculcating a belief in the existence and attributes of a Deity; and can we without reproach neglect to avail ourselves of this assistance to the faith inspired by Holy Writ, of this means of illustrating and corroborating the sublime truths of Scripture?

Most unwilling should I be to appear to lend myself, in the remotest manner, to any attempt to make what is called Natural religion a substitute for Revealed. Natural theology may tend to make a religious man more so, by strengthening the hope that is within him; but natural theology can never make an irreligious, a religious man, for it can never teach him the immortality of his soul and his moral responsibility. To attempt, therefore, to render the writings of any class of philosophers a *substitute* for the Bible, is to attempt to annihilate all the noblest and best aspirations of man; but I am totally unconscious of the existence, in any class of persons, of a desire to do so, and I cannot help thinking that rather more jealousy than is calculated to benefit their cause has been lately displayed by some well-meaning people, of any interference by lay teachers with the business of religion. The same God who gave us the Bible as the mandate of his will, gave us the objects of nature as the testimonials of his wisdom, power and goodness; and I am at a loss to perceive by what train of fair reasoning any one who insists on the latter as bearing evidence of the highest attributes of the Creator, can be construed into an opposer of the former as inculcating the sublime truths of revelation. Why should facts which might be rendered mutually illustrative of each other, and made to act as allies strengthening and receiving strength, be adduced only, or supposed to be adduced,

in opposition? In the prospectus of a work, the first number of which is advertised to appear this very day (5th March 1836) it is said to be "the signal heresy of the age, to believe that whatever increases that knowledge, which is power, increases also the blessings of peace." But it may be surely said, without heresy, that that knowledge needs not diminish these blessings, and that if it be not attempted to make natural knowledge supersede that which has been bountifully revealed to us—if they be allowed to go hand in hand together, not recklessly pitted against each other—such knowledge will make us, not only wiser, but more religious men. It appears to me further, to argue rather a sickly kind of piety in the advocates of revealed truth, to be thus tremblingly alive to every imaginary encroachment; and, paradoxical as it may appear, it seems to me to betray even some degree of infidelity, to be so morbidly tenacious of the faith. It is not the man who is confident of his strength, it is not the woman who is satisfied with her beauty, who is the most captious and dragon-like in defence of an undisputed claim—the most rigorous in exacting homage, the most sensible to every slight, real or supposed. Let, then, the advocates for revealed religion, relying on the might and excellence of their cause, show themselves above such paltry feelings; let them remember that many of the most eminent supporters of natural religion have been at the same time no less eminent as humble and sincere Christians, and that it is not among natural philosophers that we meet with the Tom Paines, the Carliles, the Hetheringtons, and the Taylors of this or any other age. Can it be believed that the writings of a Boyle, or a Swammerdam, of Roget, of Kirby, or of Bell—men whose attainments in science make us proud of the species to which we belong—have tended to shake in the slightest degree the religious faith of a single individual, and that the fervour of the piety which they every where breathe, has not rather roused thousands from their withering and fatal apathy? The pestilential precepts of infidelity have emanated, not indeed exclusively, but principally, from benighted visionaries, alike blind to the beautiful harmony

of nature, and illiterate, cowardly and base,—fools who have dared to “rush in where angels fear to tread,” and whose lives and conversations have furnished in general the best refutation of their poisonous doctrines, and made all good men blush for being formed in the same image. A want of religion, revealed as well as natural, is not a mark of profound philosophy, for the deepest philosophers have bowed before that Being in whose sight their utmost wisdom is as foolishness; not of extensive erudition, for the most universal scholars have left behind them imperishable monuments of their devotion; not of superior spirit, for the greatest heroes have been as renowned for their religion as for their courage; not of high fashion, for persons of the most exalted rank have been no less conspicuous for unaffected piety; but, on the contrary, it is a mark, and, as far as my experience goes, a never-failing one, of a half-witted and half-educated—a dastardly and vulgar creature, not valiant, (as he perhaps tries to persuade himself) since his wretchedly contracted views of things render him unconscious of what he braves, and the farthest possible from well-bred, since good manners would have taught him to treat with deference even the errors, if they be such, of the great and the good of all ages and of all nations.

Nor must the claims of Physiology, regarded as a mere human science, be quite neglected in an age distinguished before all that have preceded it for scientific pursuits. The present is not the time for standing still in science; nor must the middle and higher classes of the community continue quiescent in this respect, while the lower classes are so remarkably and so properly on the advance. I need not here enter into the question, lately so much agitated, whether such progress in science be or be not *always* conducive to a progress in morality. I do not require to be told that it is not—that it has been fatally proved that it is not—and that by giving bad men a longer lever to act with, you only increase their power to do mischief. I have already admitted that natural theology can never make an irreligious man religious—I now admit that science, in any form, can never turn a

bad man into a good one. But natural theology is not *incompatible* with revealed religion, which, on the other hand, it illuminates and strengthens; in like manner, science in general is not incompatible with morality, the blessings of which, when it is present, it is calculated to increase and extend; and I feel persuaded, that if, while the head is cultivated, the heart be not neglected, and while men are taught to know their fair place, this place be not ruthlessly withheld from them, every step in science will be a step in morality and virtue. It must be by its *abuse*, and not by its use, that the noblest gift of God to man should ever have been productive of any thing but good; and it would be but a poor argument for amputating the right hand of people in general, that that right hand is by some employed in violence and blood. But, however employed, the rapid march of science is certain. As was well remarked some time ago, in a public lecture delivered at Worcester by my friend, Dr Conolly, "every age is ashamed of at least a *few* of the cries of the one which preceded it; and the time will come, when even our own age, distinguished as it is, must be referred to as exhibiting singular remnants of barbarism and imperfections in national and individual character, which will then have been shamed away from the face of society." But it is not only of a *few* of the cries of the last age that the present is ashamed—it is not only gradually and insidiously that it *has* advanced, and is advancing. By a series of vast and gigantic efforts, it has burst suddenly asunder fetters till lately regarded as invincible, and at once opened for itself new fields of action, the existence of which it never previously entered into the heart of man to conceive. In former times the impossibilities of one age became the possibilities of the next, the probabilities of the one that followed, the certainties of the succeeding; at present, the impossibilities of to-day are the certainties of to-morrow. We cannot argue concerning what is to be, or when it is to be, from what has been, for never since the creation of man was the spirit of inquiry so universally diffused, or so abundantly supported, as at the pre-

sent moment. Unlike what was formerly the case, almost every body is now educated, and almost every body thinks for himself, and is instructed to think correctly. From one press only in this one city, no less than two tons of information for the people—not inflammatory political trash, but real bona fide practical knowledge—are circulated every week; and what must the bulk amount to when multiplied by the products of all the other presses in this and all the other cities and towns in the empire! The lowest being bearing the impress of man, is beginning to feel that he was not destined to be always merely a hewer of wood and a drawer of water, that machinery may now effect much of what was formerly effected by human throes, and the racking of human sinews, that man was formed to labour, but not to labour more violently and with less intermission than the beasts which perish, and that he has been endowed by his Creator not only with a soul to be saved, but with a mind capable of acquiring “that knowledge which is power,” and of using such power in asserting his claim to those privileges of humanity from which he has been hitherto almost excluded. If ever there was to be a time when the lower orders of the people should be instructed to distinguish light from darkness, and urged to shuffle off the trammels of ignorance by which their free souls had been long overwhelmed and brutalized—if ever there was to be a time when an all-pervading spirit of investigation, while it held out the brightest hopes to the intelligent and deserving, should threaten gradually to annihilate every claim to pre-eminence, but that of intellectual and moral superiority—if ever there was to be a time when fear to whom alone fear is due, and honour to whom alone honour should be promised, and the shallow pretender of every description should have just cause to tremble—that time is now arrived. This spirit will work its way without violence, for it is a happy feature of modern improvement to discard the brute force of former times, and to operate without convulsions. It may be opposed—it may even undergo occasional overthrows—but the mountain torrent does not the less certainly reach the

ocean because its course is not always smooth, or because that course is sometimes even retrograde. The right of the many to rank as rational beings, when once their eyes are fully opened to the possession of this right, and to the stupendous, albeit apparently unsubstantial power with which they may enforce it, must eventually triumph over the usurpations of the few: it is blindness—it is almost madness to doubt it.

And how should the middle and the higher orders of society meet this claim? By vainly attempting to repress a spirit which “rides on the whirlwind and directs the storm,” or by falling in with a tide which they cannot resist, and labouring still to keep as much ahead of their new competitors as ever? We may affect to sneer at these new lights—“this omnipotent philosophy,” as it has been ironically called; but we are as incompetent to stem the torrent of improvement as was the renowned Mrs Partington to prevent with her mop the entrance of the Atlantic ocean into her cottage. Mrs Partington should have either removed her cottage to higher ground, or got into a boat, and she might still have moved proudly, mop and all, over the waves of the ocean. In like manner, what are called the better orders of the people must be content to move a step higher in the scale of knowledge if they would still retain their superiority. There never can be equality for an instant except by the fault of those who occupy the higher walks of society; but the tendency to equality is to be counteracted not by attempts to crush the efforts of the low to rise, but by endeavours on the part of the high to rise still higher. It has been well observed lately that if all men were to get up on an equality in the morning, there would be a distinction of ranks before night; but this distinction would now be founded, not on physical, but on intellectual and moral superiority. This is the strength of the present day, and strength will be always lord of imbecility. But if *all* ranks rise in the scale, there will be the same distinctions as ever, and it is to this happy consummation, it is to be hoped, that every thing is now tending. Public opinion is untangible as

air, but irresistible as the hurricane ; and public opinion will not much longer suffer common sense to be trifled with, and common justice to be outraged, by artificial distinctions, the effect of which is to debase the many, and to foster the indolence and arrogance of the few. There will always be distinctions, but they will in no long time be *real* distinctions, and the only *real* distinction is that of knowledge, and its inseparable attendants, when properly directed, integrity and virtue. Let us all, then, earnestly endeavour to keep pace in some degree with the spirit of the age in which we live. Why should a gentleman be more ignorant than the menial who cleans his boots, or a lady than the maid who dresses her hair? And yet no one not long and practically acquainted with the melancholy fact, can form the most remote conception of the overwhelming ignorance of not a few of our most magnanimous looking loungers ; and it was observed not long ago by one of our most influential reviewers, (how truly or not I do not presume to judge) that philosophers never entertained an idea of so perfect a vacuum in nature, as that afforded by the brain of many a fashionably educated woman. Now every body knows Nature's abhorrence of a vacuum in any situation, and where can it be more hateful than in this? Fortunately the many admirable institutions lately established in this city and elsewhere promise rapidly to remove this reproach (if indeed it were ever deserved) from the female part of the genteel community ; and the male part will soon improve when it is perceived that a bluff look or an unmeaning grin is no longer a passport to favour. It is not merely as an idle frivolous toy that a young woman of the present day is here brought up—it is not upon the principle, only a few years ago unblushingly promulgated “that chemistry enough to keep the pot boiling, and geography enough to know the different rooms in her house, is learning sufficient for a woman,” that her education is here conducted. She is now happily trained for the rational companion of a well educated man—the first and best instructress of her children. No branch of useful science—not even Physiology—is with-

held from her, and there is none in which her progress has not been such as to threaten to hurl back with interest on lordly man the contempt in which her intellectual powers have been so undeservedly held. Nobody now ever hears of a bluestocking, for the cerulean tint of any individual pair is undistinguishable in its general diffusion, and it will soon be more remarkable to wear hose of any other colour, than to be clad in the colour of the firmament. And happy will it be for society when such is the case. It is not necessary nor expedient that women should be always looking like astrologers, and uttering the words of the wise and their dark sayings ; but it is in the highest degree desirable that they should be so far imbued with the spirit of intelligence as to give to every look and word, even in the veriest trifling, that unspeakable charm which at once distinguishes the rational creature from the mere puppet, which is the highest finish of the beautiful, and which is better—a thousand times better—than beauty to the plain.

Finally, the study of Physiology has claims upon our attention, as furnishing us with many general principles, which may be rendered of practical advantage in the care of our health, and in preventing us from being imposed upon by the pernicious misrepresentations and malpractices of impudent and crafty charlatans. I am quite aware that it has been often said, that “a little knowledge is a dangerous thing,” and that persons only slightly acquainted with Physiology (and it is impossible that people in general can become deeply so) are more prone than those entirely ignorant of it to tamper with themselves, and to fancy all sorts of mischief on every trifling ailment. I distinctly and boldly, however, enter my protest against both propositions. That a great deal of knowledge is better than a little, it would be folly to deny ; but that a little is infinitely better than none at all, is equally unquestionable. The opposite doctrine has gained ground, like many other absurd precepts, chiefly from having formed part of a couplet written by an author who, in his time, was in every body’s mouth ; and it has been continually bandied about since by

people who find it much easier to quote old sayings than to reflect upon their justice, and who are particularly brilliant in this way whenever they appear to find, in these old sayings, an excuse for their own ignorance and indolence. But a little knowledge is not a dangerous thing—not half so dangerous as total ignorance, provided the knowledge is of a useful kind. “A little of such knowledge,” as observed by Mr Combe, “is better than none at all, upon the same principle that it is better to have one penny than to be entirely pennyless.” Is not a little light better than utter darkness—a little clothing better than total nakedness—a little food better than absolute starvation?

And, with respect to the alleged tendency of a little knowledge of Physiology to occasion a tampering with one's constitution—if by such tampering be meant allowing the respiratory organs as unfettered a play as possible, breathing the purest possible air, using beneficial exercise, taking food of the proper quality, in the proper quantity and at the proper intervals, and following the other dictates of which a very little knowledge of Physiology is sufficient to show the expediency—if all this be to tamper with one's self, it is certainly the tendency of such knowledge to occasion tampering; and to inculcate the notion, that such precautions cannot be neglected with impunity. But, in regard to any fancies more idle than these, this little knowledge of Physiology has no tendency to produce, but, on the contrary, the strongest possible tendency to prevent them. The most ignorant people are uniformly the most fanciful. Dr Gregory used to remark, in his lectures, that it is a great mistake to imagine that old wives and uninformed people in general do not speculate on what is passing within them, as well in health as in sickness, and to assert that they are, on the contrary, in general the most determined of theorists; and the experience of all practical men will bear him out in his assertion. The wretched trash which they are every day compelled to listen to from their visionary patients is almost incredible, and the obstinacy with which such patients cling

to their delusions is in general precisely proportioned to their absurdity. What Sir William Temple said of the stomach, that, if not occupied in its proper business, it was (like a school-boy) always in mischief, may be said with much greater truth of the brain. The human mind—"that mind, that mind of man, that god-like spring of action," must be continually employed in some way or other. The most abject savage, the gibbering idiot, the untutored clown, the muling infant and the decrepit dotard—all must have their minds, such as they are, in some degree engaged; and what they want in rational knowledge they invariably make up in fancy and credulity. In as far, then, as we repudiate all real knowledge of ourselves, we infallibly lead to hallucinations incomparably worse than the worst into which such knowledge can conduct us. It is needless, in support of this position, to go into all the absurd fancies which the people of former ages, or the savages of modern times, have entertained, and still entertain with respect to the causes of diseases; or the idle measures to which they have resorted, and still resort in the treatment of them. From this degraded state the practice of medicine has only very gradually recovered itself in European countries; and among the barbarous and semi-barbarous people whom science has not yet enlightened, the opinions still prevalent respecting the causes of diseases are as wild, and the practices still had recourse to in cases of sickness as idle and absurd, not to say as revolting and cruel, as ever. And upon whom is it among ourselves that the despicable empirics of the present day live and fatten, while their terrified and poisoned victims quail under their grimaces, and totter to untimely graves under their drugs? "It is," says the able reviewer whom I have before quoted, "to the deplorable ignorance even of persons of education, with respect to the structure and functions of the human body, and every thing which relates to health and disease, that we must ascribe the inability of such persons to distinguish between the rational practitioner and the quack." Now a very little knowledge of Physiology would enable any one to de-

tect the bare-faced attempts at imposition of the latter ;
 and this very little accordingly, so far from being a dan-
 gerous thing, may be the saving of their lives. And
 such knowledge is rapidly spreading over society. The
 age of farce is almost gone—the mist of delusion is
 fading away. The days of the necromancers, exorcists,
 and wizards,—of the powder of sympathy, the electuary
 of the three devils, the plaster of the hand of God,
 the elixir of life, the immortal Catholicon, and nume-
 rous other infallible remedies of former times, have long
 been past. Let us hope that those also of the Hohen-
 loes and St John Longs,—of the balm of Gilead, the
 real blessing to mothers, and Morrison's pills, are already
 numbered ; and that one advantage of the progress of
 science will be, that people in all time coming will be
 allowed to live without groundless apprehensions, and
 to die at last a natural and peaceful death.