Can physical science obtain a home in an English university? : an inquiry, suggested by some remarks contained in a late number of the Quarterly Review / by Charles Daubeny.

CAN PHYSICAL SCIENCE OBTAIN A HOME IN AN ENGLISH UNIVERSITY?

AN INQUIRY,

SUGGESTED BY

SOME REMARKS CONTAINED IN A LATE NUMBER OF

THE QUARTERLY REVIEW.

BY

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AN INQUIRY,

&c. &c.

THE Quarterly Review, in its number for June last, contains an article on the Oxford Commission, which is attributed to an eminent Member of our own University; and there is certainly nothing either in the substance of its remarks, or in the spirit in which they are conceived, which should induce us to disclaim its parentage.

It is evidently the production of a scholar and a gentleman, valuable as the exposition of opinions entertained by a large and influential body of Oxford Graduates, who, although by no means so well satisfied with things as they are as to desire no change in the University system, entertain on many points views widely different from those which have been put forth by the Commissioners.

At a time when so much is said about the necessity of accommodating our medieval institutions to the wants of the present age, it is of the highest importance that the bearings of the subject should be laid before us, as they present themselves to the mental vision of men of every school and phase of opinion; and whether it be the Government, or the Academical Body itself, that shall ultimately take up the difficult task of reforming us, advantage will be derived from the publication of an Article, which contains a digest of all that can be said on the

other side of the question by so able a representative of the opposite party.

As, however, I do not regard it my particular vocation to enter the lists, either as the assailant or as the vindicator of the Oxford Commission, I shall pass over many questions of high interest, which the Reviewer, in the course of his article, has taken upon himself to discuss, and shall confine myself to one subject more immediately relating to that part of the Academical system in which I am especially concerned.

I allude to his assumption, that since the revival of learning, Physical Science has of necessity been transferred from the Universities to the Metropolis and other great cities, a fact which, if true, would seem to render nugatory all those measures which have been lately taken in Oxford, with a view to the encouragement of these pursuits amongst ourselves.

This migration of studies, which in the middle ages were exclusively carried on within the walls of the cloister and the college, is deduced by the Reviewer from two principal causes; first, that since the introduction of the inductive method of philosophy, facts are no longer sought to be arrived at by logical reasoning from a few abstract and arbitrarily assumed principles, but are collected by observation and experiment; secondly, because, as he contends, the Natural Sciences inevitably follow in the train of Medicine, and because the latter can only be satisfactorily taught in localities where the diseases engendered by an overflowing population supply a large amount of clinical instruction.

Nay, he would persuade us, that the sciences which reveal to us the laws of matter, not only cannot be

taught, but even cannot be cultivated with much success within our existing Universities.

The Chemist, for example, according to him, will be placed under a disadvantage from the want of skilled workmen at hand to construct his apparatus; the Mineralogist and the Geologist will be equally at a loss for collections ample enough to illustrate his enquiries; and even the Astronomer or the Mechanician, however well he may be supplied with the requisite appliances for study, will suffer from the absence of scientific intercourse.

Hence it is argued, that if the Physical Sciences have deserted their original cradles for the larger cities of the empire, we are bound to attribute their migration, rather to the mode in which scientific investigations are now conducted, than to any want of encouragement in the Universities themselves, or to the engrossing nature of other studies fostered in those seats of learning; so that it is the result, not of circumstances peculiar to ourselves, but of those affecting alike all countries, and every system of academical teaching.

It must be admitted, indeed, that the remarks subsequently put forth by the Reviewer on the subject of General Education, seem somewhat to qualify his previous assertions; inasmuch as he there admits the utility of a certain acquaintance with the laws of the material world to the country gentleman, as well as to the higher class of manufacturers; and therefore recommends, that Students who are destined for such walks of life, should obtain some instruction at the University in the Sciences calculated to enlighten them on such subjects.

But it is to be remarked, that this admission is not extended to that much larger proportion of the inmates of

our Colleges, which falls under neither of the above categories, and especially that those destined for Holy Orders are not included in it. Indeed, with regard to the latter, a protest is entered into by the Reviewer in a subsequent part of the article against one of the recommendations of the Commissioners, which was designed to provide for such instruction, and which suggests for that purpose, "that the ministers of the Church should be compelled to enter into another School independent of Theology."

I am not, indeed, prepared to vindicate the precise mode in which the injurious tendency upon the minds of the Clergy of an exclusive devotion to dogmatic Theology, unmitigated by secular learning, is here provided against. But if the Reviewer objected, not to the principle, but only to the mode in which it is proposed to carry it out, we might expect to find some expression of opinion on his part in favor of those recent regulations by which the same object is arrived at in a manner less open to objection.

At any rate, if it be ruled, that those destined for the clerical profession, in common with the rest of the students, should devote a portion of their time to certain secular studies, besides the classics, there seems no good reason, why they should be taught to regard with less favor the School of Physical Science than those of Modern History or of Mathematics.

And, by the by, in alluding to the latter, I am bound to correct a mistake into which the Reviewer appears to have fallen with respect to the division of subjects admitted into the Schools recently established.

In his remarks on the one dedicated to Natural Science, he has done me too much honor, in attributing the principal share in its erection to my efforts. My influence

in the University would have been too limited for such an achievement, had I not been supported by others equal to myself in zeal and authority; but I may at least lay claim to a sufficient knowledge of the views of its founders to interpret their meaning, if indeed it be not already patent from the words of the Statute itself.

Undoubtedly, then, it was never their intention to unite together in the same school Mathematical and Physical Science; nor can it ever happen, as the Reviewer supposes, that the Candidates in it will be rewarded for their proficiency in the former class of subjects.

It would manifestly be quite foreign to the purpose, and fatal to the genius, of a School of Physical Science, to encourage the introduction of any subjects that are treated mathematically; and no temptation can exist for admitting them, when there is already provided another independent School in which Honors are expressly given for Mathematical distinction.

To return, however, to the subject of Clerical education: it pains me to find that one who may be regarded as the organ of a large body of Oxford Graduates, should seem even tacitly to discountenance the admission of Physical Science as a desirable element in the system of secular studies which is to precede the immediate preparation for Holy Orders.

I should consider it unfortunate, if such a feeling were to prevail, because its influence would draw away from the pursuits of science by far the largest as well as the most important portion of the academic body, those who, as Undergraduates, are most likely to influence their contemporaries, by their example, and afterwards, as permanent residents, the University generally, by their authority.

But in a less personal point of view I should be inclined to regret its existence, as an intimation of views, which, if followed out, would in the end materially change the character of the education of the clerical Body in this country, and its relations to the Laity.

Hitherto it has been the characteristic of the English Clergy, that a greater sympathy prevails between them and the community at large, than is found to exist in any other part of Christendom.

This arises from the fact, that up to the period at which their strictly professional studies commence, their education is conducted upon the same principles, and directed to the same objects, as that of other youths belonging to a similar grade of society.

Thus they are disciplined in the same Schools, received at the same Colleges, trained in the same sports and exercises, and initiated in the same system of study, as those destined for other professions and callings.

Owing to these circumstances, it is difficult even to conceive amongst ourselves such an estrangement of the Members of the Clerical Profession from the great body of the nation, as that which in a neighbouring country brought about during a period of political excitement the entire proscription of the order, and which, in Roman Catholic countries at all times, causes the actions of a priest and of a layman to be looked upon, as though they were prompted by different principles, and regulated by a different standard.

It would be out of place on the present occasion to inquire, how far this isolation of the Hierarchy may be necessary to a system, which exalts the priest into a kind of mediator between God and man, which values

him chiefly as *ex officio* the dispenser of certain mysterious privileges, and therefore seeks to render him the object of a superstitious veneration, quite independent of his personal character.

But in a Protestant community, the clergyman, in his capacity of husband, of father of a family, of magistrate, and of the associate of the gentry in his neighbourhood, is regarded as a citizen no less than as the member of a sacred profession; and is never so likely to maintain his legitimate authority over others, as when he presents himself before them as a man of like sympathies, tastes, and affections, hallowed only and refined by a deeper infusion of religious principle.

Hence it is of the greatest moment, that the general education which the Clergy receive, the basis upon which their theological acquirements are founded, should be at the least as comprehensive and complete as that of the best instructed amongst the Laity.

It is thus alone that they can hope to influence by their example and precept those around them, or can give weight to their theological teaching by proving themselves a match for their lay brethren on subjects even of a secular character.

If, therefore, it be admitted, that a knowledge of the laws of the material world constitutes a useful and desirable addition to the education of a Layman, and that it ought to be acquired, not merely on the narrow plea of helping him on in the operations of his farm, or in the processes of his trade, but on the more substantial ground of its tendency to enlarge the faculties of his mind, and to impart to him more just and comprehensive views of God and of Nature, the same advantages ought surely not

to be denied to the Clergy, if we would have them maintain their proper position in the scale of society.

Indeed, if the Clerical body were induced to abstain from the study of the Physical Sciences, and if the atmosphere of our Universities be really so unpropitious to their culture, as some would pretend, it might become a grave question, whether it were worth while to force an unnatural growth of scientific learning in the academic soil, for the sake of that small proportion of the students who are recommended to profit by it.

In short, the concession made by the Reviewer, in favour of the admission of Physical Science as an element of general education, is too much narrowed and restricted, to do away with the damaging tendency of his previous assumption; and hence it becomes still necessary for those who are interested in the promotion of scientific studies in this University, to protest against the idea, that such pursuits are so out of place amongst an academic body, so alien to the genius of our Institutions, as the Reviewer would wish us to believe.

I am myself, in the first place, at a loss to understand on what principle the different mode in which Medicine is studied now than heretofore, should necessarily have the effect of transferring its study, even from its very commencement, from the Universities to the Metropolis.

If, indeed, which I doubt, there ever was a time in the profession in which the dogmas of learned men altogether superseded the lessons of experience, then of course the Universities would appear the most appropriate places for sending forth a finished physician; and, on the other hand, if, which God forbid, the time should ever arrive,

when medical practice becomes so wholly empirical, as to discard all aid from mechanics, from chemistry, and from general physiology, the *craft,* (for Science it could no longer be called,) will then, not only be perfected, but even must commence, at the great Metropolitan Hospitals. But neither the dictates of common sense, nor the usage of other enlightened nations, justify us in considering such an arrangement as a necessary one. Had it been so considered, Blumenbach would never have collected round him so numerous a band of disciples at Göttingen, nor would Tiedemann at Tubingen — the smaller Universities in Germany would have been deserted by this class of students, whilst Prague, Vienna, and Berlin would have enjoyed the monopoly of medical education.

It is, indeed, not to be wondered at, that such a notion should prevail in England, where the long duration of the preparatory education enforced, and until lately the entire omission in it of that element, which to a medical student is the one most essential, namely, the study of the laws of matter, has banished from our Universities the larger portion of the medical profession; and has compelled the few who submit to this previous training, to devote a portion of the time which they subsequently spend in the Metropolis to the acquisition of that preliminary knowledge of Physical Science, without which their bedside experience would be useless and even prejudicial.

Surely there can be no reason, why the medical student, or the apothecary's apprentice, if he were not prevented by other considerations from graduating at our Universities, should not derive as much advantage from Lectures on Mechanical and Chemical Philosophy, aye, even on Anatomy and General Physiology, there delivered, as he

does at present from the crowded Schools of Paris or London; nor does it seem clear, why it should be regarded more advantageous to prosecute all these studies simultaneously with clinical practice, and thus to begin erecting the superstructure, whilst we are still employed upon the foundation.

But, we may be told, it is but a waste of time to discuss a question, which in this country has been already practically decided by the voice of public opinion, and to attempt to divert from its present channel the great stream of Medical Students, by whom an attendance on the Metropolitan Lectures is regarded as a condition essential to success.

Nor do I aim at doing more, than to trace to its true origin the feeling which exists at present in favour of the London Schools of Medicine, as the means of shewing, that there is no such necessary connexion between scientific instruction and crowded Hospitals, as should discourage us from attempting to supply the same facilities within our own walls to those, who may require only the former without any assistance from the latter.

Inasmuch, indeed, as Lectures of whatever kinds which are given to a Medical Class, will have reference more or less to the profession for which they are meant to be preparatory, it would even seem preferable *cæteris paribus* that the general Student should resort to Courses given in the University, which are intended to impart a knowledge of the broad principles of the Science, without any such local application, even if the option of attending the Metropolitan ones lay open before him.

But the majority of academical Students have no such

option, for considering how much the period dedicated to general education is now prolonged—to a degree indeed which the Reviewer himself regards as requiring correction and curtailment—it is evident that this scientific knowledge must for the most part be either acquired by the student during his residence at the University, or be withheld from him altogether.

The Reviewer, however, would probably say, that his intention was not to depreciate the schools of physical science existing amongst us, but to discourage any overweening expectations of their success—that it would be his wish to retain them for the purpose of completing the scheme of general education which has been already chalked out, and that he would only protest against their assuming any more than that subordinate position which they at present occupy.

And here I confess my antagonist has me at an advantage, so long as he limits his views to the case of Oxford as it exists at present, or even as it has presented itself during the two last centuries.

Unquestionably past experience would seem on his side, when he asserts that physical science takes no deep root in this University, and that if any one of its branches seems now and then to evince an ephemeral vigour, it speedily receives a check, and sinks again into its former stunted condition. It must be admitted, that the inmates of our Colleges, notwithstanding the learned leisure which the munificence of their founders secures to them, have seldom taken part in those great discoveries by which the active spirits of the age have so entirely changed the face of science.

Nay, so little is expected from them in the capacity of

discoverers, that a distinguished member of the sister University, who might have been expected to recommend to others those sciences which he has cultivated with so much success himself, nevertheless has been heard to declare,* that in his opinion the proper business of the Universities is not so much to advance the boundaries of science, as to methodise and digest the discoveries elsewhere made, and thus to embody them into the general patrimony of universal knowledge.

Against such deep-rooted prepossessions, as well as such overpowering authorities, I can only hope to make head by an appeal to first principles, and to the practice of other countries.

If it be the fact, that scientific eminence has never been looked to as a passport to our collegiate emoluments—if none of those distinctions which recompense the student for his devotion to classical pursuits have ever been bestowed upon the zealous naturalist, or the diligent experimentalist—if, on the contrary, an addiction to such occupations on the part of the youths who are destined for the University is discouraged by most parents and guardians as detrimental to academical success, I conceive that there are local circumstances enough to account for the neglect of physical science without referring it to any law applicable to such institutions in general.

Until, indeed, it has been ascertained, what might be the result, supposing that a certain proportion of our fellowships were awarded to young men of scientific pursuits; supposing the student who distinguished

* I allude to Professor Sedgwick, whom I have heard on one or two occasions express himself to this effect, at meetings of the British Association.

himself in science were placed on the same level in the estimation of his contemporaries, as if he had employed the same amount of mental exertion upon studies of a literary character ; and supposing the activity of the professors in these departments were stimulated by the necessity of keeping pace with, and of pushing forwards a band of earnest and active pupils ; it cannot be said that the question as to the fitness of our English Universities for the prosecution of physical science has ever been fairly tested.

And whilst experience ought not under such circumstances to be appealed to as against us, probability seems greatly in favour of our argument.

What position could seem in itself so favourable to the pursuit of physical science as the retirement, the quiet, the independence of a College life ?

Where else can the student expect to meet with such facilities for its prosecution, as might be furnished by the pecuniary resources of these splendid establishments, and by the exemption which they afford from the cares and distractions of ordinary life ? — establishments, which, whilst they have been emancipated from the shackles, and exempted from the evils of the old conventual institutions, retain in at least an equal degree those appliances for study, and those inducements for intellectual occupation, which the earlier monasteries were designed to provide, but which gradually deserted those haunts, as the ascetic spirit inherent in them became predominant.

That the great marts of commerce and industry may afford more favourable opportunities for *applying* the principles of science to useful purposes, is what I can readily understand—that amongst those great hives of men which are congregated in our large cities, there will be found

more persons addicted to science than can be met with in smaller places, is plain from the doctrine of chances—but that the investigation of the general laws of matter—the prosecution of experiments requiring great abstraction of mind, as well as much continued physical exertion, and promising no immediate result beyond the pleasure of arriving at a new truth, should be best carried on amidst the bustle, the turmoil, the distractions of a crowded capital—the *fumum, et opes, strepitumque Romæ*—seems contrary to all reason and analogy.

A Wheatstone might be able to perfect his electric telegraph, or a Watt his steam engine, more readily in a large city than in the retirement of the country; but the great principle of electro-magnetism, which guided the former, and the laws of latent heat which directed the latter to his useful invention, might have been worked out as readily in the retirement of a small University, as in the metropolis of Denmark or of Scotland.

It was in the quiet of his Cambridge home that Newton brought to maturity the great truths of his Principia; and if the Atomic Theory of Dalton was promulgated at Manchester, it is probable that the first early glimpse of it had been obtained amongst the mountains of Cumberland.

If, indeed, we refer to the important researches on various branches of natural knowledge which have been instituted in a neighbouring country, it will be found that it is from the smaller Universities of Germany, rather than from the larger ones, that they have for the most part emanated.

It was in the obscure University of Giessen that Liebig worked out his great discoveries in organic chemistry, and initiated a large band of disciples in his new methods of research.

It was from the University of Göttingen, in all respects less considerable than Oxford, that he obtained his most active coadjutor in the eminent chemist, Wöhler.

It was at Marburg, that Bunsen, the greatest experimentalist perhaps of the present day, completed his investigations on the most intricate and dangerous class of compounds that have ever yet fallen under the examination of the chemist.

And so in the other natural sciences. Whilst Jena has the honour of giving birth to the researches on vegetable physiology which have rendered the name of Schleiden so illustrious, Tubingen has equal reason to be proud of that of Hugo Mohl in the same department. Nor have there been wanting physiologists and anatomists to do honour to the minor German Universities, such as Heidelberg, Halle, or Göttingen.

The capital of Prussia, indeed, has reason to boast of a Mitscherlich; but it is a significant fact, that this philosopher, after having at an early age given proofs of his ability by one of the greatest of modern chemical discoveries, has for many years past contributed little to the general advancement of science.

On the other hand, at Vienna, Prague, and Munich, where Universities exist in connexion with large capitals, in two of which indeed they are fostered, or it may be, impeded, by the presence of a Court, little, comparatively speaking, has been done towards enlarging the boundaries of knowledge, notwithstanding the larger emoluments which the professors enjoy, and the greater crowd of students that flock to their lectures.

No doubt owing to the migratory disposition of men of science in Germany, it has happened not unfrequently,

as in a recent instance to which the Reviewer alludes, that a reputation earned at a minor University has proved a passport to a Chair in one of the larger ones; but the question is, not where the greatest number of eminent professors have ended their days, but where the greatest number of researches of an high order have been undertaken by them.

With the exception probably of Berlin, I conceive the verdict would not be awarded to the Universities that stand highest in point of numbers and consideration.

And the reason of this is too obvious to require pointing out.

Few men resident in a large Capital will have the courage to adhere to that rigid rule of exclusion from society which has enabled Faraday to carry out his great investigations; and it may fairly be asked, what there is to hinder an individual who should follow hereafter in the footsteps of that philosopher, from finding in the cloisters of Oxford a more congenial retreat, and a more entire freedom from distraction.

Moreover the circumstances of the times in which we are placed, though they are often cited, as by the Reviewer himself, to account for the transference of physical science from the Universities to our large cities, seem to me on the other hand in most points of view to render such pursuits more practicable within our academic retreats now than at any former period.

The rapidity indeed of modern travelling causes the communication between distant places to be so easy, that the academical student may at once enjoy the advantage of seclusion, and at the same time the power of communicating at pleasure with kindred minds, as well as of availing him-

self in the fullest manner of the skilful workmen of the metropolis for the construction of his instruments.

No doubt, therefore, need be entertained as to the possibility of cultivating physical science within a University at least as well, or even better, than in a large metropolis, provided only that sufficient encouragement be held out for its prosecution.

Nor do I imagine that the eminent friend, whose opinion I have quoted, as favouring the opinion that these academic retreats are the most appropriate spots for methodising and digesting the new truths that may from time to time be brought to light, meant to contend, that they might not be also made available for carrying out those researches which led to their discovery.*

Much change, to be sure, must be wrought in the tone and habits of this University, before such pursuits will be followed up in it to the extent supposed; nor can the most sanguine advocate of these views hope that more will be done in his own day, than that the way may be paved to such a change, by the diffusion at least of more correct ideas with respect to the nature, relations, and value of this class of studies.

He must in the first place get removed a prejudice very prevalent amongst us, which leads so many to assume that the physical sciences have fewer claims to be regarded as parts of general education than studies of a literary description; that whilst, for example, the history of modern

* The recent brilliant researches of Professor Stokes would seem to shew, that Cambridge at least is a spot very suitable for scientific investigations, even though they be of an experimental nature, and not, like those of an Adams or an Airey, carried on merely through the medium of Mathematics.

nations, the general principles of jurisprudence, the first great truths of political economy, are essential to the proper development of the understanding, and are therefore indispensable to every man of liberal education; the physical sciences on the contrary are necessary only to the medical student, and are matters in themselves of very trifling importance to others.

If Chemistry be regarded as useful, it is so in the eyes of a large portion of the community, because it may chance to aid the landholder in applying with greater advantage his manures, or for some other similar reason; if Physiology forms a desirable adjunct to a gentleman's education, it is because it imparts that general insight into the functions of the human frame, which may give him the power of regulating in some measure for himself his diet and mode of life, and may enable him to dispense with the services of a physician on every slight occasion.

Reasons such as these could be alleged in behalf of the humblest of the useful arts, any one of which might, under certain circumstances, prove serviceable to those who were adepts in them; but the Physical Sciences now included in our course of study stand upon much higher ground, and, independently of their practical utility, rank among the means to be employed for disciplining the youthful understanding, and for preparing it for the future business of life.

If this were once admitted—and a little more familiarity with the truths of Physical Science must, I am convinced, bring about its general recognition—the difficulties that have hitherto stood in the way of obtaining the appliances for carrying out on an adequate scale our courses of instruction in these departments would speedily vanish.

So long as a knowledge of the laws of the material universe is regarded as only important to those under training for the Medical Profession, it is not surprising that many should object to a large outlay for the sake of so inconsiderable a portion of our Students; but once realise the principle which the late Statute has adopted as the basis of its enactments, and consider the Physical Sciences as much a part of general Education, as those branches which form the subjects of examination in the other newly-established Schools, and the question of the erection of such a Museum as should supply the requisite means of instruction in this department, must be regarded as settled.

There is also another measure of improvement, of a practical kind, which we may hope to see introduced, and which, I am happy to think, may meet the approval of the Reviewer and his friends—I mean that of shortening the period assigned to Classical education, so that the last year of residence may be devoted to studies connected with one or other of the newly-established Schools. Of the advantage of such a concession to the medical part of our Students at least, no doubt can be entertained. It is rather a mortifying reflection, that since the Medical Examinations at Oxford have become a reality, the number of Graduates in this Faculty sent forth from our University, has gone on gradually diminishing; and is indeed at present reduced to so low an ebb, that unless some reaction should take place, it will become difficult in a few years to maintain the existing usage, which restricts the post of Physician at the Infirmary, and consequently the higher medical practice in Oxford, to members of our own University.

At the time when the new regulations were under consideration, I had my misgivings that such might be the case, unless the Student, who by entering himself in the Physic line indicated that medicine was to be his future destination, were allowed, as at Cambridge, to be released from his Classical studies after having gone through his Responsions.

I never, indeed, questioned, but that it was highly desirable, for the Physician to be thoroughly imbued with Classical literature, and to exhibit himself in after life an accomplished Scholar, as well as an able Practitioner. Nor should I have denied, that the postponement for a year or two of the commencement of his active career, was a cheap price for him to pay for such high advantages.

But unfortunately there are tastes and faculties peculiarly important for success in Medicine, which can seldom be fully developed except they be fostered at an early period of life. Such is that talent for minute observation, that clear and accurate recollection of individual facts, that power of classifying and arranging the objects that present themselves, in which consists the genius of the Naturalist, and which constitutes the best initiation to professional investigations.

No doubt, a sense of deficiency in such qualifications, arising from a neglect of the studies which principally impart them, more even than the lateness at which he would have to begin his professional studies, has deterred many an Oxford Student from adopting Medicine as his profession.

Under such circumstances I hail with peculiar satisfaction the precedent which the Vice-Chancellor has just set

to the University, in looking beyond the circle of Oxford Graduates, for the purpose of supplying the vacancy occasioned by the fearful catastrophe which has befallen the lamented friend, who so ably fulfilled for the last three years the duties of Deputy Reader in Geology. In the present languishing state of the Medical Department of the University, so far I mean as regards the number of Students who graduate in it, there is no saying how soon it may be deemed advisable to resort to the same expedient for supplying the vacancies that may occur in the Chairs connected with that Faculty.

If, indeed, in this, or in any other department of Science, we are unable from whatever cause to find amongst our own body persons qualified to sustain the reputation of the University, and to take the place of the eminent men, of whose services we have been deprived by death, or, alas, by some worse calamity, let us seek them elsewhere ; if we cannot at present boast of any widely-diffused interest in scientific subjects, let not this indifference be attributed to the lukewarmness or incompetency of the instructors to whom this class of studies is confided.

It may be long, indeed, before any amount of ability or zeal on the part of the Professors in those departments can elevate Oxford to the same eminence in Science which it possesses in Literature ; but at any rate we need not despair of disseminating such an amount of general information on these subjects, as should prevent the occurrence amongst us of that blind credulity in the most extravagant impostures, and the most absurd delusions, which is too often seen connected with cultivated literary tastes, and understandings in many respects enlightened.

We should then no longer be answerable for the favor shewn to Homœopathy in high circles, or countenance the possibility of a millionth of a grain of any medicinal agent pervading the system, and making head against an inveterate or acute disorder.*

* Whilst on every principle of sound Logic, the proof of a proposition which is to command our assent ought to be cogent in proportion to the degree of its improbability, it often happens, that the extraordinary nature of a fact related exercises such a fascination over the mind, as to induce it to admit the statement on evidence that would not be accepted in behalf of one which fell within the compass of our ordinary experience.

Thus the general principle upon which Homœopathy sets out, namely, that agents similar to those which produce a particular disease have a tendency to work its cure, might perhaps claim to be received upon evidence of no higher kind than what would be deemed necessary for the establishment of any other medical dogma; and it is the defect of such evidence alone which justifies us in discrediting it: whilst the idea that infinitesimal quantities can operate in any way upon the animal frame, is so opposed to all analogy and experience, both of which lead us to conclude that the action of a chemical agent would bear some kind of relation to quantity, that we have a right to demand for its establishment a much more overpowering array of evidence than is in general thought necessary.

The former proposition, in short, is simply paradoxical; the latter little less than absurd; and moreover the evidence in support of it seems admitted by the leaders of the sect to be less conclusive than that upon which the general principle of Homœopathy is based, so much so, that many of them will even, if pressed, abandon it, as an unessential part of Hahnemann's doctrine. And yet there are perhaps ten times the number of persons who repose the most implicit confidence in the efficacy of infinitesimal doses, compared to those who attach importance to the dogma with which Hahnemann set out, namely, that, *similia similibus curantur*. The public, indeed, must be much in the dark on matters of physical science, when so wide a belief prevails in the efficacy of medicines, not one of which has ever yet been shewn, to the satisfaction of disinterested and competent persons, to exert any action at all upon the animal frame, if unaided by imagination; nor is it easy to account for medical men of any intelligence embracing such a system, except upon the hypothesis, that having begun by persuading themselves,

We should no longer merit the ridicule, not less pungent, because it is conceived in a calm spirit, and is expressed in mild language, which an eminent philosopher has cast upon the belief in table-turning, and other similar wonders of the day; discreditable to those who entertain it, not so much on account of the absurdity of the facts alleged, as because of the utter deficiency, evinced on the part of those who vouch for their reality, in the power of contriving the experiments requisite for substantiating any physical truth, and in a knowledge of the conditions of the problem with which they pretend to grapple.†

that owing to the uncertainty of the art, active remedies of all kinds are likely in the long run to injure more persons than they can benefit, they have concluded in favour of an inert mode of treatment, as being more harmless, at least, than any other. Such a supposition, although the most charitable that can be adopted, does not, perhaps, reflect much credit upon the honesty of those who take up Homœopathy as a means of livelihood, but the maxim, *populus vult decipi, et decipiatur*, is, I fear, not confined to the Jesuits.

† Granting that the explanation of table-turning given by Dr. Faraday will not apply to a few of the rarer and least authenticated cases which are reported to us, is it not reasonable to suspect some exaggeration—some delusion—some disposition to mystify, on the part of those who relate, or those who exhibit such effects, when we find that phenomena of the same kind, as those more ordinary ones, which most persons, who try the experiment of table-turning, have witnessed, are demonstrated to have been the result of unconscious muscular movement—when, moreever, the phenomena have never been produced except under circumstances which render muscular motion possible—and when other effects equally marvellous have been before brought to notice, which were afterwards shewn to have arisen from this very same mechanical impulse produced without the knowledge of the parties concerned?

My complaint, however, against the table-turners, is not so much that they should entertain any theory which may suggest itself to their minds, for the sake of accounting for phenomena, which, however considered, present without doubt a certain amount of difficulty; but that having adopted this or that hypothesis, they should have shewn themselves so

But I have already extended these remarks far beyond my original intention, and will therefore now take leave of the distinguished member of the University whose remarks on one important point I have ventured to controvert, by thanking him, not only for the honorable mention he has made of the humble services of the individual who addresses him, but also for having given expression to sentiments on the prospects of Physical Science which I believe to be of wide currency in the University, and which, as they are frequently taken for granted without inquiry, I am glad to have this opportunity afforded me of submitting to a fair and candid examination.

incompetent to carry on the experiments, which alone could substantiate it, or reconcile it to the laws of the agent which they begin by assuming.

Until this has been done, we ought not to be accused of excessive scepticism, if we decline to admit on such authority, that the table-turners have succeeded in bringing to light a new system of forces—for this after all is equally assumed by these theorists, whether they ascribe the phenomena to an agent with a new name, or by investing one long known with new properties, refer them vaguely to Electricity, Magnetism, or other familiar causes.

The above Remarks have reference solely to the phenomena which are ascribed to *natural* agents; with regard to others more recently brought before the public, in which *supernatural* ones are supposed to have been instrumental, I can only say, there is contained in the statements themselves such strong internal evidence that the witnesses were under the influence of delusion, that it would be necessary for them in the first instance to prove their own *sanity*, before we can be called upon to examine into the facts for which they vouch.

An article which has just appeared in the Quarterly Review on this and other marvels of the day, relieves me from the necessity of pursuing the subject further.

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