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THE
HUNTERIAN ORATION
1852.

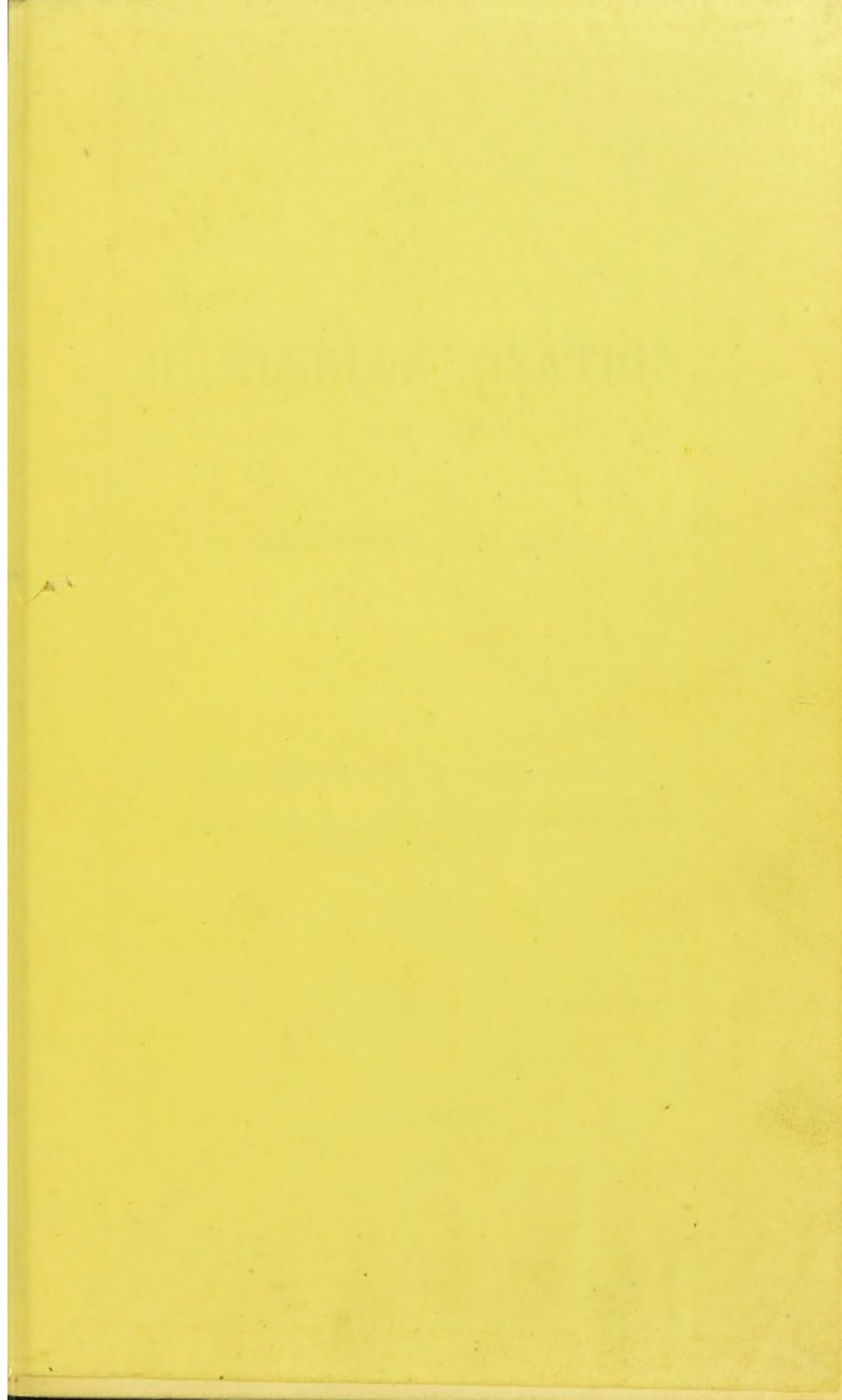
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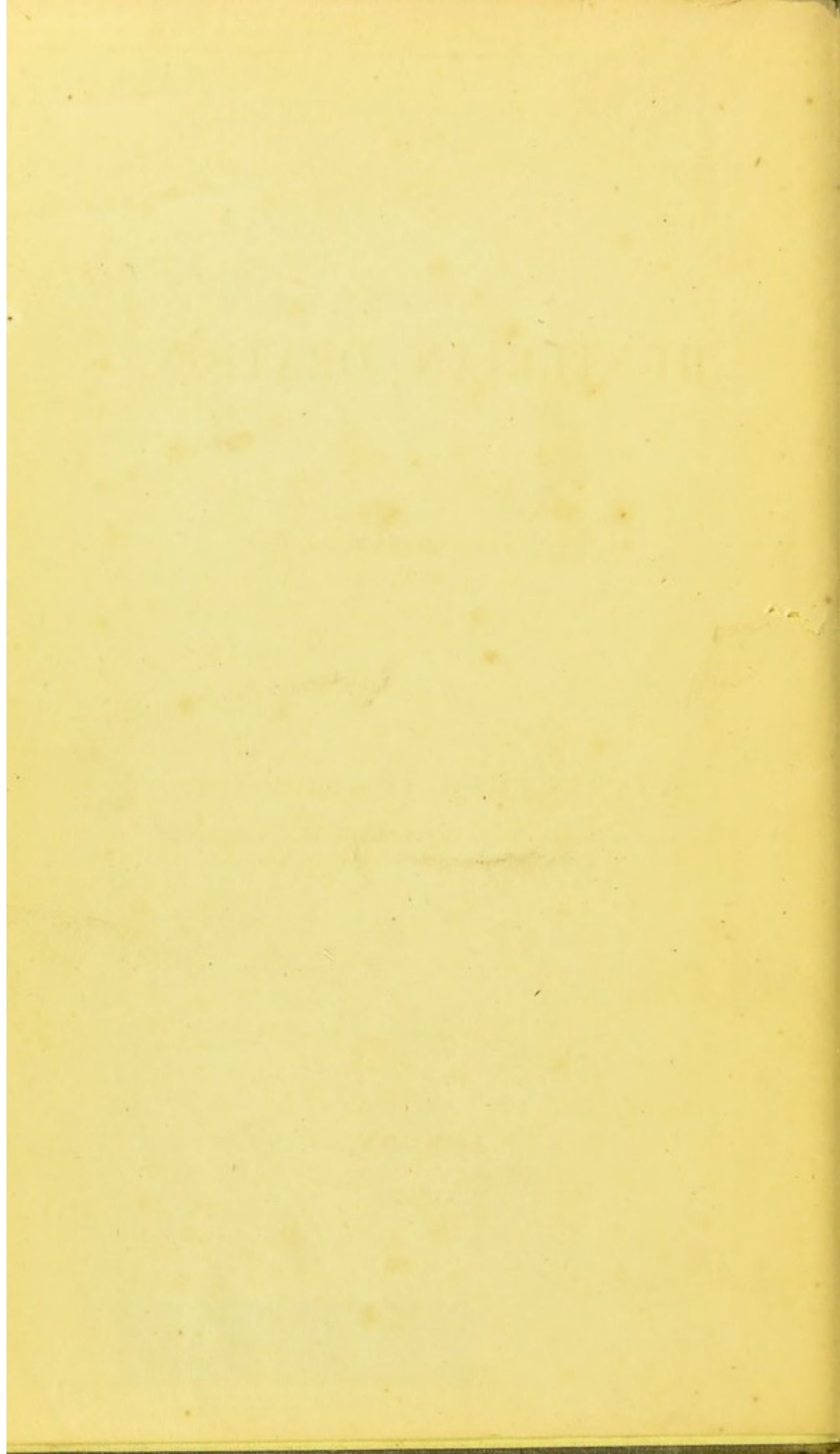
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THE
HUNTERIAN ORATION,

DELIVERED FEBRUARY 14, 1852.

BY
JAMES LUKE, VICE-PRESIDENT,

SENIOR SURGEON TO THE LONDON HOSPITAL, SURGEON TO
ST. LUKE'S HOSPITAL FOR LUNATICS, ETC. ETC.

LONDON:

1852.



Hunt. Or.

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BZP (Hunter)

TO
THE PRESIDENT AND COUNCIL
OF THE
ROYAL COLLEGE OF SURGEONS OF ENGLAND,
THIS ORATION,

PUBLISHED AT THEIR REQUEST,


Is Dedicated

WITH EVERY FEELING OF RESPECT

BY

THE AUTHOR.

39 Broad Street Buildings.



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MR. PRESIDENT AND GENTLEMEN,

IN addressing you upon the subject to which this day is set apart at this College, and which upon so many past occasions has furnished materials for eloquence, and for exhibition of powers far more forcible and commanding than I pretend to claim, I feel naturally diffident lest the humble endeavours which I have brought to the undertaking, shall fail in sufficiency for the proper fulfilment of those objects to which the occasion should be devoted. It is, therefore, with much hesitation that I introduce myself to you to attempt, at the request of the Council, the execution of a trust devolving necessarily upon one of its members.

By that trust it is appointed, that an Oration, expressive of the merits of John Hunter, shall be delivered in this College on the anniversary of his birth, which shall also be expressive of the merits of those other members of the Profession to which he belonged, who, having attained excellence in Comparative Anatomy, Physiology and Surgery, shall have passed from the scene of their exertions. The language of eulogy, when addressed to the living,

may not have any other scope than that of policy, and may be limited or prompted by personal considerations merely. The language of eulogy, however, of those to whom it cannot reach, must have some higher motive, and should be animated by some enduring principle. Can we suppose any motive more elevated, or any principle more permanently enduring and suitable to occasions like the present, than the certain influence which the presentation of a good example has upon the mind, as a powerful incentive to emulative imitation? Actuated, no doubt, by motives such as these, those, who themselves distinguished, justly estimated the great example of Hunter, were induced to institute these addresses; while a former Council of this College, influenced by similar feelings, cheerfully undertook the trust for their delivery by one of its members. Fortunately subjects for such discourses have been manifold in times long past, nor are our own times barren of those constellations of industry and intellect combined, which serve as guiding stars to our course. The present Council too, by following the course accepted for them by their predecessors, hope, by a continued succession of examples worthy of imitation, to keep alive and increase in the professional mind, those aspirations after distinction, which so materially tend to its healthy progress and advancement. The desire of being associated with the memory of him, whom we meet more especially to honour, may be expected to have at least some influence upon the conduct of individuals; and although such association may not be a primary incentive to exertion, yet the predetermined recognition of merit can scarcely fail to be useful in that direction; while the point-

ing out of the numerous ways, in which merit evinces itself in different persons, may demonstrate, upon occasions like the present, the various courses to its attainment suitable to the different tendencies and predilections of the mind.

Such addresses, therefore, when properly carried out, promise to be both interesting and instructive; for the selection of a distinguished model for imitation must be considered a valuable means for facilitating the acquisition of excellence. Such a model shows not only what is to be done, but *how*. Under that impression, it is my intention to devote a large portion of the present occasion to those particulars and circumstances in the character and pursuits of Hunter himself, from which useful lessons may be extracted.

It will be unnecessary to my purpose to follow closely the examples of some of my predecessors, or to enter fully into the details of a life, every stage and action of which is replete with interest to the professional student.

We should, however, form but a very inaccurate estimate of Hunter, were those circumstances at the outset of his career omitted, which may be supposed to have any influence on his after-conduct or pursuits. It must be a matter of some interest to know, what was the amount of preparatory education of such a man for entry upon his professional career; for important inferences are capable of being drawn therefrom, as tending to manifest the advantages of such education in the cultivation of professional knowledge, or the reverse. Unhappily, it has been asserted that Hunter's scholastic education was defective; and this is so broadly stated by his biographers

and so fully confirmed by internal evidence, that we have not any reason to doubt the fact.

The direct inferences to be drawn from this circumstance may truly be supposed to have an injurious tendency, in diminishing the force of arguments urged in favour of preliminary education. For when high and brilliant positions are demonstrated to be attainable, and results are produced and recognized as constituting almost a new era of the profession, almost without any preliminary education, it may naturally and not illogically be concluded, that the influence of scholastic education upon the cultivation of Medicine as a science, cannot be very important. It may therefore be advisable to say a few words upon this subject. To attribute this educational defect in Hunter to the too common indolence of youth, appears to be a heresy which the whole tenor of his after-life forbids; and to say that the constituted originality of his mind indisposed him to, and enabled him to dispense with, those ancillary means to professional study, however complimentary to its power and energy, furnishes but an insufficient answer to the argument derived from the fact of his deficiency. Indeed, to endeavour to explain or excuse the fact in any way, would be unattended by any useful result. That an originality of conception and an independence of thought, which formed so conspicuous a portion of Hunter's merit, enabled him to overcome difficulties insurmountable by less powerful intellects, may be readily admitted; yet it will not be irrelevant to say, that even in his case, with the possession of so powerful an intellect, the defect was followed by consequences

tending to impair the brilliancy of his great name. These consequences are discernible in his writings, in parts of which, obscurities of language prevail which in some instances render his meaning difficult to be understood. Thus clearness of expression, which should be a first consideration in scientific language, has been marred in his productions by a deficient early education; and even in connexion with such a man, I have to express a passing regret, that jewels so rare and so valuable have been subjected to any tarnish, consoling myself, however, with the reflection that all sorts of excellence are never united in one man. Although the showing the direct ill consequences flowing from such a defect may be useful, yet the fact of Hunter himself having urged upon this College (by letter now in course of publication) the establishment of a Library, the initiation of which he "would consider one of the happiest events of his life," will probably have greater weight. This circumstance evinces so marked an appreciation of literature as an important element of professional education, that I might adduce Hunter himself as a powerful advocate in its favour even as a corrective to his own example. The eloquent and moving addresses upon the subject of education on former anniversaries of this day, render it superfluous that I should dwell long upon it on this occasion. Indeed, were I to do so, my observations might appear bald and unimpressive. Yet there are practical considerations connected with education which may excuse a few observations from me, even at the risk of my repeating those things which have been already more eloquently insisted on. Looking then at education

as a means auxiliary to professional progress, and irrespective of those many advantages which are unquestionably to be derived from it in our social positions, I may enumerate many particulars in which it conduces to the object in the search after and conveyance of truth. Thus, at the very outset of our professional career, difficulties are encountered, which no means exist better fitted to overcome, than those derived from a knowledge of the Greek and Latin languages. At the earliest period, the multitude of terms used in professional descriptions are well calculated to perplex the student. All these have a predetermined significance, and are intended to convey to the mind by a single expression, ideas, which would otherwise require much circumlocution and inconvenient verbiage. They must therefore be considered as a necessary part of the machinery of language for the conveyance of thought and knowledge. To render that machinery suitable to its intended uses is a desideratum of very high moment, and merits an attention which is now insufficiently afforded to it. In the absence of a competent knowledge of the import of terms, ambiguities and errors are continually liable to arise, and a fertile source of misapprehension is the result. When used with due precaution, however, they have so great an influence upon the conveyance of clear and definite ideas, that their importance cannot easily be over-estimated, nor can the requirement of a knowledge of the means necessary for their correct interpretation be deemed a work of supererogation, or exercise other than a beneficial influence upon the progress of Medical studies.

In the modern literature of the profession is probably embodied the sum of professional knowledge, and perhaps the perusal of ancient Latin and Greek authors would have but little influence in enlarging our acquaintance with the particulars of modern discovery. Yet in the works of these authors are to be found the seeds from which much of our present knowledge is derived ; and although the study of them may not greatly contribute to further advance, the retrospect cannot be otherwise than interesting. If the object of reading were simply the education of facts with a view to the intelligent adoption of opinion, perhaps a more effective method for its accomplishment may be found in the perusal of modern authors only, and more particularly in the perusal of those of France, Germany, and of our own country.

It is to be regretted, however, that facts which constitute the staple of knowledge, are in modern literature too often so dealt with, that the labour of collecting and adding them to our common stock in a compendious and useful form bears so high a proportion to their intrinsic value. It is also to be regretted that so many works issue from the press, with the pretensions of experience, which contain but little or nothing to support such a pretension. The chief objects of such works are to be found in the large characters of their title-page, or in the announcements intended to bring them and their authors from merited obscurity. Most of these have no influence in promoting the march of improvement, but, on the contrary, prove direct impediments to advance, and are injurious diversions from those objects of study which are really worthy of regard. They consume our

time, and waste our money, while they cumber our shelves and literature with unnecessary repetitions. These observations apply to a section. Fortunately, another section, more worthy of respect, comprise authors, who, trained under the influence of the Hunterian School, and having received inspirations of Hunter's genius, have sent forth productions deserving our highest commendation, bearing upon them deeply-impressed internal evidence of great sagacity, industry and extensive research, with those other characteristics which mark them as important steps in our onward healthful progress. These, while they eminently conduce to the benefit of the profession, serve as honourable memorials of the distinguished persons from whom they emanate. It is beyond the limits of my mission to particularize while these leading members of the profession are still with us in person. Yet I cannot let pass the opportunity which the occasion affords, of paying a passing tribute of respect to an amiable man, who has left our Councils during the last year. That tribute is due most appropriately to him, when speaking of those works of merit which emanate from their authors with no vain-glorious pretensions, or seeking after ephemeral popularity; for these motives to action our late respected colleague repudiated as repugnant to his own sense of right. Those who knew Mr. Vincent's high qualifications as a practical Surgeon, know also with what reluctance he presented himself before the public as an author. Under whatever influence that reluctance arose, the effect was to defer the publication of the results of his observations until a matured experience, through a long and useful

career of practical benevolence, enabled him to speak with that authority and weight which both became his position and commanded the respectful attention of his cotemporaries. Although the temptation to speak at length upon the general merits of an upright and honest man may be strong and cogent, I feel that to say more than is sufficient to illustrate a particular subject during his life may be thought mistimed, and in deference to the trust, by which I am guided, I accordingly abstain. After this brief digression I revert to the more immediate object which at present I wish to hold in view. Perchance there may be some, who hold it to be a matter of indifference in what manner facts and ideas are conveyed, provided only they are conveyed by some means, and think that forms of expression have but little influence either in retarding or accelerating the extension of knowledge. The natural result of such a feeling must be an inattention to the perspicuity and clearness of language, and a want of appreciation of those methods and elegances, which by the most competent judges have been thought desirable to cultivate, as tending to improve and perfect medical literature. If, however, a grammatical construction of sentences, or a proper arrangement of their members, with a due attention to the selection of terms of definite meaning, contribute in any degree to the more perfect understanding of an author, the means by which those advantages are to be attained must surely be worthy of cultivation, not merely on account of the grace and elegance which they impart to composition, but as being directly contributory to the diffusion of knowledge. For what errors may result, on

the one hand, from the misunderstanding of an author's meaning, arising out of an obscure expression ; and what facilities of comprehension, on the other, may be afforded by clearness and force of language !

Actuated by a desire to diminish, if not remove, adverse influences of this description from the profession, the Council of this College have instituted examinations in classical literature as a stimulus to its members, and with the hope that, upon the foundation thus laid, an elegant and useful superstructure may be raised, eventuating in those literary advantages which it has been the object of my immediate predecessors to point out. It is not intended, nor to be understood, that classical should usurp the place of professional knowledge, nor is it to be encouraged to transgress beyond its proper and useful limits ; for it will be recollected that Medicine is a practical profession, and that study by its professors which contributes to render them the most useful aids to the public, is most to be promoted and encouraged. All reputation which is acquired at the expense of practical knowledge is meretricious and liable to deceive by dazzling the judgement. Great as the advantages of classical erudition undoubtedly are as auxiliary to the attainment and diffusion of scientific truth, we are ever to hold in remembrance, that those advantages have determinate limits, and to pursue them beyond those limits must be considered as devoting time to a pursuit which may possibly be more usefully applied to purposes of direct professional advancement. The tendency of the times is certainly not to approach those limits, and as a consequence, the profession requires

rather the spur than the rein ; and unfortunately the example of Hunter, so proper to be imitated in other respects, in this, is rather to be avoided than followed.

If it be important to possess this preliminary erudition as a preparation of the mind for understanding the language and history of science, and to enable its possessor to convey to others in the most agreeable and effective form the knowledge which he himself has to impart, it is of still greater importance that the cultivators of our profession should also be well prepared to concentrate the powers of their mind upon those points which constitute the immediate objects of their inquiry. The steady application of the mind to its particular pursuits is so greatly conducive to individual advancement in knowledge, that every effort in preliminary education should be made to increase and foster this faculty. Great, indeed, are the advantages of habitual attention. Clearness of understanding, extensive knowledge and exact memory are its natural consequences. But the faculty of attention varies greatly in different men. To some it is liberally given, to others it is almost wholly denied. The volatile and discursive character of the latter, but ill-adapts them to the pursuits of science. It is fortunate, however, that this faculty of attention is capable in all of much improvement by education and practice. It is on this account, that the study of Mathematics, independently of many other, and by most deemed principal advantages, is so important as preparatory to professional study.

The habit of attention, which in appearance restrains the inquirer to a close and impressive application of his

mental powers to particular subjects, by no means confines him to the consideration of a limited range of inquiry, nor prevents him from taking the most extensive and general views. On the contrary, in the conduct of investigations, by the depth to which it enables the inquirer to penetrate, it tends directly both to elicit truth in particular instances, and to determine relations and general similitudes unsuspected by the superficial, because inattentive, observer. Attention and thoughtfulness are closely associated. The first stands at the very threshold of knowledge, maintaining the co-ordinate and allied faculty of perception ready to receive those impressions or ideas of things which constitute the materials of thought. The second refers to that faculty which compares, contemplates, and ponders on the materials presented to the mind, and leads to those conclusions which, when complete, we recognise as judgement. It is obvious that this subsequent operation of the mind must be greatly influenced by the clear apprehension of facts and ideas which have ingress through the faculty of perception; and it follows as an important consequence, that all attempts to strengthen and increase this initiatory faculty, must have a direct influence upon the ultimate eduction of truth. The power which habitual attention yields in this respect is one of very great importance, and should be appropriately cultivated in all well-conducted systems of preparatory education. Nor is it by one method alone that this should be accomplished, but by every means available to the purpose.

It has already been asserted that Hunter was deficient in perspicuity of language. It may also be asserted, that

at an early period of his life he was likewise deficient in that kind of scholastic exercise which tends to fix the attention. Yet at a subsequent period, when he so enthusiastically entered upon his brilliant professional career the original tendency of his mind, aided by a powerful will and a persevering industry, supplied effectually these essential requisites to scientific excellence.

We can, then, find little to imitate in the early life of this great man; but our admiration is excited when we consider the intelligence which enabled him to achieve so great an excellence in spite of his defaults.

I now proceed to those points in Hunter's professional and scientific character from which we may expect to derive interest or advantage.

The first that I am disposed to notice, is the perfect honesty and integrity of all his scientific and professional acts. Influenced by an unquenchable love of the pursuits in which he was immediately engaged, his sole object appears to have been the attainment and promulgation of truth; and to the first of these almost all other considerations yielded in his estimation, even to the sacrifice of those interests which in most other men hold paramount sway over their minds. Whether we are disposed to consider science or money the more worthy of our regard, all whose opinions are of value, agree that honesty and integrity in all our actions claim the highest commendation; and it is no vain compliment to assert that in these particulars we are justified in taking Hunter as our great exemplar. For whether it was in the pursuit of scientific inquiry, or in the enunciation of results, or in the conduct of his communications with other men, or in

the details of a lucrative practice, we have to admire the perfect honesty and integrity of his dealings. As we perceive him pressing simply forward in the great ocean of truth, availing himself of those aids to his advance only which were legitimately available for his purpose, and deducing results and conclusions which the premises properly justified, so we also perceive the conclusions with the facts from which they were derived, unreservedly laid before his cotemporaries with a perfect singleness of purpose; and as an important consequence, and with an entire confidence in his truthfulness, we may adopt his statements as a perfect expression of what he saw and thought at the time. With a mind so constituted and properly regulated in affairs of science, and with an indifference to pecuniary considerations almost amounting to imprudence, and thinking how much only money might contribute to the promotion of his favourite objects, we are prepared to expect that his conduct, in affairs of practice, did not descend to petty and unworthy arts for success. Indeed, in particular instances, the course which he pursued, and the unreservedness of his remarks, were the reverse of that which is usually understood as leading to success; but that which in lesser men leads to its ordinary consequences of failure, in him was compensated by the obvious integrity of his purpose, and by the brilliancy of his intelligence. Nor did he, amidst the urgent calls of arduous duties, forget the virtue of private charity, nor form an exception to that character for benevolence, which distinguishes generally the profession of Medicine, and which we have good reason to hope is about to assume an extensive practical application in an enduring

structure for the benefit of its own distressed members and their families. May I not therefore with strict propriety uphold to his successors those qualities of his, which adorn the man, and place even science itself upon a more elevated position, as examples worthy their best regard and imitation? Although it may be permitted to me to bring these qualities forward as meriting our approval in a passing comment, yet the chief debt of gratitude which is due to Hunter from us upon the present occasion, is for the substantial and extensive benefits which he conferred upon the Profession by the philosophic method with which (more by example than by precept) he has taught us, his successors, to conduct inquiries to the most important and permanent results. To obtain the most impressive notion of the pervading spirit which influenced all he did, we must place ourselves amidst that vast collection of scientific facts, of which, by the enlightened liberality of a former government of this country, it is the good fortune of this College to hold the charge. How much that charge is valued as contributory to scientific professional interests, may be partly inferred from the exertions used, and from the expense incurred for its preservation and increase, but much more from the extensive changes which have taken place in professional knowledge, to which that collection has had a direct influence. In taking a general survey of the assemblage of objects at first planned and effected by its founder's intelligence and energy, we obtain an instructive insight into those extensive and comprehensive views which embraced all animated nature as the basis of his knowledge. Had this collection been promiscuously

gathered together without a preconcerted plan, or without any definite scientific object, we might still have admired the patient industry of the collector, or the dexterity and skill displayed in the preparation of some of its details ; yet we should have failed to have recognised a greater amount of merit than is due to the ordinary collector of any other miscellaneous assemblage of objects, in which each particular object stands by itself, without any dependence for its value upon those amongst which it happens to be placed. Although the merit of industry is worthy of the closest imitation, and offers in the present instance the most illustrious example to consideration, and although the financial difficulties voluntarily encountered and overcome in the amassing the physiological treasures which we now possess, conveys to us an idea of the intense love and zeal which served as the stimulus to the accomplishment of this great labour, yet our gratitude to him on these accounts would have been scarcely commensurate with the occasion upon which we meet this day, had there not been blended with them other considerations of higher import, and which we are disposed to value as having been mainly instrumental in conferring upon the profession those characteristic impulses of a scientific nature, which distinguish its present from its former condition. Multitudinous and highly important as the facts realized undoubtedly are, and however instructive they may separately appear for the illustration of particular subjects, yet it is from the collection as a whole that are to be derived those lessons which teach right methods of pursuing professional knowledge through all its intricate details, and finally, after

having divested it of its obscurities, of placing it upon that lofty rock of truth which time itself cannot destroy. Thus the merit of untiring industry, and an energy beyond the powers of ordinary men, become enhanced by a powerful intelligence of the most utilitarian kind, and which unitedly have not only pushed forward the march of knowledge in natural objects by contributions of facts, to which they have given birth, but also by example have indicated a path in which succeeding aspirants may continue with advantage to the end of time. Some estimate of the services thus rendered to our advancement may be formed, by comparing the condition of Physiology previous to Hunter's time, with the progress which physiological science has made since his death; and in pursuing that comparison it will demonstrably appear that the science which he chiefly and beyond other men of his age made ancillary to professional purposes, has raised the character of professional knowledge, and extended its basis upon the most secure of all foundations, the foundation of fact.

To a beginner, however, it does not appear upon the surface, how a museum, which consists principally of organs and parts derived from the dissections of animals, many of which have little or no direct affinity with man, can be made available to the purposes of treating or of curing disease, from which they are in relation apparently so remote. Yet it is upon a due and proper appreciation of the advantages derived to the one from the other, that the scientific character of Medicine, as depending upon Physiology, mainly rests; nor can I more forcibly illustrate the comprehensive sagacity of

Hunter's views, than by pointing to his pursuits and inquiries amongst the lower order of animals, with the obvious intention of attempting to educe those facts in their simplest forms, which would best serve to throw light upon functions rendered obscure and difficult to be comprehended in their more complicated form in man. The plan which he proposed to himself in these inquiries, was too vast for execution by a single individual during the limits of even a prolonged life ; yet much was done, and under circumstances of difficulties of no common kind, in a period of no lengthened duration, and the results now remain as a brilliant example of a well-directed application of labour to a pursuit, the full benefits of which are known, or will be known, alone to his posterity. As the object desired was truth, which might bear the test of universal experience, and come unchanged out of every form of fair inquiry, it was obviously of the highest moment that the means for its attainment should be coordinate with its importance ; and we can perceive in the immensity of toil which necessarily must have been devoted to this collection, how great the influence of such a feeling must have been upon the mind of its author. The examination of a few details, which might have satisfied the requirements of less philosophic minds in his day, was insufficient for him, who, while aught of proof remained unrealized, still persevered to accumulate such facts as came within his opportunities, which by their cumulative force would give irresistible weight to his conclusions. The scheme of philosophy which he adopted, was that commonly known as the Baconian ; and although he had little or

no acquaintance with the writings of its great founder, yet the spirit which influenced all his proceedings appears to have been in exact accordance with his views. Living at a period when the ancient philosophy had not yet ceased to influence the opinions of the Profession, and when speculations were founded upon the uncertain basis of mere reasoning and unverified suppositions, he adopted that best method of inquiry, which placed all his deductions upon a foundation that no after-thought could contravene or shake. Difficult and laborious as the task may be of searching and acquiring true knowledge by the methods indicated in his museum, aided by inquiries of an experimental character, the plan is obviously the one best adapted to the purpose; and although apparently slow, and perhaps in the opinion of some persons capable of being readily accelerated by the more free and direct exercise of the reasoning faculty, yet much concurrent testimony shows, that any deviation from the spirit of those methods is far more likely to lead to error, and those baneful consequences which follow in its train; and as it may be truly asserted that even ignorance itself is preferable to error in affairs of science from its being nearer to truth, it becomes an obvious advantage to its progress, to avoid so fertile a source of this evil consequence, as the permitting ourselves to be led astray by preconceived reasonings and unfounded assumptions. Lord Bacon has properly remarked, that "the human understanding is not a mere faculty of apprehension, but is affected more or less by the will and the passions. What man wishes to be true, that he too readily believes to be so;" and he further

remarks, that "Physic, of all the sciences, has the least pretensions to proclaim itself independent of the empire of the passions." To free Physic from this empire is an important desideratum to our future safe advancement; nor does there appear to be any means by which this can be so effectually attained, as by tutoring the mind to rely solely upon facts as they present themselves to our observation, either with or without solicitation by experiment, taking, however, due precautions that they be sufficiently verified before they are treasured amongst our stores of knowledge, or allowed to become premises to scientific deductions. The first step, then, to the undertaking of a scientific inquiry, is to learn to suspend the judgement, and to discard all prejudice upon the subject in hand, for unless this be done, preconceived notions will affect and probably vitiate the results. Thus, even facts and experience themselves cannot be used with advantage, unless by a previous dismissal and clearing of the mind from all prejudice from whatever source arising, accompanied by a determination to depend upon the conclusions as determined by the facts presented. As facts are the materials which should be the only dependence of scientific knowledge, the acquisition and accumulation of them become of the highest importance. In their isolated form they constitute a link merely, many of which may be needful to the completion of a perfect chain of proof; yet as the absence of a link may destroy the continuity of the chain, so may the absence of a fact sever a series of sequent dependencies which may be necessary to the establishment of any great truth. Every fact, therefore, should be, when

properly examined, carefully treasured ; for although its particular value or position in the chain of proof which perhaps it may subsequently hold be at first not recognised, a probable value even, in a matter of so much importance as truth, is surely a sufficient reason for the preservation or remembrance of a fact. Had Medical science been reared under this absolute dependence on facts, how different would have been its present condition, and how little cause would there be to give expression to any regret on account of errors in our own day of some of its Professors ! Unfortunately to many other causes prevalent in times long past, we have in our own times to regret, that either folly or avarice has withdrawn many persons from its legitimate paths. The groundless assumptions which have been taken by these persons as a means of pandering to a popular sentiment, and impudently and falsely dignified by them with the proper attributes of science, serve to make manifest to what a depth of degradation the mind can and will descend when not upheld by the dictates of true science or moral rectitude. Godlike though our Profession be, when properly used for the glorious purpose of giving health, how fallen from that high similitude when perverted to the ignoble purposes only of an absorbing avarice ! It is an axiom of the deepest import to the steady and safe course of scientific study, that no confidence should ever be placed in conclusions beyond the limits of the data from which they are derived. It is to be feared, that, with every disposition to adopt facts as the groundwork in forming deductions, it has happened too frequently that inquirers have been influ-

enced by a few prominent and impressive, rather than by a due consideration of all the facts which by a more careful proceeding might have been brought to help their decisions, and that thus opinions have been promulgated which may not have been justified by the premises, had they all been duly taken into consideration. Such opinions, insufficiently supported as they must be, and bearing upon them the probability of error, while they seemingly advance knowledge, serve occasionally, like *ignes fatui*, to lead from the true path, and entail a necessity upon others of a toilsome correction, with all its attendant retardations to advancement.

Those who have most consulted the contents of the Hunterian Museum and have used them most liberally as assisting their own investigations, are most competent to appreciate their influence upon physiological inquiries, and probably will agree with me in the assertion, that they have not only expanded the basis, but have contributed profusely to the superstructure of knowledge. Had I required more corroborative evidence of the estimation in which this great work is held, I need not do more than adduce the numerous visits by multitudes of scientific men during the late eventful year, bringing with them honour and homage to Hunter's memory from all parts of the civilized world. The circumstance is most significant of the universality of opinion upon this subject; and were I disposed to draw it into comparison with that almost miraculous display of gorgeous and attractive objects with which we have been so recently gratified and instructed, the comparison I doubt not would result in my showing the greater and still growing influence of this work of *one*

man upon the substantial good to mankind ; not by calling forth immediate admiration, nor by its adding to the general conveniences and adornment of life, but by its tending so powerfully to the diminution or removal of those discomforts and bodily ills, which when present render life itself a burthen almost too heavy to be borne. Great as has been the influence of Hunter's labours in this respect, yet it must be admitted that the lesson which we have received from him is incomplete ; for the general scope of his inquiries, although extended as far as time and opportunity would permit, fails to embrace all the details necessary for perfect elucidation by facts. The analysis of organs has been the object desired, but this has not been extended beyond the entirety of the organ in its simplest form. Satisfactorily as this has been accomplished, and advantageous as the plan has undoubtedly proved, in impressing clear ideas, resulting from the examination of a series of organs of the same kind, beginning at the simplest and passing gradually to the more complex and difficult to be understood as they ascend in the scale ; yet it must be held in remembrance, that an inquiry so conducted still leaves uninvestigated and unelucidated those minute and intimate arrangements of parts, of which each organ, however apparently simple, is itself certainly composed, and by which its functions are carried on. Without such knowledge of minute structure the acquaintance with functional mechanism must be extremely imperfect, if indeed it can be said to have any existence.

That Hunter was sensible of this deficiency in his investigations is rendered probable by the fact, that we

find relics amongst the larger portions of his Museum, which display attempts to exhibit microscopic structure. That these attempts were but partially successful is attributable, rather to the imperfection of his means, than to a want of appreciation of this kind of information as auxiliary to his purpose. In our own times, the difficulties which beset such modes of inquiry have been materially diminished; and with more perfect means, and a generally more just estimate of their importance, a new era has commenced pregnant with important results, and opening up fields of knowledge almost uncultivated and consequently barren in times past. Already to the microscope we are indebted for many facts previously unknown, essentially necessary to explain functions aright, and to it we must diligently address ourselves for material facts, which are still necessary for our further progress. Under this conviction, the Council of this College have devoted its attention to the illustration of structure by means of objects fitted for display under the microscope, and have accumulated during a few years a large collection from various sources, but particularly through the labours of their zealous Assistant Conservator, Mr. Quekett, well-suited to supply many of the wants upon this subject. Those who have examined this beautiful and extensive series must be aware of the skill and industry manifested in its collection and preparation. But it would be of little avail to our certain progress in knowledge, without a correct and intelligent interpretation of the facts brought under observation.

That Mr. Quekett has successfully accomplished this difficult problem in a way to ensure our entire confidence in the

truth of his statements, is an assertion eminently due to him, when speaking of this department of the Museum. The subject is one attended by many difficulties, and is probably open, in common with other modes of inquiry, to the charge of occasionally misleading the observer into error when due care is not taken. With the unassisted eye, to see is commonly to believe; but to adopt the same facility of belief with respect to that which is supposed to be seen by means of the microscope, would be most unsafe. The distorting influence of an ill-formed glass, of an ill-adjusted focus, or of the mismanaged admission of light for illumination, with numerous other circumstances, form so many sources of error, that the greatest caution is needful lest erroneous impressions are produced. The expert will readily appreciate these sources of fallacy, and know the means necessary for their correction. For reasons connected with these sources of fallacy, unmerited obloquy has been thrown upon the means used, and the microscope has been by some condemned as an uncertain and therefore unsafe instrument for scientific purposes. The charge, however applicable to observers in particular instances, when requisite cautions have not been observed, cannot be fairly sustained against the microscope itself when properly used, nor invalidate its title to be considered as a trustworthy means of carrying us forward in the march of knowledge; and the rapidity to which that march has been accelerated during the last few years, in developing more accurate views of minute structure, is the best evidence of its great value to the scientific or practical professional inquirer. But it must be evident, that when

the microscope has accomplished all, of which it is capable, in the most perfect manner, and has displayed the minutest molecules of which parts are composed, there are other subjects still left for investigation, which are equally important to be known, to establish a complete and dependent series of physiological facts. It is impossible that any physiological action can take place without the presence of fluid, and accordingly during life a complicated combination of fluids and solids is uniformly found to constitute the organism, and the interchange between these maintains the requisites necessary for the performance of function. To know the nature of these interchanges, and by what agencies they are produced, appears to be the sum of our endeavours to attain; but as we endeavour so they elude our grasp, and we are obliged by the nature of the subject to rest satisfied for the present with a limited amount of success.

The science of Chemistry furnishes the requisite means for these investigations, and has explained, however imperfectly, the processes of digestion, respiration, the production of animal heat, and the nature of various secretions, while the fact has been almost demonstrated, that every action is the consequence of, or is attended by, some chemical change. The chemistry of living bodies, however, differs in some important particulars from that which is witnessed exteriorly to the organization. In the latter, elementary bodies unite with each other by affinities previously ascertained and predicated by the experienced chemist, and compounds are formed as predetermined by his arrangements; but in the chemistry of living bodies, a principle is in operation which mate-

rially modifies and controls the results; and although similar affinities may exist amongst similar elements within the body, as exist without, yet by some means they are so restrained and altered, as to effect combinations and products which preclude the power of predication by any previous knowledge of the simple elements themselves by which they are formed. This power of control over the constituents of the body, restraining the inherent tendency of its component parts from effecting new combinations which lead to its destruction, and compelling those combinations which are necessary to its well-being, we attribute to a Vital Principle or Principle of Life. To determine the nature of this all-important principle, and to measure its influence upon the actions of the body, is a desideratum of the highest moment, which has engaged attention from remote ages, and the barren results up to the present time served only to demonstrate the fact of its unapproachable character. It appears, that in this principle we detect the barrier and limits of our knowledge of living beings, to attempt the passage of which entails labour without fruits, and disappointment, and establishes the proof of man's finite capacity; and "to know that we cannot know, is in itself positive knowledge, and a knowledge of the most valuable kind; and it is infinitely preferable to abide by this cautionary knowledge, than to exchange it for any product of conjecture or speculation. For men, by extending their inquiries beyond their capacities, and letting their thoughts wander into depths where they can find no sure footing, it is no wonder that they raise questions and multiply disputes, which never coming to

any clear resolution, are proper only to continue and increase their doubts, and to confirm them at last in perfect scepticism."

Finally, to control our aspirations after knowledge by a wholesome reliance upon facts alone, as ascertained by experience, and to eschew all dependence upon mere hypothesis and conjecture, is the valuable and safe lesson which we are taught by Hunter and his Museum.



THE END.

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