

Memoirs of John Abernethy, F. R. S : with a view of his lectures, writings, and character.

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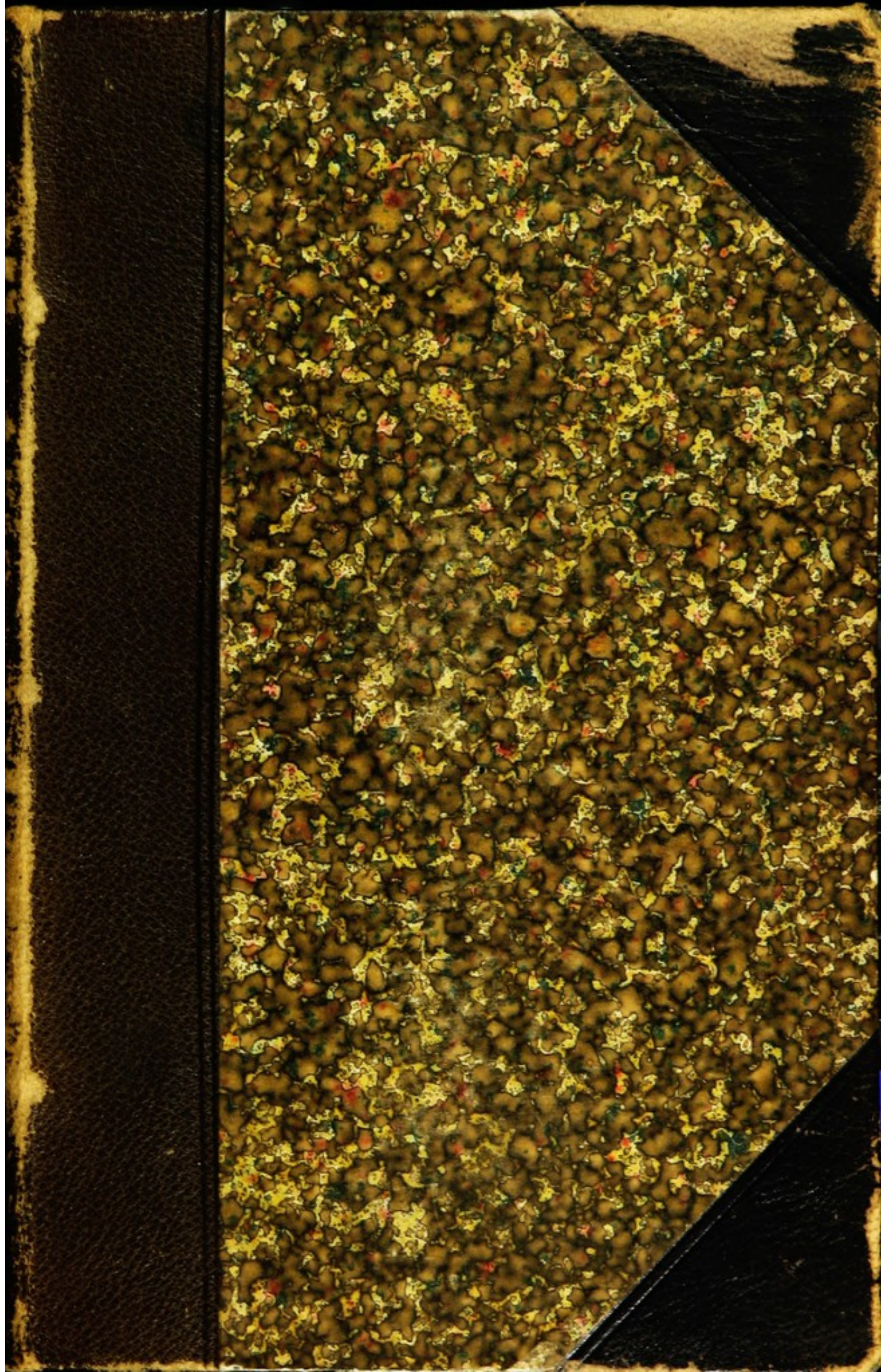
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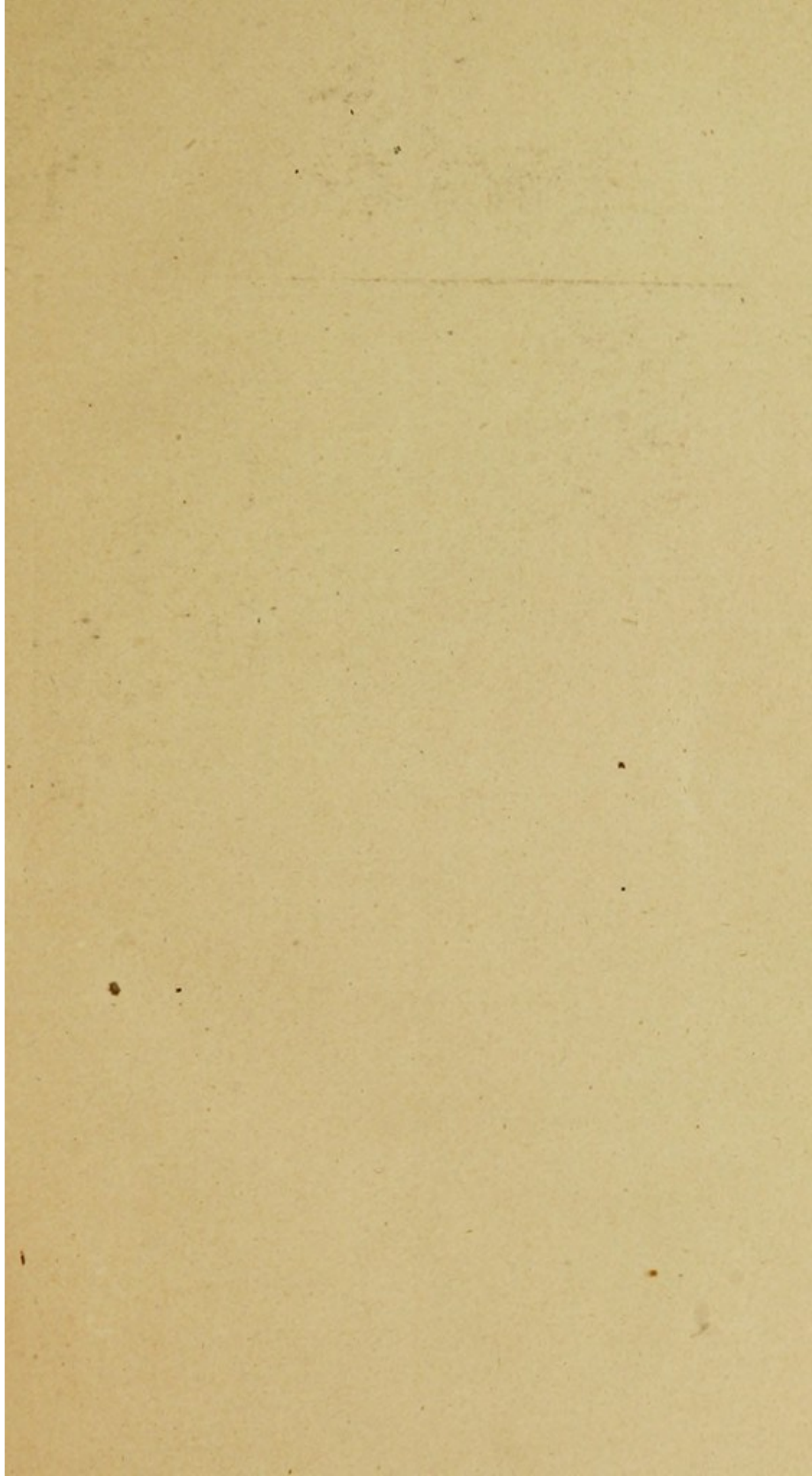
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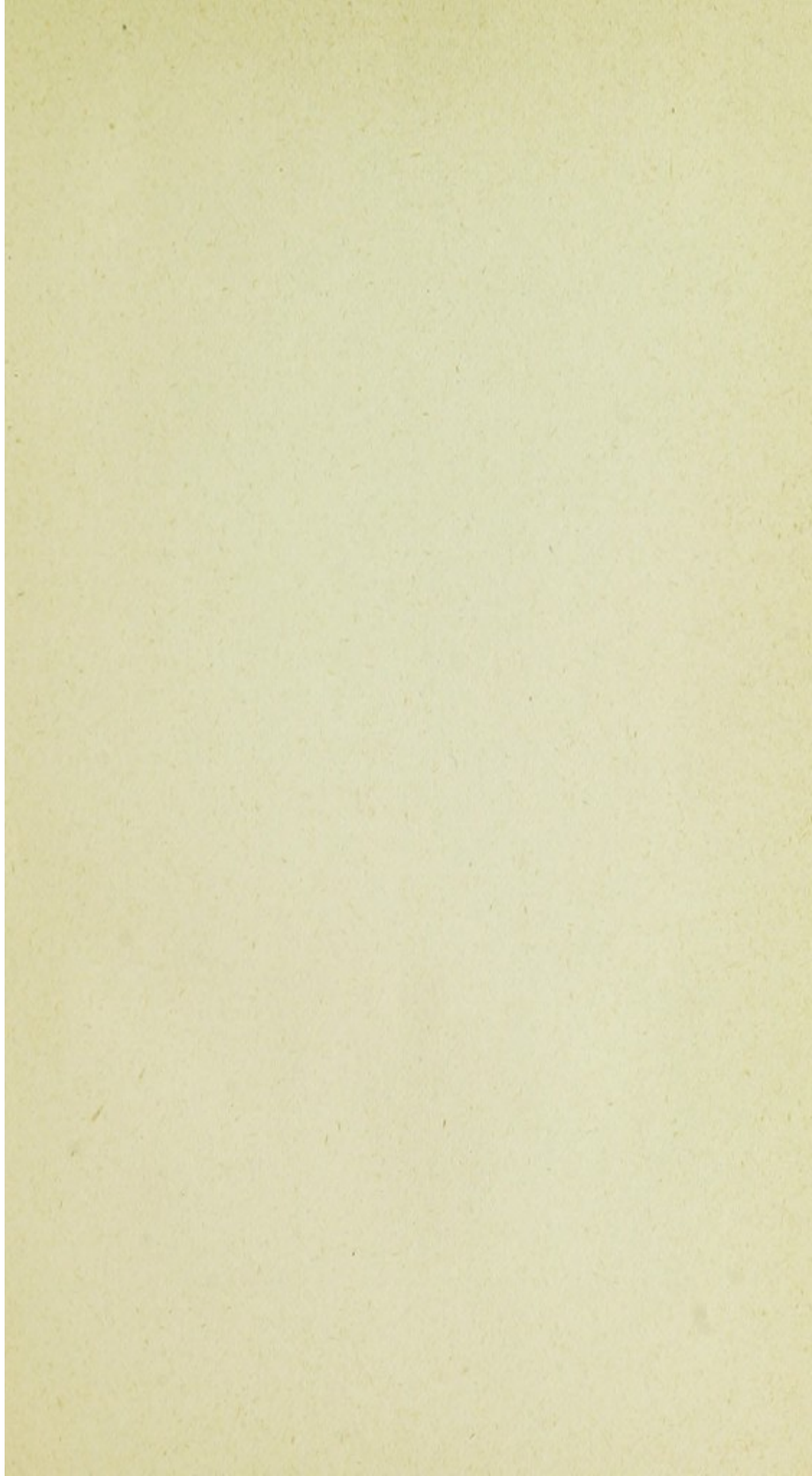
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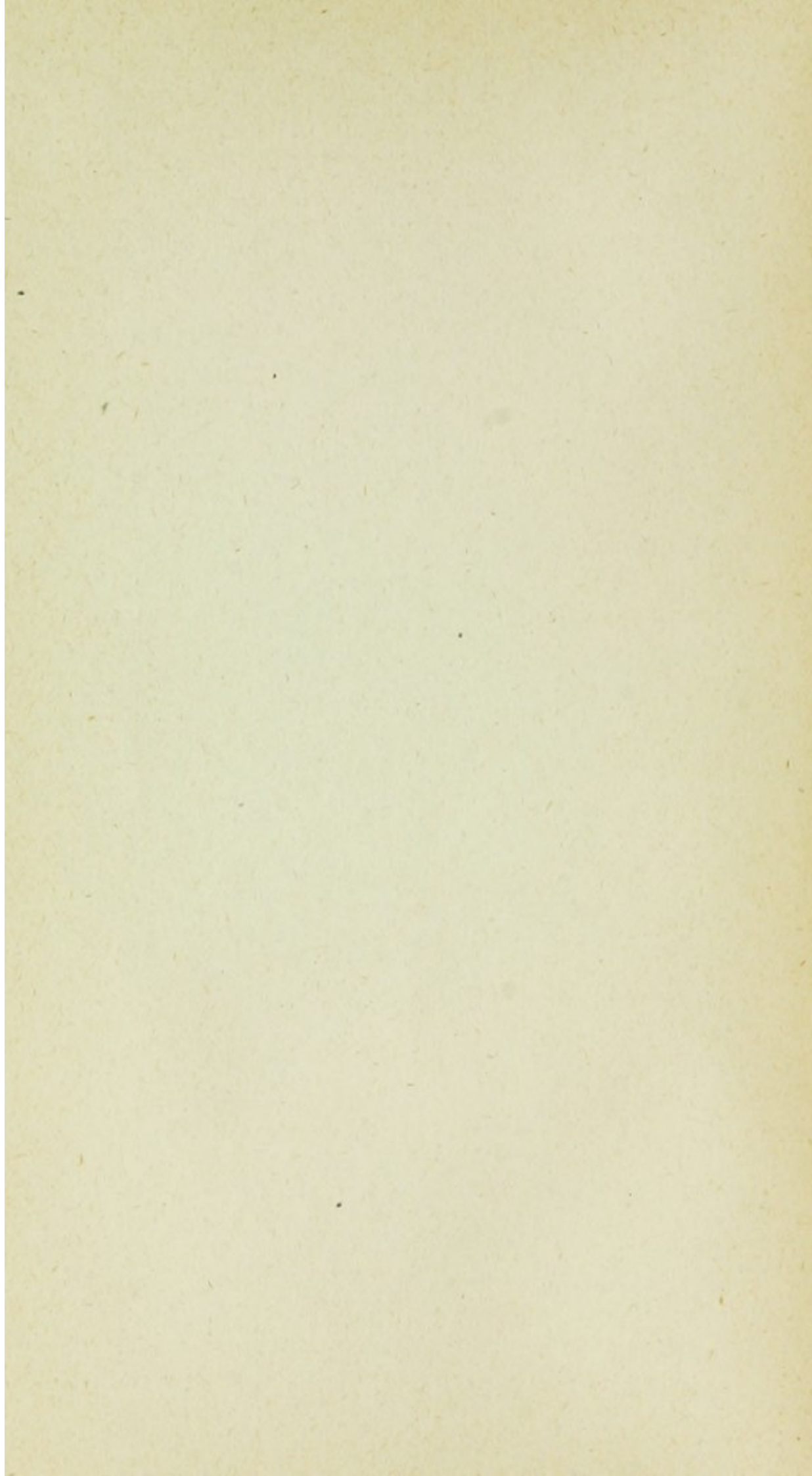
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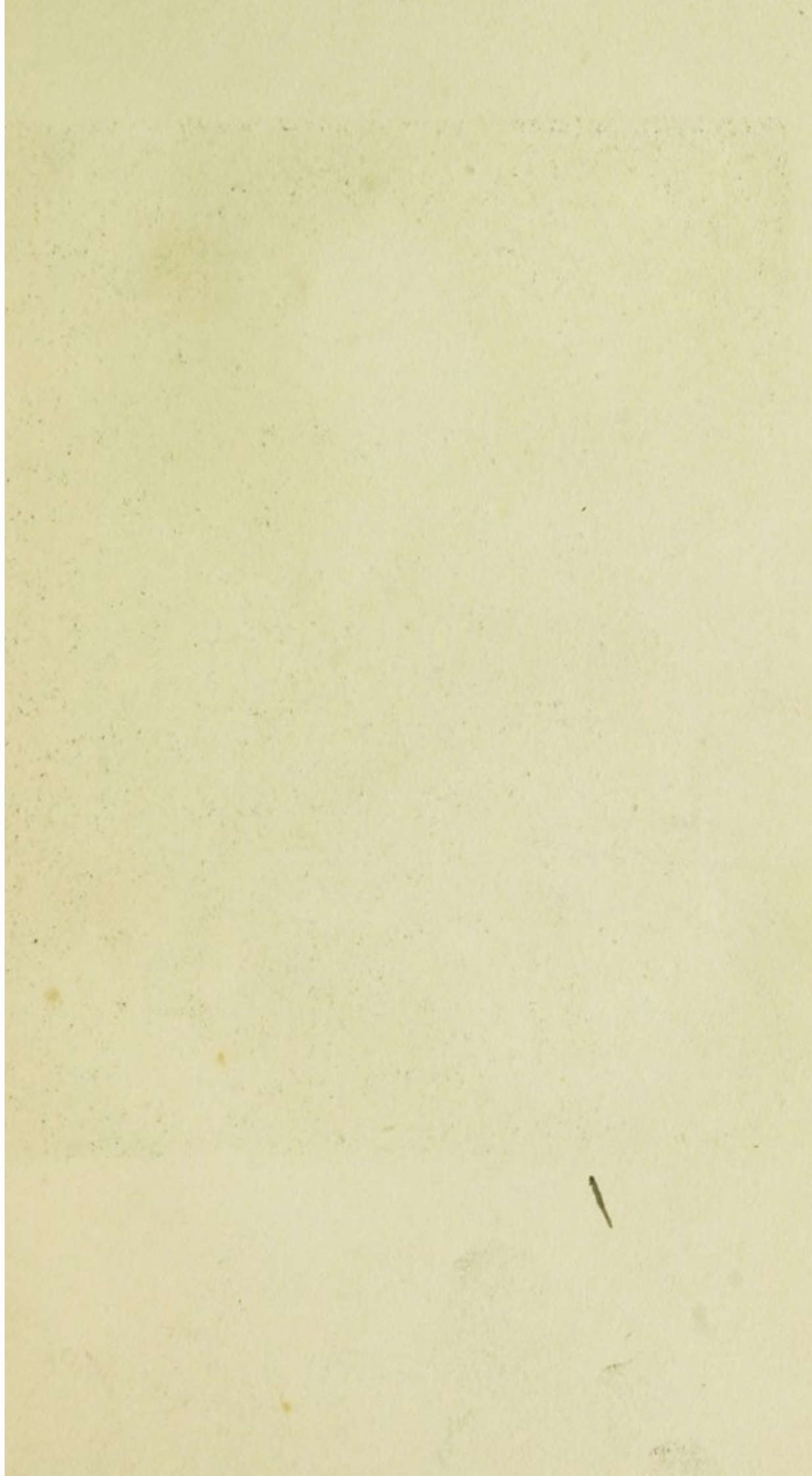
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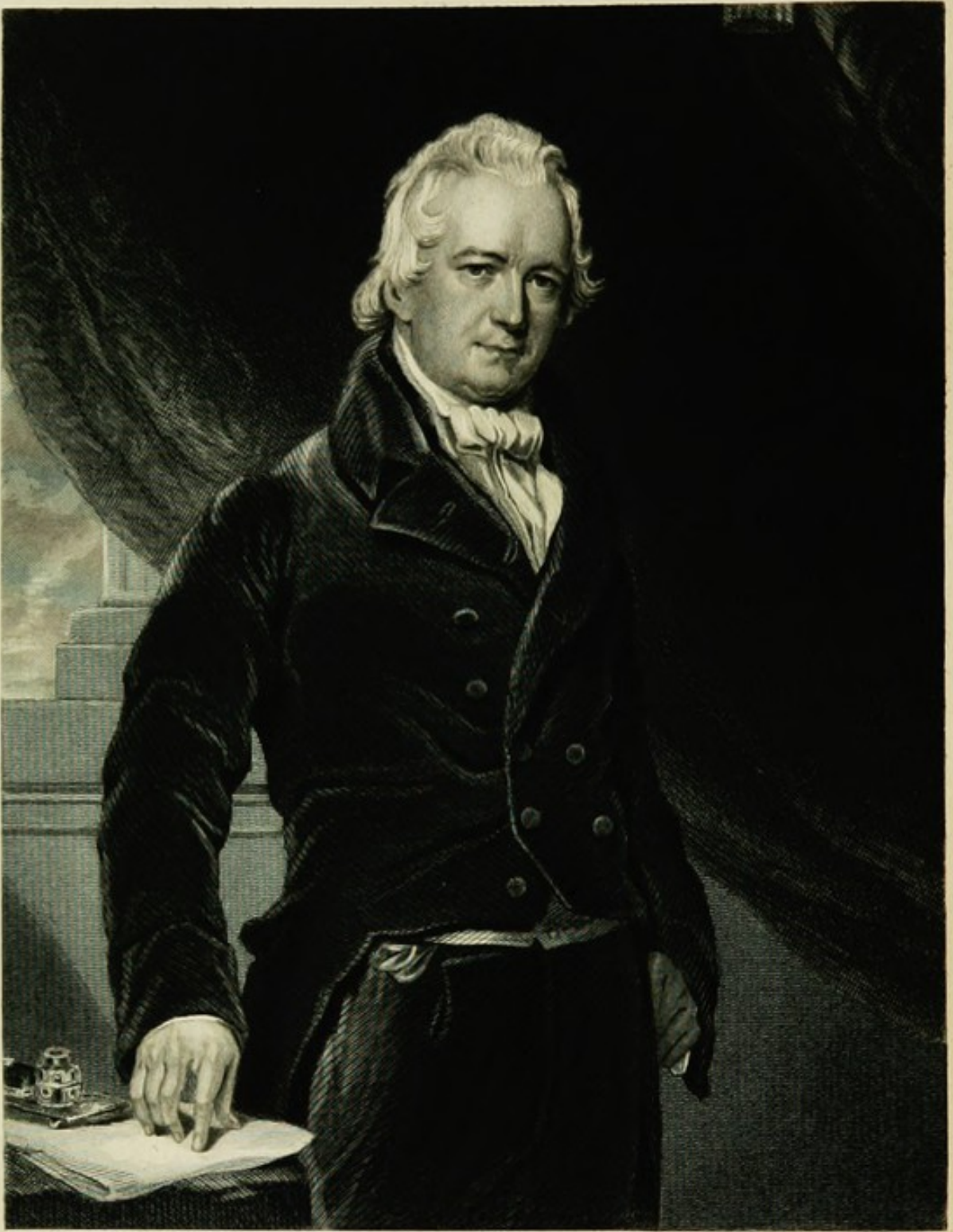
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Sir Tho^o Lawrence. P.R.A.

Cook.

*W. most sincerely
John A. Hervey*

MEMOIRS

OF

JOHN ABERNETHY, F.R.S.

WITH A VIEW OF
HIS LECTURES, WRITINGS, AND CHARACTER.

BY GEORGE MACILWAIN, F.R.C.S.

AUTHOR OF

“MEDICINE AND SURGERY ONE INDUCTIVE SCIENCE;”

&c. &c. &c.

“The evil that men do, lives after them:
The good is oft interred with their bones.”

SHAKSPEARE.

Second Edition.

IN TWO VOLUMES.

VOL. I.

18782

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LONDON:
Printed by Schulze and Co., 13, Poland Street.

TO THE MEMORY
OF
JOHN ABERNETHY, F.R.S.

THESE VOLUMES ARE INSCRIBED

BY

ONE OF HIS NUMEROUS

AND

GRATEFUL PUPILS,

THE AUTHOR.

THE
PREFACE

TO THE
FIRST EDITION

OF THE
HISTORY OF THE
CITY OF
NEW-YORK

FROM
ITS FIRST SETTLEMENT
TO THE PRESENT
TIME

BY
J. B. H. H. H.

NEW-YORK:
PUBLISHED BY
J. B. H. H. H.

1808

P R E F A C E

TO

THE SECOND EDITION.

THE indulgent reception which the Public and the Profession have been pleased to accord to these Memoirs, having already rendered a second edition necessary, the volumes have been carefully revised. This has enabled me to correct some typographical errors, and so to modify certain passages, that whilst the narrative remains essentially the same, it may be in some points presented in an improved dress. I have also availed myself of the opportunity of making some additions and corrections, which, though few, are not unimportant.

Although not unacquainted with the fact, that Mr. Abernethy had declined the honour of a Baronetcy, no allusion was made to it in the first edition, because I was not then in possession of such evidence as appeared to me necessary in relation to a circumstance that had not fallen within my own knowledge.

By the kindness of the family, I have been enabled to correct an error in regard to those who were present in his last moments ; which, if in an historical point of view immaterial, is by no means so, with regard to the feelings of those whom it more immediately concerns.

G. M.

THE COURT YARD, ALBANY,

NOV. 14, 1853.

P R E F A C E

TO

THE FIRST EDITION.

IN submitting to the Public a Memoir of a great man, it may naturally be expected that an author should endeavour to convey to them some idea of the associations, or other circumstances, which have prompted the undertaking.

My father practised on the borders of a forest, and when he was called at night to visit a distant patient, it was the greatest treat to me, then a little boy, to be allowed to saddle my pony and accompany him. My father knew the forest nearly as well as his own garden ; but still in passing bogs in impenetrable darkness, the more refined topography of a forester would

be necessary ; and it was on one of these occasions that I first heard two words, "Me-ward" and "Abernethy," the one from our forester guide, which I have never heard since, and the other which I have heard more frequently perhaps than any. The idea I then had of Abernethy was, that he was a great man who lived in London. The next distinct impression I have of him was derived from hearing my father say that a lady, who had gone up to London to have an operation performed, had been sent by him to Mr. Abernethy, because my father did not think the operation necessary or proper ; that Mr. Abernethy entirely agreed with him, and that the operation was not performed ; that the lady had returned home, and was getting well. I then found that my father had studied under him, and his name became a sort of household word in our family. Circumstances now occurred which occupied my mind in a different direction, and for some years I thought no more of Abernethy.

As long as Surgery meant riding across a

forest with my father, I thought it a very agreeable occupation ; but when I found that it included many other things, I soon discovered there was a profession I liked much better. Some years had rolled away ; when one afternoon in October, about the year 1816, somewhat to my own surprise, I found myself about two o'clock walking down Holborn Hill, on my way to Mr. Abernethy's opening lecture at St. Bartholomew's. Disappointed of being able to follow the profession I had chosen, looking on the one I was about to adopt with something very much allied to repulsion, considering everything in this world flat and unprofitable, and painfully depressed in spirits, I took my seat at the lecture.

When Mr. Abernethy entered, I was pleased with the expression of his countenance. I almost fancied that he could have sympathised with the melancholy with which I felt oppressed. When he commenced, I listened with some attention ; as he went on, I began even to feel some pleasure ; as he proceeded, I found myself entertained ; and before he con-

cluded, was delighted. What an agreeable, happy man he seems, thought I! What a fine profession! What would I give now to know as much as he does! In short, I was converted.

Years again rolled on; I found myself in practice. Now, I had an opportunity of proving the truth and excellence of the beautiful principles I had been taught. I found how truthful had been his representations of them, I was, however, grieved to find that his opinions and views were very much misunderstood and misrepresented; and I had very frequent opportunities of seeing how much this restricted their application, and abridged their utility.

Some few years after his death, I tried to induce some one to endeavour to correct the erroneous impressions which prevailed in regard to him; but to do Abernethy full justice, *would require a republication of his works, with an elaborate commentary.* This was a task involving too much time, labour, and expense, for any individual to undertake; whilst anything less, however useful or instructive to

the public, must necessarily subject the author to a criticism which few are disposed to encounter.

But as it appeared to me that scruples like these stood in the way of that which was alike just to the memory of Abernethy, and useful to the public, I was resolved at all hazards to undertake at least a memoir myself. I shall say little of the difficulties of the task. I feel them to have been onerous, and I believe them to have been, in some respects, unexampled.

Apologies for imperfections in works which we are not obliged to write, are seldom valued: the public very sensibly take a work for what it is worth, and are ultimately seldom wrong in their decision. I have only said thus much, not in deprecation of criticism, so much as to show that I have not shrunk from what I deemed just and useful on account of the somewhat oppressive sense I entertain of the risk or difficulty which it involves.

The scientific reader, may, I fear, think that in endeavouring to avoid too tedious a gravity,

I may sometimes have been forgetful of the dignity of biographical memoir; but in the difficulty of having to treat of subjects which, however important, are not always of the most popular kind, I have been obliged sometimes to think of the "*quid vetat ridentem.*" In the very delicate task of discussing subjects relating to some of my contemporaries, I have endeavoured simply to do Abernethy justice; and beyond what is necessary for that purpose, have avoided any quotations or other matter, calculated unnecessarily to revive or rekindle impressions which may as well be dismissed or forgotten. It may appear to some that in my remarks on the present state of professional affairs, I have been too free. I can only say, that I have stated exactly what I feel. I am earnestly desirous of seeing a better state of things, but I have no idea that we can materially improve that which we are afraid to examine.

I have to express my warmest thanks to several gentlemen for the readiness with which they have contributed their assistance; my

most grateful acknowledgments to my respected friend, Mr. Fowler of Datchet, and his son, Mr. Alfred Fowler, Mr. Thacker and Mr. Tummins of Wolverhampton—three of them being old schoolfellows of Abernethy; to Mr. White, the distinguished head master of Wolverhampton School, whose acceptable services have been further enhanced by the ready kindness with which they were contributed; to Mr. Belfour, the Secretary of the Royal College of Surgeons, and Mr. Stone, the Librarian, I have to express my best thanks for their kind assistance, and to the latter especially for many very acceptable contributions.

I have also to acknowledge the kind interest taken in the work by Mr. Wood of Rochdale, Mr. Stowe of Buckingham, old and distinguished pupils of Abernethy. My best thanks are also due to Dr. Nixon of Antrim, not only for his own contributions, but still more for the personal trouble he was so kind as to take in relation to some particulars concerning the ancestors of Mr. Abernethy; to Mr. Chevasse of Sutton Coldfield, for very

acceptable communications ; and to Mr. Preston of Norwich. Nor must I omit to express my obligation to several gentlemen whom I have consulted at various times. My thanks are specially due to Professor Owen. My old friends and fellow-pupils, Mr. Kingdon, Mr. E. A. Lloyd, Dr. Barnett, Mr. Skey, and Mr. Welbank, have shown as much interest in the work as their opportunities allowed them, and will please to accept my best acknowledgments.

G. M.

LONDON,
SEPT. 20, 1853.

Faint, illegible text, possibly bleed-through from the reverse side of the page.

My dear Sir

I return you my best Thanks for your Book which you did me the favor of sending: I have read the new Matter with which I am well pleased I feel also oblig'd to you for your Kind Wishes, & assure you that they are on my part reciprocals. I am a Cripple with Rheumatism & good for nothing, but still remain My dear Sir

Wth most sincerely

John Abernethy

Enfeld

26 April

To George Macilwain Esqre

MEMOIRS OF ABERNETHY.

CHAPTER I.

“ The Author of Nature appears deliberate throughout His operations, accomplishing His natural ends by slow successive steps. And there is a plan of things beforehand laid out, which, from the nature of it, requires various systems of means, as well as length of time, in order to the carrying on its several parts into execution.”—BUTLER’S ANALOGY.

A RETROSPECT of the history of human knowledge, offers to our contemplation, few things of deeper interest than the evidence it so repeatedly affords of some great law which regulates the gradual development of truth, and determines the Progress of Scientific Discovery.

Although knowledge has, at times, appeared to exhibit something of uniformity in its advances, yet it cannot have escaped the least observant that, as a whole, the Progress of Science has been marked by very variable activity. At one time marvellously rapid; at another, indefinitely slow; now merged in darkness or obscurity; and now blazing forth with meridian splendour.

We observe a series of epochs divided by intervals of great apparent irregularity—intervals which we can neither calculate nor explain; but which, nevertheless, exhibit a periodicity, which the very irregularity serves to render striking and impressive.

We may remark, also, a peculiar fitness in the minds of those to whom the enunciation of truth has been successively entrusted: a fitness, not merely for the tasks which have been respectively assigned to each as the special mission of the individual; but also in the collective relations of different minds to each other. This adaptation to ends which different minds have unconsciously combined to

accomplish, might be illustrated by very many examples, from the earliest records of antiquity, down to our own times. This would be incompatible with our present purpose; we will therefore only refer to one or two examples, which, as being familiar, will serve to illustrate our meaning, and to lead us, not unnaturally, to our more immediate object.

We can hardly contemplate men like Bacon, Galileo and Kepler, for example, without feeling how auspicious the precession of such minds must have been to the development of the genius of Newton.* It will be observed that Newton was born the same year that Galileo died. There is something very interesting and significant too in the peculiar powers of Kepler. Prolific in suggestion, great in mathematical ability, elaborate in analysis,

	Born.	Died.
* Galileo	1564	1642
Kepler	1571	1630
Bacon	1561	1626
Newton	1642 ^a	1727

^a The same year that Galileo died.

and singularly truthful in spirit, Kepler exemplified two things very distinct from each other, but both equally instructive, both alike suggestive of the link he represented in the chain of progress. In the laws he discovered, he showed the harvest seldom withheld from the earnest search for truth, whilst in the limit prescribed to his discoveries, he exemplified the vast additional labour, and the comparative short-coming of the greatest minds when proceeding too much on hypothesis. Now it is interesting to remember that this was coincident with the dawning of that glorious light, the Inductive philosophy of Bacon, and shortly succeeded by the splendid generalization of Newton.

In like manner, if we think of the discoveries of Sir Humphrey Davy—their nature and relations to physiology as well as chemistry, we see how much there might have been that was preparatory, and to a mind like Davy's, suggestive, in the investigations of preceding and contemporaneous philosophers. Priestley had discovered oxygen gas, Galvani and Volta had

shown those remarkable phenomena—which constitute that important branch of knowledge which we term voltaic electricity; Berzelius had effected the decomposition of certain salts by the voltaic pile, and Lavoisier had even predicted as *probable* what Davy was destined to demonstrate.*

In medical science few things have been more talked of than the discovery of the circulation of the blood. Now it is curious to observe that every fact essential to the demonstration of it had been made out by previous investigators;† but no one had deduced from them

	Born.	Died.
* Priestley	1733	1804
Galvani	1737	1798
Volta	1745	1826
Lavoisier	1743	1794
Crauford	1749	1795
Hunter	1728	1793
Davy	1778	1829

† The valvular contrivances in the veins and heart, which showed that the blood could only move in one direction, had been either observed, described, or their effects respectively remarked on by Paul, Sylvius,

the discovery of the circulation until Harvey, although it was a conclusion scarcely more important than obvious.

There is surely something very encouraging in the reflection, that the advance of knowledge thus results from the accumulated labours of successive minds. It suggests, that however unequally the honours may appear to be distributed; however humble in our eyes the function of those who unconsciously prepare the way to great discoveries, still it may involve a duty no less important than the more lofty mission of enunciating them.

Humanly speaking, we naturally ascribe discoveries to those who have practically demonstrated them; but when we examine all the clues which have been furnished by previous observers, we frequently have misgivings as to the justice of our decisions. In our admiration of the successful labour of the recent inquirer, we sometimes forget the patient industry of the Michael Servetus, Realdus Columbus, Andreas Cesalpinus, and especially by Fabricius ab Aquapendente, of whom Harvey was a pupil.

early pioneer. With regard to those laws which govern the human body, we cannot suppose that the development of them can be destined to progress on any plan less determined than other branches of human inquiry. But in all laws of nature, we know that there are interferences which, until explained, serve to obscure or altogether to conceal the law from our view.

In relation to the Physiological laws, these interferences are very numerous. 1st. Many are furnished by the physical laws, many arise from the connection of the physical with the moral laws, and especially from the abuse of (a responsible) volition. These interferences, however, when their nature is clearly developed, beautifully illustrate the laws they at first obscured; for the common characters of subjects, in which the law is usually exemplified, are brought out into higher relief, by the very diversities in the midst of which they occur. The progress of mankind towards a popular familiarity with this fact, is necessarily slow, but still we think it plainly perceptible. An individual life,

indeed, however distinguished, represents a mere point in time; it affords little scope for considering, much less for estimating, as they occur, the true meaning of various events, which nevertheless ultimately prove to have had important influence on the progress of knowledge.

These are world-wide things, which we must survey as the geologist does the facts concerning which he inquires. We must endeavour to combine, in one view, facts over which long periods of time may have rolled away with such as are still passing around us. This will frequently suggest designs and relations altogether unobservable by the mere abstract inquirer. In the course of the following pages, a further opportunity may occur for a few remarks on such views, the elaborate discussion of the subject would be altogether beyond our present objects.

It will be our endeavour to point out the position occupied by Abernethy, in that (as we trust) gradually dawning science, to a particular phase of which our object and our

limits will alike restrict our attention—we mean that period when Surgery having approached to something like a zenith as a mere practical *art*, began to exhibit, by slow and almost imperceptible degrees, some faint characters of science—a shadowy commencement of a metamorphose, which we believe promises to convert, (though we fear at a period yet distant,) a monstrous hybrid of mystery and conjecture into the symmetrical beauty of an Inductive science ; a science based on axioms and laws, powerfully influential to the social progress and to the health of nations.

In considering Hunter and Abernethy, we shall see not only a remarkable adaptation for the tasks in which they were respectively engaged ; but also how the peculiar defects of the one were supplied by the characteristic excellences of the other. Thus co-operating in throwing open to us clear and definite objects, which, though far as they were from fulfilling the requisitions of an Inductive science, were eminently calculated to lead us to stumble on the necessity of it.

We no sooner begin to inquire with clear and definite purpose, than we are led to the means necessary for the attainment of it.

Abernethy himself, in speaking of the ordinary resources of daily practice, used to say: "If a man has a clear idea of what he desires to do, he will seldom fail in selecting the proper means of accomplishing it."

So in gathering the materials for building up a science, the first thing, is to be clear as to those things in which it is deficient. This once determined, all may lend assistance; and this very division of labour, when directed with definite purpose, may render even men most addicted to narrow and partial inquiries, contributory to a great and common object.

In this way those blows and discouragements so common in the infancy of science, which test our motives and try our patience, may prove tolerable when distributed over the many, instead of proving, as is too common, depressing or destructive, when bearing only on the efforts of the few.

If we desire to shorten this labour, we need

scarcely say there is no way of doing it but by the adoption of that mode of proceeding to which every other branch of science owes its present position

I mean the rigid suspension of all hypotheses, setting to work by collecting *all* the facts in relation to the subject, and dealing with them in strict compliance with the precepts of common sense, or, what is the same thing, Inductive philosophy.

This will soon show us the just amount of the debt we owe to Hunter and Abernethy ; and in leading us onwards, instructively point out why these great men did not farther increase our obligations.

We shall see how the industry and circumspection of the Argus-eyed Hunter, as Abernethy used to call him, enabled him to unfold a legend in nature, which he had neither length of days, sufficient opportunity, nor perhaps aptitude wholly to decipher ; and how far it was developed into practical usefulness by the penetrative sagacity and happy genius of Abernethy ; which like light in darkness guides and sustains

immediate research, and animates and encourages onward inquiry. To appreciate Abernethy, however, it is necessary that the public should have correct views at least of the *general* nature and objects of Medical Science.

We hope to show in these volumes, that the public have not only a very real interest in a sound common-sense view of the objects of medicine and surgery, but a far deeper interest, than it is possible for any one medical man to have, merely as such, or all medical men put together. This may, to those who have not considered the matter, appear new, and therefore startling, but we only beg the reader to be patient, and by-and-bye he will be able to judge for himself.

It is right, however, at once to observe, that mankind have been taught or induced to believe that the objects of medicine and surgery are to prevent or relieve diseases and accidents by the astute employment of drugs, or by certain adroit manipulatory or mechanical proceedings, and *par excellence* by "operations." Now here is a great error—an idea so far from true, that

nothing can more delusively define, or more entirely conceal the higher objects of the science.

The direct contrary of the proposition would be nearer the truth. It would be more correct to say that while the object was to relieve diseases and accidents by removing all interferences with the reparative powers of nature, that this was accomplished more perfectly in proportion as we were enabled to *dispense* with the employment of drugs, or the performance of operations.

The making the lame to walk, the blind to see, and the deaf to hear, were chosen amongst the appropriate symbols of a Divine Mission; and we need scarcely observe, that in the restricted sphere of human capacity, this is a portion of the mission of every conscientious surgeon.

We may well, therefore, be dissatisfied with the narrow, not to say degrading definition of our duties too generally entertained; but on the other hand, if we would realize these claims to more lofty views of our calling by increasing

its practical usefulness, we should recollect there is only one way of attaining even human approximation to these symbols; and that is by the applied interpretation of those no less miraculous symbols, no less certain manifestations of Divine Power, the "Laws of Nature." To name a science from something not essential to it, is like naming a class of animals from some exceptional peculiarity in an individual. It is as if we would infer the mission of the ocean wave from the scum sometimes seen on its surface, or as if we would deduce the use of a feather, not from its common character of levity and toughness, so much as from the use we make of it in writing; treat an exception as a rule, or any other manifest absurdity.

We have no opportunity of entering more fully into this important distinction; we must therefore rest satisfied in having awakened the reader's attention to it; and proceed to the more ordinary objects of Biographical Memoir.

John Abernethy was born in London, in the parish of St. Stephen's, Coleman Street, on the

3rd of April, 1764, exactly one year after John Hunter settled in London. It is also interesting to remark, that Abernethy's first work, his "Surgical and Physiological Essays" — Part I. — was published the same year that Hunter died, 1793, so that whilst his birth occurred nearly at the same time as the commencement of the more sustained investigations of Hunter, his opening contribution to science was coincident with the close of the labours of his illustrious friend and predecessor.

The Abernethy family in their origin were possibly Scotch, and formed one of those numerous inter-migrations between Scotland and the north of Ireland, which after lapse of time frequently render it difficult to trace the original stock. There seems little doubt they had resided for some generations in Ireland.

John Abernethy, who was the pastor of a Coleraine congregation in 1688, was an eminent Protestant dissenting minister, and the father of one still more distinguished. The son (also named John) had been for some time pastor

of the old congregation of Antrim, whence he removed to Dublin about the year 1733, to take charge of the Wood Street, now Strand Street, Dublin. He is the author of several volumes of sermons, which are not a little remarkable for the clearness of thought, and earnestness of purpose, with which they inculcate practical piety. He had a son who was a merchant, who subsequently removed to London, and traded under the firm of Abernethy and Donaldson, in Rood Lane, Fenchurch Street. This gentleman married a lady whose name was Elizabeth Weir, daughter of Henry and Margaret Weir, of the town of Antrim, and they had two sons and three daughters.

James, the elder brother, was also in business as a merchant, and died about the year 1823. He was a man of considerable talent, spoke with an accent suggestive of an Irish origin; and was remarkable for his admiration and critical familiarity with our immortal Shakspeare. He was probably born before his father left Ireland. John, the second son, the subject of our Memoir, was,

as we have already said, born in London. The register of his christening at St. Stephen's is as follows :

Abernethy	{	<div style="text-align: right; margin-bottom: 10px;">1765.</div> John, son of John and Elizabeth, <div style="text-align: right; margin-top: 10px;">April 24.</div>
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This register would suggest that he was born a year later than I have stated. I have, however, preferred 1764 as the year adopted by his family; for although a man's birth is an occurrence respecting the date of which he is not the very best authority, he usually gets his information from those who are. Besides, it was no uncommon thing at that time to defer the christening of children for a much longer period. The education of his early childhood was most likely altogether conducted at home, but it is certain that, while yet very young, he was sent to the Grammar School at Wolverhampton. Here he received the principal part of his education, and though the records are somewhat meagre, yet they tend to show that at an early age he manifested

abilities, both general and peculiar, which were indicative of no ordinary mind; and which, though they do not necessarily prefigure the future eminence at which he arrived, were sufficiently suggestive of the probability that, whatever his career might be, he would occupy a distinguished position.

CHAPTER II.

“ Ah, happy hills ! ah, pleasing shade !
Ah, fields beloved in vain,
Where once my careless childhood stray'd
A stranger yet to pain.”

GRAY.

MANKIND naturally feel an interest in the boyhood of men of genius ; but it often happens that very little attention is paid to early indications, and when observed, it is certain that they are often interpreted very falsely.

Nothing more emphatically suggests how much we have to learn on this subject, than the obscurity which so often hangs over the earlier years of distinguished men. At school a number of variable organizations are subjected to

very much the same order of influences; the necessity for generalization affords little opportunity for individual analysis. The main road is broad and familiar, there is no time for indulging in bye-paths, even should the master have the penetration to perceive, in individual cases, the expediency of such selection. Hence the quickening of those impulses, on which the development of character so much depends, is greatly a matter of uncertainty. The moment boys leave school, on the contrary, this uniformity of external influences is replaced by an interminable diversity; at home scarcely two boys being subjected to exactly the same. Thus, in many instances, it would be easier to deduce the character of the boy from the man, than to have predicted the man from the boy. The evidences of the one are present to us, those of the other may have been entirely unelicited, unobserved, or forgotten.

We cannot wonder then, that expectation should have been so often disappointed in the boy, or that excellences little dreamt of, should have been developed in the man.

Dryden, who, regarded in the triple capacity of poet, prose writer, and critic, is hardly second to any English author, took no honour at the University. Swift, perhaps our best writer of pure English, whose talents proved scarcely less versatile and extraordinary, than they had appeared restricted and deficient, was "plucked" for his degree in Dublin, and only obtained his recommendation to Oxford "*speciali gratia*," as it was termed. The phrase, however, being obviously equivocal, and used only in the bad sense at Dublin, was, fortunately for Swift, interpreted in a good sense at Oxford, a misapprehension which Swift, of course, was at no pains to remove.

Sheridan was remarkable for his readiness and wit; as a writer, he showed considerable powers of sustained thought also. He had an habitual eloquence, and on one occasion delivered an oration before one of the most distinguished audiences that the world ever saw,* with an effect which seems to have rivalled

* We allude to his first speech on the trial of Warren Hastings.

the most successful efforts of Cicero, or even Demosthenes. Yet he had shown so little capacity as a boy, that he was presented to a tutor by his own mother, with the complimentary accompaniment, that he was an incorrigible dunce.

Some boys live on encouragement, others seem to work best "up stream." Niebuhr, the traveller, the father of a son no less illustrious, with anything but an originally acute mind, seems to have overcome every disadvantage which the almost constant absence of opportunity could combine. Those who are curious in such matters might easily multiply examples of the foregoing description, and add others where—as in the case of Galileo, Newton, Wren, and many others—the predictions suggested by early physical organization, proved as erroneous as the intellectual indications to which we have just adverted.

The truth is, we have a great deal to learn on the subject of mind, although there is no want of materials for instruction. Medicine and surgery are not the only branches of knowledge

which require the aid of strictly inductive inquiry. In all, the materials (facts) are abundant.

In Abernethy there was a polarity of character, an individuality, a positiveness of type which would have made the boy a tolerably intelligible outline of the future man. The evidence is imperfect; it is chiefly drawn from the recollections of a living few, who, though living, have become the men of former days; but still the evidence all inclines one way.

We can quite imagine a little boy, "careless in his dress, not slovenly," with his hands in his pockets, some morning about the year 1774, standing under the sunny side of the wall at Wolverhampton Grammar School;* his pockets containing, perhaps, a few shillings,

* Wolverhampton School, founded by Sir Stephen Jermyn, Alderman and Knight of the City of London, in the reign of Henry VIII., for the "Instruction of youth in morals and learning." Many distinguished men were educated at the school, as Abernethy, Mr. Tork, fellow of Trinity College, Cambridge, Sir William Congreve and others. The present Head Master is the Rev. W. White.

some halfpence, and a knife with the point broken, a pencil, together with a tolerably accurate sketch of "Old Robertson's" wig. This article, as shown in an accredited portrait,* now lying before us, was one of those enormous by-gone bushes which represented a sort of impenetrable fence round the cranium, as if to guard the precious material within. The said boy just finishing a story to his laughing companions, though no sign of fun appeared in him, save a little curl of the lip, and a smile which would creep out of the corner of his eye in spite of him. I have had the good fortune to find no less than three schoolfellows of Abernethy, who are still living: John Fowler, Esq., of Datchet, a gentleman whom I have had the pleasure of knowing for many years, and who enjoys in honourable retirement at his country seat, at the age of eighty-two, the perfect possession of all his faculties; William Thacker, Esq., of Murchall, about two miles from Wolverhampton, who is in his eighty-fifth year; T.

* Kindly sent us by Mr. Fowler, of Datchet.

Tummins, Esq., of King Street, Wolverhampton, who is in his eighty-seventh year, schoolfellows. To these gentlemen, and to J. Wynn, Esq., also of Wolverhampton, I am principally indebted for the few reminiscences I have been able to collect of the boyish days of Abernethy.

The information which I gained from Mr. Fowler, he gave me himself; he also kindly procured me a long letter from Mr. Wynn. The reminiscences of Mr. Tummins and Mr. Thacker, I have obtained through the very courteous and kind assistance of the Rev. W. White, the present distinguished head master of the Wolverhampton School.

To all of these gentlemen I cannot too strongly express my thanks, for the prompt and kind manner in which they have replied to all the inquiries which have been addressed to them. The following are the principal facts which their letters contain, or the conclusions they justify. Abernethy must have gone to Wolverhampton when very young probably, I should say certainly before 1774. He was brought by Dr. Robertson from London with

another pupil, "his friend Thomas;" and the "two Londoners" boarded with Dr. Robertson. When Mr. Fowler went there in 1778, Abernethy was high up in the school, and ultimately got to the head of the senior form. He must have left Wolverhampton in all probability not later than 1778, because Dr. Robertson resigned the head mastership in that year; and we know that in the following (1779), when he was fifteen, Abernethy was apprenticed to Sir Charles Blicke.

Mr. Thacker says he was very studious, clever, a good scholar, humorous, but very passionate. Mr. Tummins, Mr. Thacker says, knew Abernethy well. Abernethy used to go and dine frequently with Mr. Tummins's father. Mr. Tummins says "Abernethy was a "sharp boy, a very sharp boy, and a very "passionate one, too. Dr. Robertson," he says, "was also a very passionate man."

One day Abernethy had to "do" some Greek Testament; and it appeared that he set off very glibly, having a "crib," in the shape of a Greek Testament with a Latin version on the other side. The old Doctor, suspecting the case,

discovered the crib, and the pupil was instantly "levelled with the earth." This *fortiter in re* plan of carrying the intellect by a *coup-de-main* has, as the present head master observes, been replaced by more refined modes of proceeding. The more energetic plan was (however coarse and objectionable) not always unsuccessful in implanting a certain quantity of Latin and Greek. Abernethy was a very fair Latin scholar, and he certainly had not a bad knowledge of Greek also.

There are, however, many other things to be learnt besides Latin and Greek; and it is probable that the more measured reliance on such violent appeals, which characterizes modern education, might have been better suited to Abernethy. To a boy who was naturally shy, and certainly passionate, such mechanical illustrations of his duty were likely to augment shyness into distrust, and to exacerbate an excitable temper into an irritable disposition.

Abernethy, in chatting over matters, was accustomed jocularly to observe that, for his part, he thought his mind had on some subjects

what he called a "*punctum saturationis*;" so that "if you put anything more into his head, you pushed something out." If so, we may readily conceive that this plan of forcing in the Greek, might have forced out an equivalent quantity of patience or self-possession. It is difficult to imagine anything less appropriate to a disposition like Abernethy's than the discipline in question. It was, in fact, calculated to create those very infirmities of character which it is the object of education to correct or remove.

It seems that neither writing nor arithmetic were taught in the school; and "Tummins and Abernethy" used to go to learn these matters at the school of a Miss Ready in King Street, Wolverhampton. This lady appears to have had, like Dr. Robertson, a high opinion of what the profession usually term "local applications" in the conduct of education. Many years afterwards she called upon Mr. Abernethy. He was then in full practice in London. He received her with the greatest kindness, begged her to come and dine with him as often as she could while she stayed in London; and

introducing her to Mrs. Abernethy, said: "I beg to introduce to you a lady who has boxed my ears many a time."

Had Miss Ready, however, heard us call in question this association of boxing ears and quill-driving, she would probably have retorted on us that few men wrote so good a hand as John Abernethy. It is also perfectly certain that *brusque* as the discipline might have been, and ill-suited to the disposition of Abernethy, that it did not interfere with the happiness of his schoolboy life. He always looked back to his days at Wolverhampton with peculiar pleasure, and seemed to regard every association with the place with affectionate remembrance.

Mr. Wynn observes in his letter: "About
" twenty years ago I accompanied a patient to
" Mr. Abernethy. After prescribing, he said, 'let
" me see you again in about a week.' 'We
" cannot, for we are returning into the country.'
" 'Why, where do you live?' 'Wolverhampton.'
" 'Wolverhampton? Why, I went to school
" there. Come, sit down, and tell me who's

“ alive and who's dead.' After running over the
“ names of some of the old families, their health,
“ circumstances, &c., he wished us good morning,
“ saying, ‘ Ah ! I cannot forget Wolverhamp-
“ ton ! ’ ”

Mr. Thacker's note I subjoin, written in a
good firm hand, at eighty-five :

“ Murchall, near Wolverhampton,
“ May 17, 1852.

“ Sir,

“ As a boy, I remember John Abernethy,
“ and William Thomas coming from London to
“ board with, and as scholars to, Dr. Robertson,
“ the head master of the Wolverhampton School,
“ in which there were two masters, both clergy-
“ men. We were formed into several classes,
“ in which John Abernethy, William Thomas,
“ Walter Acton Mosely, and myself, formed one.
“ Abernethy took the head or top of the class ;
“ but the boys used to change places in the
“ classes according to their proficiency, but I do
“ not recollect that Abernethy ever took a third

“ place in the class. So also in his sports, he
“ usually made a strong side, for he was re-
“ markably quick and active, and soon learned
“ a new game. He had but one fault that I
“ knew of—he was rather hasty and impetuous
“ in his manner, but it was soon over and for-
“ gotten.

“ The ‘ Doctor,’ as we used to call him
“ (Robertson), had a daughter grown up, and she
“ used to hear the boarders in the house read
“ plays before her father, in which, in particular
“ passages, she showed where the emphasis
“ should be laid, and how to pronounce the same
“ properly ; this occasioned the use of the play
“ of ‘ Cato,’ and originated the boys’ perform-
“ ance of that play in the school-room before
“ their fathers and friends. I do not remember
“ the part that Abernethy took in that play.
“ I have applied to Mr. Tummins of Wol-
“ verhampton, but his memory does not sup-
“ ply information. He knew Mr. Abernethy
“ well.

“ If I recollect any others of my schoolfel-
“ lows who knew him, I will apply to them for

“information, and communicate the same to you
“immediately.

“I am, Sir,

“Your obedient servant,

“WILLIAM THACKER.

“To George Macilwain, Esq.”

We learn from another reminiscence, that in the play at Wolverhampton, Abernethy took a “principal part.” He certainly had a good deal of dramatic talent, in the highest sense of the word; and, as will be seen in the sequel, could light up a story with rich humour, or clothe it with pathos, as suited the occasion, with equal facility. There is much in these school reminiscences, scanty as they are, significant of his future character.

As we have observed, Abernethy left Wolverhampton in 1778. He was then head of the school, a quick, clever boy, and more than an average scholar. He returned to London, that world of hopes, fears, and anxieties, that spacious arena, on which all are desirous of entering as competitors, who are ambitious of professional or commercial distinction.

CHAPTER III.

“ Nunquam ita quisquam bene subductâ ratione ad vitam
fuit

Quin res, ætas, usus, semper aliquid apportet novi
Aliquid moneat; ut illa quæ te scire credas, nescias :
Et quæ tibi putâris prima, in experiundo repudias.”

TER. AD. A. 5, SC. 4.

“ Never did man lay down so fair a plan,
So wise a rule of life, but fortune, age,
Or long experience made some change in it,
And taught him that those things he thought he knew,
He did not know, and what he held as best
In practice, he threw by.”

COLMAN.

CIRCUMSTANCES, in themselves apparently unimportant, often determine the selection of a profession. Few boys can do exactly what they

please, and the *pros* and *cons* are seldom placed before them in a way to assist them in determining the just value of the reasons on which their choice may have proceeded. They are not, indeed, unfrequently dealt with as if, whilst not incompetent to make choice of a profession, they were held incapable of weighing the circumstances by which alone such choice could be judiciously directed. The absurdity of this appears when we think a moment of what it involves, which is nothing less than expecting them to do what is impossible—viz., to form an opinion on a subject, when the main facts in relation to it are withheld from them. Be this as it may, every day shows us that men are too frequently dissatisfied with the profession which they follow. The question of our boyhood recollections

“ Qui fit Mæcenas ut nemo quam sibi sortem,
 Seu ratio dederit seu fors objecerit, illâ,
 Contentus vivat ?”*

is just as applicable as ever ; and although human

* “ How happens it, Mæcenas, that no one is content with his condition, whether reason gave it him, or chance threw it in his way ?”

nature has almost everything ascribed to its natural infirmities, yet it appears quite as sensible, and not a whit less humble, to conclude, that paths chosen without consideration, naturally lead to disappointment. The evil, like most others, carries with it the elements of self-correction.

Parents are slow to encourage their children to imitate a course on which they themselves look back with regret. This, of course, tends to distribute their professions to other families. Mutual interchanges of this kind serve to protect the interests of society, from an indefinite multiplication of cases in which men have failed to select the pursuits best adapted to them.

In almost all pursuits of life, success is determined, much more than many are disposed to imagine, by the homely qualities of steadiness and industry. We are apt—and sometimes not improperly certainly—to ascribe peculiar *excellence* to peculiar powers. Yet the more we discover of the histories of great men, the more we perceive how constantly the more

special, have been aided by the more homely qualifications to which we have adverted.

No doubt some minds are so constituted, as to be moderately certain of success or distinction in almost any pursuit to which they might have been directed ; and we are disposed to think that Abernethy's was a mind of that order ; but there is abundant evidence to show that his talents were at least equalled by his industry. One paper of his, which contains a beautiful and discriminative adjustment of a difficult point of practice in Injuries of the Head, and which contains no intrinsic evidence of such industry, was only prepared after he had attended to every serious injury of the head in a large hospital for almost twenty years ; besides examining the bodies of all the fatal cases. Nor can we estimate this industry properly, without recollecting that all this time he was an *assistant surgeon* only, whose duties for the *most* part neither required, nor *permitted* him to do more than to observe the treatment ; and that therefore the whole of this industry was simply in the character of a student of his profes-

sion.* All biography is full of this kind of evidence ; and art, as well as science, furnishes its contribution. Who could have imagined that the peculiarly chaste composition, the easy and graceful touch of Sir Augustus Callcott, could have owed so much to industry, as it undoubtedly must have done ? It is known, for example, that he made no less than forty different sketches in the composition of one picture. We allude to his "Rochester." Had Abernethy been allowed to choose his profession, there can be no doubt but that he would have selected the Bar. It is impossible for any one to consider the various powers he evinced, without feeling, that had he followed the Law, he would have arrived at a very distinguished position. "Had my father let me be a lawyer," he would say, "I should have known every Act of Parliament by heart." This, though no doubt intended as a mere figure of speech, was not so far from possibility as might be imagined, for it referred to one of his most striking characteristics,

* The assistant surgeons having no *in*-patients under their care except in the absence, or by permission, of their chiefs.

viz., a memory alike marvellously ready, capacious and retentive—qualities common enough separately, but rare in powerful combination.

We may have opportunities by-and-bye, perhaps, of further illustrating it. We will give one anecdote here. A gentleman, dining with him on a birthday of Mrs. Abernethy's, had composed a long copy of verses in honour of the occasion, which he repeated to the family circle after dinner. "Ah!" said Abernethy, smiling, "that is a good joke now, your pretending to have written those verses." His friend simply rejoined, that such as they were, they were certainly his own. After a little good-natured bantering, his friend began to evince something like annoyance at Abernethy's apparent incredulity; so thinking it was time to finish the joke, "Why," said Abernethy, "I know those verses very well, and could say them by heart." His friend declared it to be impossible: when Abernethy immediately repeated them throughout correctly, and with the greatest apparent ease. To return. However useful this quality might have been at the Bar, Abernethy was destined to another course of

life—a pathway more in need, perhaps, of that light which his higher qualifications enabled him to throw over it, and which “his position” “in time” afforded him an opportunity of doing just when it seemed most required. He probably thus became, both during life and prospectively, the instrument of greater good to his fellow-creatures than he would have been in any other station whatever.

I have not been able to discover what the particular circumstances were, which determined his choice of the medical profession. It is probable that they were not very peculiar. A boy thwarted in his choice of a profession, is generally somewhat indifferent as to the course which is next presented to him ; besides, as his views would not have been opposed but for some good reason, a warm and affectionate disposition would induce him to favour any suggestion from his parents. Sir Charles Blicke was a surgeon in large practice ; he lived at that time in Mildred’s Court, and Abernethy’s father was a near neighbour, probably in Coleman Street.

Abernethy had shown himself a clever boy,

a good scholar; and he was at the top of Wolverhampton School before he was fifteen. Sir Charles Blicke was quick-sighted, and would easily discover that Abernethy was a "sharp boy." All that Abernethy probably knew of Sir Charles, was that he rode about in his carriage, saw a good many people, and took a good many fees, all of which, though probably presenting no particular attractions for Abernethy, made a *primâ facie* case, which was not repulsive. Accordingly, in the year 1779, being then fifteen years of age, he became bound an apprentice to Sir Charles, and probably for about five years.

This first step, this apprenticing, has a questionable tendency as regards the interests of the public and the profession. It exerts also a considerable influence on the character and disposition of the boy, which we must by-and-bye consider. It is a mode of proceeding which we fear has done not a little to impede the progress of surgery as a science, and to maintain that handicraft idea of it suggested by the etymology of the word. Where one man strikes out a new

path, thousands follow the beaten track. A boy with his mind ill prepared, having no *definite* ideas of the nature and objects of scientific inquiries, and almost certainly uninstructed as to the rules to be observed in conducting them—knowing neither any distinction between an art and a science—a boy thus conditioned, is bound for a certain number of *years!* to a man of whom he knows little, and to a profession of which he knows nothing. He takes his ideas and his tone from his master, or if these be repulsive to him, he *probably adopts an opposite extreme*. If the master practise his profession merely as an art, he furnishes his pupil with little more than a string of conventionalisms; when if the pupil has talent enough to do anything for himself, he is tolerably certain to have a great deal to unlearn.

We believe the system is in course of improvement; it is high time it was put an end to, altogether. Apprenticeships might not have been an inauspicious mode of going to work in former times, when there existed barber-surgeons. This alliance of surgery and

shaving, to say nothing of the numerous other qualifications with which they were sometimes associated, conceivably enough furnished some pretext for apprenticeships ; since Dickey Gossip's definition of

“ Shaving and tooth-drawing,
Bleeding, cabbaging, and sawing,”

was by no means always sufficiently comprehensive to include the multifarious accomplishments of “ the doctor.” I have myself seen in a distant part of this island, within twenty-five years, chemist, druggist, surgeon, apothecary, and the significant &c., followed by the hatter, hosier, and linen-draper, in one establishment ; but as we shall have to discuss this subject more fully in relation to Abernethy in another place, we may proceed.

Sir Charles Blicke had a large and lucrative practice. He had the character of taking care to be well remunerated for his services. He amassed a considerable fortune ; but we incline to think that the impressions of the profession which Abernethy derived from the experience of his apprenticeship were not very favourable. The astute, business-like mode of carrying on

the profession, which seems to have characterized Sir Charles Blicke's practice, could have had few charms for Abernethy. Mere money-making had never at any time much attraction for him, and at that period of his life probably none at all; whilst the measured pretensions of surgery to anything like a science, could hardly have been at times otherwise than repulsive.

The tone in which he usually spoke of Sir Charles's practice, did not convey a very favourable idea of the nature of the impression which it had left on him. In relating a case he would say: "Sir Charles was at his house in the country, where he was always on the look out for patients." On another occasion, speaking of patients becoming faint under peculiar circumstances, he observed: "When I was an apprentice, my master used to say: 'Oh, Sir! you are faint; pray drink some of this water.' And what do you think was the effect of his putting cold water into a man's stomach under these circumstances? why, of course, that it was often rejected in his face."

Sir Charles's manipulatory and operative pro-

ceedings seem, however, to have represented a tolerably adroit adoption of the prevailing modes of practice; while his medical surgery consisted chiefly of the empirical employment of such remedies as he had found most frequently successful, or at all events somehow or other associated with a successful issue; with the usual absence of any investigation of the cause of either success or failure. By a mind like Abernethy's, this sort of routine would be very soon acquired, and in a short time estimated at its real value. Still, while a clear head is all that is necessary to the reception of what may be positive and truthful, it requires a vivid perception and a cultivated understanding to detect error. Many things, however, would creep out in Abernethy's lectures, showing that young as he was, even during his apprenticeship, he was not only a real student, but he had begun to think for himself.

He mentions a case of "Locked-jaw," that occurred as early as 1780 (the first year of his apprenticeship), which he appears to have noted with great accuracy. He mentions

the medicine that was given to the man, the unusually large doses, and lastly, the enormous quantity of it which was found in the stomach after death. It was opium, and amounted to many drachms !

We also find him engaged in inquiries involving much more extended views than were in that day *generally* associated with the study of *surgery*. He very early participated in those researches, which had for their object to determine the relation of the digestive functions, to one of the most recondite affections of an extremely important organ (the kidney).

“When I was a boy,” said he, “I half ruined myself in buying oranges and other things, to ascertain the effects of different kinds of diet in this disease.”

The same researches show how early also he began to perceive the importance of chemistry in investigating the functions of different organs, and in aiding, generally, physiological researches. We have heard a contemporary and a lecturer on chemistry attest Abernethy's proficiency in that science. As his investigations proceeded, he had the still higher merit of

taking *just and sober views* of the relations of chemistry to physiological science.

We mean that whilst he fully recognized the importance of it, he entirely avoided that *exclusive* reliance on it which is too often created by some of the more striking demonstrations of chemical science ; that one—idea—tendency, which unconsciously wrests it to the solution of phenomena which, in the *present state* of our knowledge, it is wholly inadequate to explain. We have alluded to the foregoing facts touching the impressions derived from his apprenticeship, and his early disposition for philosophical research, because both will be found to have relations to his subsequent labours and peculiarities. Diligent as he was, we suspect he found little during his apprenticeship of those attractions which make labour and industry sources of pleasure and enjoyment.

As a matter of course, he would have been allowed to attend any lectures which were given at the hospital to which Sir Charles Blicke was surgeon (St. Bartholomew's), and this would bring him in contact with Mr. Pott, who delivered a certain number of surgical lectures there.

There were no *courses* of anatomical lectures given at St. Bartholomew's, at that period ; but anatomical lectures were delivered regularly at the London Hospital, by Dr. Maclaurin and Sir William Blizard, and afterwards by Sir William Blizard alone. As Sir Charles Blicke lived in Mildred's Court and subsequently in Billiter Square, Abernethy, would be about equidistant from the two hospitals, both of which he attended. We incline to think that it was in attending the lectures, and perhaps especially those of Sir William Blizard, that he first found those awakening impulses, which excited in him a real love for his profession.

It was about this time, we think, that he began to have more enlarged ideas of the nature and objects of surgical science ; a state of mind calculated to enable him to thoroughly understand and appreciate Mr. Hunter, and to deduce from the principles which he was shadowing forth, those relations and consequences, which we shall endeavour popularly to explain ; principles which, though originally directed to the treatment of so-called surgical maladies, were found equally to affect the practice of medicine.

CHAPTER IV.

“There is not a more pleasing exercise of the mind than gratitude. Were there no positive command which enjoined it, nor any recompense laid up for it hereafter, a generous mind would indulge in it, for the natural gratification which accompanies it.”—ADDISON.

SIR WILLIAM BLIZARD was an eminent surgeon and an enthusiastic student of the profession, as studied in his day. He had a certain bluntness of manner, which was not unkind neither. He was very straightforward, which Abernethy liked; and he had nothing of a mercenary disposition, which Abernethy held in abhorrence. He was a kind of man very likely to excite in one of Abernethy's tone of mind

many agreeable impressions. He early perceived the talents, and was probably the first to encourage the industry, of his distinguished pupil. Enthusiastic himself, he had the power of communicating a similar feeling to many of his pupils; and he appears to have contributed one of those impulses to Abernethy, which are from time to time necessary to sustain the pursuit of an arduous profession.

Some men seem to like anatomy for its own sake, examinations of structure merely, by dissection, or the microscope, have a kind of intrinsic charm for them. This was not the case with Abernethy. *Mere* anatomy had few charms for him. He regarded it in its true light, as a means to an end; as the basis on which he could alone found, not only the more common or handicraft duties of surgery, but also those higher views which aim at developing the uses and relations of the various organs; and in this way to ascertain what the processes of nature are in the preservation of health and the conduct of disease; in short, a knowledge of what he called physio-pathology.

Sir William, therefore, in exciting Abernethy's enthusiasm at this time, was probably of great service. He was thus impelled to pursue the study of anatomy, which, perhaps, might otherwise have failed to interest him sufficiently, whilst his attention was by no means diverted from the real purposes of that study. On the contrary, he always saw anatomy, as it were, through a physiological medium. This threw a pleasure into his anatomical pursuits, and was *one* of the means by which, in his own lectures, he contrived to impart an interest to the driest parts of our studies.

Many years afterwards, he was fond of illustrating the true relations of anatomy and physiology, and at the same time contrasting the attractions of the one with the comparatively repulsive requisitions of the other, by saying with Dr. Barclay, of Edinburgh, that "he never would have wedded himself to so ugly a witch (anatomy), but for the dower she brought him (physiology)." The impressions, which he derived from Sir William Blizard, were deep and durable. More than thirty

years after, when he himself was at the zenith of his career, we find his grateful feeling towards Sir William still glowing warm as ever. He seems to have considered the expression of it as the most appropriate opening to the first of the beautiful lectures which he delivered at the College of Surgeons in 1814. It must have been a moment of no small gratification to Sir William, who was present, now venerable with age, to have found that the honourable course of his own younger days, and the purity and excellence of his precepts, had all been garnered up in the heart of his grateful and most distinguished pupil. Nor could the evidence of it be well made more striking than when heralded forth, before an audience composed of the most venerable and experienced, as well as of the most rising members of the profession; and to crown the whole, with an eloquence at once modest and emotional, impressive of the depth and sincerity with which the eulogium was delivered.

It is difficult to imagine a scene more moving to the master, more gratifying to the pupil, or more honourable to both. As the style was

very characteristic, we select a few passages. He commences the lecture by saying of Sir William Blizard, that " he was my earliest
" instructor in anatomy and surgery, and I am
" greatly indebted to him for much valuable
" information. My warmest thanks are also due
" to him for the *interest he excited in my mind*
" *towards these studies*, and for his excellent
" advice. ' Let your search after truth,' he
" would say, ' be eager and constant. Be wary
" in admitting propositions to be facts, before
" you have submitted them to the strictest ex-
" amination. If after this you believe them to
" be true, never disregard or forget *any one* of
" them, however unimportant it may at the
" time appear. Should you perceive truths to
" be important, make them motives of action.
" Let them serve as springs to your conduct.
" If we *neglect to draw such inferences*, or to
" act in conformity with them, we fail in essen-
" tial duties ! " Again, in remarking how Sir
William excited his enthusiasm by the *beau-
idéál* which he drew of the medical character,
Mr. Abernethy observed: " I cannot tell you

“ how splendid and brilliant he made it appear ;
 “ and then he cautioned us *never* to tarnish its
 “ lustre by any disingenuous conduct, or by
 “ anything that bore even the *semblance* of dis-
 “ honour.” Abernethy then proceeding in a
 strain warm, yet apologetic (Sir William being
 present), at length concluded his public thanks
 to his venerable instructor, by saying, “ what
 “ I have now stated, is a tribute due from me
 “ to him ; and I pay it on the present occasion
 “ in the *hope* that the same precepts and mo-
 “ tives may have the same effects on the junior
 “ part of my audience as they were accustomed,
 “ in general, to have on the pupils of Sir
 “ William Blizard.”*

Abernethy then proceeded to advocate similar

* Sir William was a good surgeon and an excellent man. He was born at Barnes, in Surrey, and practised his profession until his death, which took place at the advanced age of ninety-three. One of his eyes was affected with cataract, which was removed by operation when he was ninety-one. He was enthusiastically fond of his profession, and was chiefly remarkable for his zealous observance of its honourable practice, and his indifference to lucre. He died in 1835.

lofty views of the nature and duties of our profession in the following manner : “ That which
“ most dignifies man is the cultivation of those
“ qualities which most distinguish him from the
“ brute creation. We should indeed seek truth
“ for its importance, and act as the dictates of
“ reason direct us. By exercising our minds in
“ the attainment of medical knowledge, we may
“ improve a science of great public utility. We
“ have need of enthusiasm, or of some strong
“ incentive, to induce us to spend our nights in
“ study, and our days in the disgusting and
“ health-destroying duties of the dissecting-room,
“ or in that careful and distressing observation
“ of human diseases and infirmities, which can
“ alone enable us to alleviate or remove them ;
“ some powerful inducement,” he adds, “ exclu-
“ sive of fame or emolument, (for unfortunately
“ a man may attain a considerable share of re-
“ putation and *practice without being a real*
“ *student of his profession.*) I place before you
“ the most animating incentive I know of—that
“ is, the enviable power of being extensively use-
“ ful to your fellow-creatures. You will be able

“to confer that which sick kings would fondly
 “purchase with their diadems, which wealth
 “cannot command, nor state nor rank bestow.
 “—To alleviate or remove disease, the most
 “insupportable of human afflictions, and thereby
 “give health, the most invaluable of human
 “blessings.”

When Abernethy entered the London Hospital, he soon gave proofs that Sir William's lessons were not unfruitful. He was early employed to prepare the subject for lecture. Anatomy is usually taught by combining three plans.

In one, the various structures, muscles, vessels, nerves, &c., are exposed by the removal of their covering and connecting-tissues, and so displayed as to be clear and distinct. This is, “dissecting for lecture;” and it is the duty of the lecturer to describe the connections and immediate uses of the parts so displayed.

The body is then laid on a clean table, covered with a white cloth, and everything is ready. There is some difference in these matters in different hands; but attention to

order and cleanliness goes a long way in facilitating anatomical pursuits. To many there may be much that is disagreeable in anatomy, but we are persuaded that a coarse and vulgar inattention to decency, has often alone rendered it disgusting or repulsive.

The other plan is not materially different from the foregoing, excepting that it is generally done by the anatomical assistant—technically, the “demonstrator.” The parts having been somewhat exposed, are left, as much as is consistent with clearness, in their natural and *relative* positions; and vessels, nerves, muscles, &c., which had been for the most part described *separately* by the lecturer, are now “demonstrated,” (as the phrase is,) *together*. The relative positions of all parts are thus more especially impressed on the student. In these “demonstrations” there is the same attention to covering the body with a cloth, &c., as in the lecture.

Lastly, the pupil is required to make out the parts by dissecting them himself, with such occasional assistance as may be at first

necessary, and which is given by the demonstrator, who attends in the room for that purpose.

Now these duties (the lecture only excepted) were early performed by Abernethy. We may safely infer from this that he was distinguished by his industry and zeal in the pursuit of knowledge, and that he began thus early to cultivate that power of communicating what he knew to others; in the exercise of which he ultimately acquired a success, *curiosa felicitas*, in which he excelled all his contemporaries. That special qualifications were already discernible, we may infer from the post he occupied; this is usually filled by a pupil of the hospital to which the school belongs, whereas Mr. Abernethy was an apprentice of a surgeon of St. Bartholomew's. On the testimony of a contemporary and fellow-student, Mr. W. W. Cox, late of Wolverhampton, we learn that he began to individualize himself very early. That, at the London Hospital, “he was for the most part reserved, seldom associating with any of the other students, but sitting in some place or corner by himself,

“diligently intent on the business of the lecture.” Sir William Blizard is known to have felt proud of him, and to have soon indulged in great expectations from his character and talents.

I have already observed that Abernethy had the advantage of attending also the Surgical Lectures of Mr. Pott, at St. Bartholomew's. Mr. Pott was a gentleman, a scholar, and a good writer, and seems to have been a spirited and attractive lecturer. In an oration delivered by Sir William Blizard, in 1815, it is said that “it was difficult to give an idea of the elegance of his language, the animation of his manner, or the perceptive force or effect of his truths and his doctrines,” a character which is by no means inconsistent with Mr. Pott's more studied compositions.

Such opportunities were not lost on Abernethy. He soon became possessed of what was known in the ordinary business of anatomy and surgery. His diligence too had afforded him an opportunity of testing those powers of communicating what he knew, to which I have

just alluded. As an apprentice of a surgeon of Bartholomew's, his views were directed in that hospital; and it was not long before the resignation of Mr. Pott, and the appointment of Sir Charles Blicke, who was assistant surgeon, to succeed him, opened to Abernethy an arena in which he might further mature that capacity for *teaching* his profession, which had been, as we learn from his own testimony, an early object of his ambition, and for which he had already begun to educate himself at the London Hospital.

CHAPTER V.

“Terra salutiferas herbas eademque nocentes
Nutrit, et urticæ proxima sæpe rosa est.”*

OVID.

A LARGE London Hospital (if we may be excused the Hibernianism, as Mr. Abernethy used to call it), is a large microcosm. There is little in human nature, of which an observant eye may not here find types or realities. Hopes and fears, joys and sorrows, solace and suffering, are here strangely intermingled. General benevolence, with special exceptions. There is no human good without its shadow of evil; even the benevolent must take care. Impatient

* “The same earth nourishes both wholesome and noxious plants, and the nettle is often next the rose.”

sensibility is much nearer a heartless indifference, than people generally imagine. The rose Charity, must take care of the nettle Temper. The man who is chary or chafed, in yielding that sympathy which philosophy and feeling require, must beware lest he degenerate into a brute.

One of the brightest points in Abernethy's character, was, that, however he might sometimes forget the courtesy due to his private patients, he was never unkind to those whom charity had confided to his care. One morning, leaving home for the hospital, when some one was desirous of detaining him, he said: "Private patients, if they do not like me, can go elsewhere; but the poor devils in the hospital I am bound to take care of."

But to the hospital. Here we find some that have had the best that this world can give—some who have known little but misery; the many no doubt lie between, but all come upon the same errand. Disease is a great leveller. There all flock, as to Addison's

Mountain of Miseries, to get rid of their respective burthens, or to effect such exchanges as benevolence may have to offer, or the grave can alone supply. Our large hospitals have a most efficient "*matériel*;" the accommodations are extensive, the revenues princely. St. Bartholomew's, for example, has a revenue of between twenty and thirty thousand pounds a-year, and is capable of receiving six hundred patients.

As regards what is mechanically or physically necessary to the comfort of the inmates, the ample appliances of our large hospitals leave little or nothing to be desired. There is every facility too for the execution of the duties, that convenient space, and orderly arrangement can suggest; in short, everything, in the general sense of the word, that money can procure. Then there are governors, whose hearts are as open as their purses, whose names are recorded in gold letters, as the more recent or current contributors to the funds of the establishment, and who rejoice in the occa-

sional Saturnalia of venison and turtle; all duties or customs which may be observed, with the gratifying reflection that they are taking the thorns out of the feet of the afflicted; provided only that they do not involve forgetfulness of other duties, the neglect of which may plant a few in their own. The governors determine the election of the medical men, to whom the welfare of the patients and the interests of science are to be entrusted.

We have said that money cannot procure all things, and one of these is mind; a remark requiring some qualification certainly, but this we must refer to a subsequent chapter. Minds such as Abernethy's, are not to be found every day; and notwithstanding the sumptuous bill of fare we have already glanced at, there are many things in a large London Hospital, yet to be desired; defects which, though it need no great penetration to discover, may, for aught we know, require public attention and the plastic hand of power to supply.

Abernethy was elected assistant surgeon of St. Bartholomew's Hospital, July 15th, 1787.

Sir Charles Blicke, an assistant surgeon, had been appointed to the surgeoncy vacant by the resignation of Mr. Pott, and Abernethy succeeded to the assistant surgeoncy thus vacated. The election was contested by two or three other candidates; amongst the rest, by Mr. Heaviside. This gentleman was an eminent surgeon, and a gentlemanly, facetious, and agreeable companion. He was originally in the Guards, and practised in London many years with great credit and respectability. He was fond of science, and expended considerable sums in the formation of an interesting museum. In the earlier part of his life he gave conversaziones, which were attended by great numbers both of the scientific and fashionable.

He lived in a day when, if a gentleman felt himself insulted, he had at least the satisfaction of being relieved from his sensibility, by having his brains blown out in a duel—professionally speaking, by a kind of “operative surgery,” viz., the demolition of the organ in which the troublesome faculty resided.

Mr. Heaviside, in his professional capacity, is said to have attended more duels than any other surgeon of his time. This gentleman, albeit not unused to one kind of contest, retired from that at the hospital; which then lay between Mr. Jones and Mr. Abernethy, the former polling twenty-nine, the latter fifty-three votes.

This was an important epoch in the life of Abernethy. It is difficult to adjust the influence which it ultimately exerted for good or evil, on his future prospects and happiness, or on his relations to science. The hospital, by this step, secured a man of extraordinary talent, it is true, and in spite of a system which indefinitely narrows the field of choice; still, for no less a term than twenty-eight years, the "system" (which we shall by-and-by describe) kept Abernethy, as regards the hospital, in a position which, although it did not exclude him altogether from the field of observation it afforded, did much to restrict his cultivation of it. His talents for observation, nevertheless, and the estimation in which he was soon held, no doubt enabled him, to a certain extent, to

bring many of his views to the test of practice. Still, as an assistant surgeon, except in the absence of his chief, he had officially nothing to do; whatever cases he conducted, were only by sufferance of his senior.

This, for a man of his ability, was a false and miserably cramped position, one, in fact, much better calculated for detecting faults, than for developing the best mode of correcting them. As assistant surgeon he had no emolument from the hospital; he had, therefore, a very reasonable inducement to set about doing that for which he felt himself calculated, and to which he had early directed his attention—namely, to teach his profession. The event showed that he had by no means miscalculated his powers. These proved well-nigh unrivalled. The appointment to St. Bartholomew's, besides other advantages, gave him an opportunity of lecturing with the *prestige* usually afforded by connection with a large hospital. He did not, however, at first give his lectures at the hospital, but delivered them in Bartholomew Close.

There was at this time, in fact, no school,

properly so called, at St. Bartholomew's. Mr. Pott had been accustomed to give about twenty-four lectures, which, as short practical discourses, were first-rate for that period ; but there were no other lectures, not even on anatomy ; which are essentially the basis of a medical school.

Dr. Marshall, who was a very remarkable man, and no less eminent for his general ability than for his professional acquirements, was at this time giving anatomical lectures at his house, in Bartlett's Buildings, Holborn. In a biographical notice of him in the "Gentleman's Magazine," in which we read that he was giving lectures about the year 1787, it is incidentally remarked that, "in all probability he derived little support from St. Bartholomew's Hospital, for that recently an ingenious young gentleman, Mr. Abernethy, had begun to give lectures in the neighbourhood."

Abernethy, who seems to have been always seeking information, certainly attended some of Marshall's lectures, because he would occasionally refer to anecdotes he had heard there. He had thus listened to most of the best lecturers of

his day—Sir William Blizard, Dr. Maclaurin, Mr. Pott, and Dr. Marshall. To the experience which he had thus acquired, and with the early intention of applying it, he added a remarkable natural capacity for communicating his ideas to others. We thus begin to perceive his early cultivation of that aptitude for lecturing, by which he ultimately achieved such excellence in that mode of instruction.

We desire to impress this feature in his education, because by-and-bye it will, with other things, assist us in a rather difficult task: that is, an attempt to analyze the means by which he obtained such a power over his audience. He thus became a teacher at the age of twenty-three, at a large hospital where he was about to commence a school, of which he would be at first the sole support. This necessarily involved a fearful amount of labour, for an organization, active and energetic, but by no means of great physical power.

Labour, to be sure, is the stuff that life is made of; but then in a fine organization like Abernethy's, it should be directed with economy

of power, and in application to the highest powers. Such an organization should, if possible, have been relieved from the drudgery which lies within the sphere of more ordinary capacity. Ready as we are then to congratulate the young philosopher, about to display his powers on a field where he was so successful, still misgivings creep in which restrain, or at least moderate our enthusiasm. Unusual ability, no doubt, allows men to anticipate the order which, as the rule, Nature seems to have assigned to the pursuits of intellect; but we must not suffer ourselves to be blinded to the rule, by the frequency of the exception. Youth is the time for *acquiring* knowledge; and although there is no reason why the fruits may not be imparted to others as fast as they are gathered, still when the larger space of a man's time at twenty-three is devoted to *teaching* merely, it may be reasonably doubted whether it be such a disposition of it, as is best calculated to economise his power, or develop the maximum of its influence, in *extending* the science to which it is devoted.

John Hunter declined undertaking to teach anatomy at forty (1768), because it would have "*engaged his attention too much* to admit of "that general attention to his profession, to "forming habits and established modes of "thinking, which he thought necessary." In Abernethy's after life we think we saw a good deal of the wear and tear that early and diversified labour had impressed on his physical organization. In advancing life, the natural desire for ease, if not carefully guarded, may not be without its perils; but precocious labour, stinted rest, and the malaria of large cities, crowded hospitals, and filthy dissecting-rooms, too certainly bring on a train of evils, not less grave, because more distant.

We shall have to revert to these points when in conclusion we consider the variety and importance of his contributions to the science of his profession, and why they were not still more numerous; the latter, though perhaps the less grateful, is by no means the least useful portion of biographical analysis.

Commencing his lectures in Bartholomew

Close, they soon seem to have attracted notice. The anatomical courses, which were always on a similar plan, were very skilfully framed, to interest and instruct the students. The arrangement of the matter was such, that the dry details of anatomy were lighted up by a description not only of the purposes served by the various parts, but by as much as could be conveniently included of the diseases or accidents to which they were subject; and thus the juxta-position of the structure, function, and diseases, naturally tended to impress the whole.

Diseases of more general site, and which did not therefore fall conveniently under discussion in describing any one part, were reserved for a separate course of lectures. It was in this course that he more fully developed those general principles on which his reputation more especially rests. Of his inimitable manner we shall speak hereafter.

He was one of the first who insisted on the great importance of Comparative Anatomy in studying the uses of the several parts of the

human body. Were it not for the comparison of the relations of various parts in different animals, we should be continually the victims of hypotheses, which the juxta-position or other characters of organs in any *one* animal are constantly suggesting. Here necessity compels the observance of that rule of inductive philosophy, which seeks not for the true relation of any one thing in *itself*, but from *universals*, from uses and application which are common to *other* things. In one case nature makes that luminously clear, which is only dimly shadowed forth in another; and in seeing organs under every conceivable variety of circumstance, we learn to estimate at their full value, characteristics which are common and inseparable from all; the only point whence we can securely deduce their real uses in the animal economy. Of this Abernethy early saw and inculcated the advantages.

As it was impossible to combine anything like a comprehensive study of a vast science in the same course with lectures on human Anatomy, he was accustomed, at the con-

clusion of the course, to devote a lecture or two to select illustrations of this very important subject. This he ultimately relinquished, the universal admission of the fact rendering it no longer necessary.

We shall have occasion, by-and-bye, to record the circumstances under which one of the most important steps was taken for securing the interests of Comparative Anatomy in this country ; a proceeding in a great degree owing to the good sense and personal influence of Abernethy, and exemplifying in the admirable fitness of the individual,* the penetrative perception of character which distinguished his early Preceptor in Anatomy.

We have little doubt that we have now entered on the most laborious part of Abernethy's life, and that during this and some succeeding years his exertions were so great and unremitting that he laid the foundation of those ailments, which at a comparatively early period of life began to embitter its enjoyment,

* Professor Owen.

and to strew the onward path with the elements of decay and suffering.

He lectured himself on anatomy, physiology, and pathology, besides surgery, subjects which are now usually divided between three or four teachers. There is abundant evidence that he was an attentive observer of what was going on in the hospital. He was assiduous in visiting most places where any information was to be obtained. We find him attending Mr. Hunter's lectures, and constantly meditating on what he heard there, thus seeking opportunities of making himself more and more familiar with those opinions, which in his view, on most of the points to *which* they related, *were* definite—cautiously deduced—not always clear perhaps, but when understood—truthful.

He endeavoured further to mature an accurate perception of Mr. Hunter's views by seeking private conferences with him, and Hunter kindly afforded him facilities for so doing. We have Abernethy's own acknowledgment of this, coupled with his regret that he could not more frequently avail himself of them. Indeed, when

we consider that Abernethy lived at this time in St. Mary Axe, or in Mildred's Court in the Poultry, that he was lecturing on the sciences I have mentioned, that he was observant of cases at the hospital (a very timeful occupation), and consider the distance between these points and Mr. Hunter's residence in Leicester Square, or his school in Windmill Street, we see there could not be much time to spare. It was not, however, merely during the time at which he was delivering his lectures that he was thus actively employed. We have not unfrequently evidence that he was often at the hospital late in the day in the most leisure season in the year, when perhaps his senior had, during his absence in the summer, confided the patients to his care.

We used to get occasionally such passages as these in the lectures: "One summer evening, "as I was crossing the Square of the hospital, "a student came running to me," &c. Very significant of continued attention during the summer or leisure season, he not being, be it remembered, other than an assistant surgeon,

and not therefore necessarily having duties at the hospital.

At this period it was a common practice with him to rise as early as four in the morning. He would sometimes go away into the country, that he might read, more free from interruption. He also instituted various experiments, some of which we shall have shortly to notice, for the philosophical spirit in which they were conducted. His visit to France must have been made about this time, when the celebrated Dessault was at the height of his reputation. His stay could not have been long, in all probability ; but we have evidence showing how quickly he perceived, amidst the success of Dessault, the more important defects of the hospital—the Hôtel Dieu—to which he was *chirurgien-en-chef*, and the influence exerted by them on his practice.

As we shall be obliged again to mention Dessault in connection with a material item in the catalogue of our obligations to Abernethy, we postpone for the present any further remarks on that distinguished French surgeon.

Abernethy now continued actively engaged in the study and teaching of his profession. The most remarkable circumstance at this time of his life, and for several years, was his peculiar diffidence—an unconquerable shyness, a difficulty in commanding at pleasure that self-possession, which was necessary to open his lecture. Everything connected with his lectures is of importance to those who may be engaged in this mode of teaching, or to those who may desire to learn. No man ever attained to excellence more varied or attractive, yet many years elapsed before he had overcome the difficulty to which I have alluded.

An old student who attended his lectures, not earlier than 1795, told me that he recollected several occasions on which, before beginning the lecture, he had left the theatre for a time, to collect himself sufficiently to begin his discourse. On these occasions a tumult of applause seemed only to increase the difficulty. The lecture once commenced, I have no evidence of his having exhibited further embarrassment. He seems early to have attained that happy

manner, which though no doubt greatly aided by his peculiar and in some sense dramatic talent, there is every reason to believe had been carefully cultivated by study and observation.

His lectures continuing to attract a larger and larger class, the accommodation became inadequate for the increased number of students. The governors of St. Bartholomew's therefore, in 1790, determined on building a regular theatre within the hospital. It was completed in 1791, and Abernethy gave his October courses of anatomy, physiology, and surgery of that year in the new theatre. He had thus become the founder of the School of St. Bartholomew's, which, for the approaches it made towards giving a more scientific phase to the practice of Surgery, was certainly superior to any other.

In expressing this opinion, we except, of course, John Hunter's lectures, for the short time that they were contemporaneous with those of Mr. Abernethy; John Hunter dying, as we have said, in 1793. As St. Bartholomew's Hospital was our own Alma Mater, we

may perhaps speak with a fallible partiality, but we think not. We are far from being blind to the faults which Bartholomew's has, in common with other schools, and we believe regret as much as anybody can do that the arrangements of our hospitals, excellent as in many respects they are, should still so defectively supply many of the requisitions which the interests of science demand. Some of these defects we may endeavour to point out in their proper place. We shall now leave the subject of Mr. Abernethy and his lectures, and begin to consider some of his earlier efforts at authorship, sketch the objects he had in view, and the mode of investigation.

CHAPTER VI.

“All things are but altered, nothing dies,
And here or there the unbodied spirit flies.”

DRYDEN.

THE most universal character impressed on all created things that sense allows us to recognize, or philosophical inquiry to demonstrate, is “change.”

While nothing is more certain, few things pass less observed, or when first announced, more stagger conviction.

An old man sees the yew-tree of his boyish days apparently the same. Gilpin tells us eight hundred years is “no great age for an oak!”*

* “Forest Scenery.”

The cliff though "beetling," seems to beetle still; mountains appear to be everlasting; yet, were seas and rivers to disclose even a small part of their mission, the Danube or the Volga might tell of millions of tons of soil carried from higher levels to the Black Sea and the Caspian. Animals, too, are mighty agents in recording the mutability of the matter of the universe. Coral Reefs, never spoken of in smaller terms than miles and fathoms, are the vast ocean structures of countless millions of animalcules, which serve, as it were, to link together the two great kingdoms of organic nature—the animal and vegetable creation. The microscopic geologist informs us of whole strata, well-nigh entirely composed of the sili-cified skeletons of insects. Sir Charles Lyell further impresses on us the reality of continual change by referring (and, as it would appear, with increasing probability) even the stupendous changes demonstrated by geology, to the agency of causes still in operation.

Animals, however, besides the curious structures which they combine to contribute, are

individually undergoing constant change. Man is not only no exception, but he is a "glaring" example.

The whole human race are in hourly progress of mutation. In the midst of life we are in death, is a truth to which physiology yields its tribute of testimony. Every moment we are having the old particles of our bodies silently taken away, and new materials as silently laid down. Surrounding agencies—which during life are necessary to existence, the moment the breath leaves us, proceed to resolve the body into the elements of which it was composed. In all cases change may be regarded as the combined result of two forces—the force acting, and the body acted on—that is to say, of certain external agents, and certain forces inherent in the thing changed.

Animals are no exceptions to this view, and diseases are amongst a multitude of other exemplifications of it; but, in order to distinguish these more clearly, it is desirable that we should be familiar with those more ordinary changes in the body, which are constantly going

on, and to some of these were Abernethy's early investigations directed.

In proceeding to give some account of his works, we must be necessarily more brief than a scientific analysis would require.

To do him full justice, it would be necessary to republish his writings with appropriate commentaries. We shall hope, however, to do enough to relieve his memory from some of the numerous misconceptions of his principles and opinions, and to endeavour to show his claims to the respect and gratitude of posterity.

In everything Abernethy did, we find evidence of the acuteness of his mind, and his general qualifications for philosophical research.

His lectures had gradually attracted an increasing number of students; and he seems, about 1791, to have been desirous of prefacing his lectures on Anatomy by discussing the general composition of animal matter.

The rapid advance of chemistry had given a great impetus to this kind of investigation.

Abernethy was not only well up in the chemistry of the day, but also not unskilled in the manipulatory application of it; and he felt interested in the great diversity of substances that appeared to be made up of similar elements. Boyle has recorded a vast number of facts, many of which would even now well repay the studying; and Fordyce was certainly one of our most philosophical physicians.

Boyle had grown vegetables in water and air only, and found they produced woody fibre. Fordyce found that gold fish placed under similar conditions, not only lived but grew. Abernethy's experiments had for their object to inquire how far organized bodies (animals and vegetables) were capable of deriving their various structures from similar simple elements.

He grew vegetables on flannel wetted from time to time with distilled water, and then analyzing them, compared the results with those of the analysis of vegetables grown in the ordinary manner.

Other curious experiments consisted in pouring concentrated acids on vegetable structures,

with a view to dissolve any alkali or iron which they might contain, and then analyzing the vegetables so treated.

He now found in the burnt vegetable, lime, iron, &c., which, had they been free to combine, should have been taken up by the acid to which he had subjected the vegetable before he analyzed it; but he found neither in the acid, whilst both were discovered in the vegetables.

He also inquired whether tadpoles and leeches would live when kept only in distilled water, with the admission of air. For example, he placed twelve leeches in two gallons of distilled water. They weighed in all twelve scruples. In three months two had died, but the remaining ten weighed twelve scruples, showing that they had grown. He next inquired whether vegetables grown in air and distilled water would admit of further conversion into the structure of animals, and for this purpose he fed rabbits on vegetables so reared. His rabbits appear to have eaten about six plates at a meal of young cabbages thus reared on flannel wetted with distilled water.

He also experimented on eggs both before and at the time of incubation.

He wished to ascertain the quantity of lime in the chicken and the egg respectively, and whether any of the lime was absorbed from the shell, which it appeared not to be.

It is curious to observe the time and labour he gave to these experiments; they evince a very perfect knowledge of the chemistry necessary; and the circumstances calculated to interfere with or obscure the conclusions from them are judiciously stated.

Many of his remarks exemplify the caution with which he reasoned, and they are interspersed with ingenious suggestions. In speaking of his experiments on leeches and tadpoles, many of which latter had become perfectly developed frogs, he says: "The experiments
" which I made on this plan (in vessels of dis-
" tilled water covered with linen) were made in
" the summer, when to prevent vegetation was
" impossible; and on the other hand, when the
" vessels were covered over, even leeches died.
" In the winter vegetation might cease, but then

“the torpid state of the animals would render
“the experiments inconclusive.”

He reduced an equal number of eggs and chickens (at the time of incubation) to ashes, sometimes in crucibles, sometimes in retorts. On the ashes he poured some distilled water, and ascertained the salts (as lime, &c.) contained in them. In some experiments the quantity of these found in the ashes of the chickens greatly exceeded that found in the ashes of the eggs. In other experiments the quantities were equal.

In some of his experiments, after using the best chemical tests for detecting iron, lime, salt, and then washing the residue with distilled water, he burnt it in a crucible, and found more lime and iron; on which he makes the following remarks, which suggest what we apprehend, even at this time, is a very necessary caution:

“This circumstance proves to me that the
“substances found in the ashes of burnt animal
“matter do not formally exist in the mass before
“its destruction, but are only new distributions
“of the same ultimate particles which, under

“their former mode of arrangement, made the
“animal substance, but which being driven
“asunder, by the repulsive power of fire, are left
“at liberty to form other modifications of
“matter.” Page 97. Just what happens in the
formation of ammonia, when animal matter is
burned, by the union of the nitrogen and hydro-
gen gases then set free.

He investigated also the question of how far
the results of the decomposition of animal
matter would be identical if the analyses were
conducted by heat, or by putrefactive decompo-
sition. In this experiment he selected blood,
and he found that blood which had been
allowed to putrify yielded a *much larger quan-
tity* of iron and lime.

The whole of the experiments are very sug-
gestive, full of thought, and of extensive views
of the relations of organic with inorganic
matter. He concludes by observing that he
had undertaken these experiments for the
reasons already assigned, and because he had
imbibed the idea that the *ultimate particles of
matter were the same*.

He remarks that the progress of chemistry had not been applied, in every respect, to the best purpose; that men's views were becoming contracted by being directed to individual objects; and that they had ceased to contemplate the beautiful and extensive prospect of matter and its combinations; and he complains that even Fourcroy, Lavoisier, and Chaptal, either avoid the subject, or do not sufficiently consider it. We must recollect this was said before Sir H. Davy had made his splendid discoveries. Abernethy, after observing that he hopes his experiments will induce others to investigate the subject, concludes thus:

“ I know not any thought that on contempla-
“ tion can so delight the mind with admiration
“ of the simplicity and power evident in the
“ operations of the Creator, as the consideration
“ that by different arrangement and motion of
“ singular atoms, He has produced that variety of
“ substances found in the world, and which are
“ so conducive to the wants and gratification of
“ the creatures who inhabit it.”

SECTION I.

“Mors sola fatetur
Quantula sint hominum corpuscula.”

JUV.

Amongst a multitude of examples, which teach us how little we can infer the importance of anything in nature from its size or other impression which it may convey to mere sense, we might adduce the wonderful little tubes, certain relations of which were the objects of this paper. Those constant mutations in animal bodies, which are every moment in progress, are in great part due to a very curious order of vessels of such extreme minuteness and tenuity, that being in the dead animal usually empty and transparent, they are very commonly invisible, and thus long eluded discovery. There is one situation, however, in which circumstances combine to expose them to observation. Transparent though they be, they are here usually rendered visible, first by being loaded with a milk-like fluid, and secondly by being placed between

the folds of a membrane, itself beautifully transparent (the mesentery). This fluid, they have just taken up from the digestive surfaces on which their mouths open, and they are now carrying it off to pour it into the blood-vessels, that it may be added to the general stock of the circulation.

In the situation above-mentioned, they were at length discovered about the commencement of the 17th century. Everything destined to support the body with new material, as well as the old, which is to be taken away, must first be sucked up by the myriads of inconceivably minute mouths of these vessels, which, from their office, are called the *absorbents*. These absorbents may, therefore, be regarded as the sentinels of the body. They are very sensitive and excitable; but besides this, they have in the course of their journey from the surfaces whence they bring their contents, and the blood-vessels, to which they are carrying them, a number of *douaniers*, or custom-house officers (the glands or kernels, as they are popularly called), whereby, as we have every reason to believe, the fluids they are im-

porting are subjected to rigid examination ; and if found to be injurious, to some modification, tending to render them more fit for admission into the system.

If the contents are very irritating, these vigilant guards—these kernels—become very painfully affected, and sometimes inflammation is set up, sufficient even to destroy the part, as if, faithful to their trust, they perished themselves, rather than give entrance to anything injurious to the body.

We should never advance, however, in our story, if we were to tell all the interesting peculiarities of these curious vessels.

When first discovered, and the office assigned to them could no longer be disputed, the general distribution of them was still doubted. As it was usual to render them visible by filling them with quicksilver ; so with a kind of reasoning which has too often characterized mere anatomical research, when they could not be made visible, it became the fashion to doubt their existence. Amongst other structures, Bone was formerly one in regard to which people found a

difficulty. How could such delicate vessels exist in such an apparently dense structure? but Mr. Abernethy, who had always opposed mere eye-reasoning, used to observe with equal simplicity and good sense, that, for his part, he could see no more difficulty in an absorbent taking up a particle of bone, than he could in comprehending how a vessel could lay it down, which nobody doubted. We now know that bone is not only supplied with all the vessels which characterize a living structure, but so liberally, that, in comparison with some other structures of the body, we regard it as a part of high organization.

Nevertheless, the extreme minuteness and transparency of these vessels conferred a great interest, in obtaining any magnified view of them, such as that afforded in larger animals. In the paper before us, which was published in the "Philosophical Transactions" for 1793, Mr. Abernethy gives the account of his examination of the absorbents in a whale; and his object was to help to determine a question long-agitated, whether the glands, or kernels,

were composed of cells, or whether they were merely multiplied convolutions of vessels. He selected the absorbents from the situation to which I have already referred. He threw into the arteries which carry blood to nourish the gland, a red solution containing wax, which of course became solid on cooling; and into the veins which return the blood from all parts, a similar solution, only coloured yellow. He filled the absorbents with quicksilver.

He found in filling the absorbents, that wherever the quicksilver arrived at a gland, there was a hesitation—its course became retarded, and that this retardation was longest at those glands which were *nearest the source* whence the vessels had drawn their contents, viz., the alimentary canal: as if the surfaces over which the fluid had to pass were more multiplied where most *necessary*, or, recurring to our metaphor, as if the more strict *douanier* had been placed on the frontier. He says that he found that some of the absorbents went *over* the glands, whilst others *penetrated* these bodies. That he found that the melted wax

which he had thrown into the vessels had formed round nodules of various sizes. He then extended his examination of these vessels to those of horses and other large animals ; and the result of his investigation was, that it inclined him to the conclusion that the glands were not merely made up of convolutions of vessels, but were of a really cellular structure.

The paper is very modestly put forth, and he concludes it by observing that he offers it merely for the facts which it contains, and not as justifying any *final* conclusion ; but “ as all our “ knowledge of the absorbents,” he continues, “ seems to have been acquired by fragments, I “ am anxious to add my mite to our general “ stock of information on the subject.”

It may not be uninteresting to some unprofessional readers to know that the glands here alluded to are the organs which are so seriously diseased in those lamentable conditions, popularly expressed, I believe, by the term mesenteric disease, or disease of the mesentery.

SECTION II.

CURIOUS CASES PUBLISHED IN THE "PHILOSOPHICAL
TRANSACTIONS," 1793.

"The Universal Cause

"Acts to one end, but acts by various laws."

POPE.

However paradoxical it may appear, it is not the less true, that nothing more teachingly impresses the inquirer into nature, with the *actual* presence of general laws than the *apparent* exceptions to them. Finite capacities in dealing with the Infinite must of course encounter multitudes of facts, the meaning of which they cannot interpret; portions of the Divine Government, as Butler has said, which they do not as yet understand.

In philosophical investigations they are properly regarded as facts which, in the present state of knowledge, cannot be made to fall under any of our very limited generalizations.

At one period, departures from the ordinary

structure or form in animals were simply regarded as unintelligible abstractions, and no more philosophical expression was given to them than "Lusus Naturæ,"—sports of nature. Progressing science, however, has thrown considerable light on such phenomena, and invested many of them with a new interest.

Physiologists have not arrived at the explanation of all such facts, but much has been done by comparative anatomy to show that many of them are merely arrests of development, and cases of interference with the ordinary law.

That, in fact, they show the mutual harmony and connection of the laws of nature to be such that the development of any one law implies the concurrence, so to speak, of some other, just as the successful incubation of an egg, or any other familiar fact, implies the presence of certain conditions. We cannot boil a drop of water without the concurrence of various laws: we say it boils ordinarily at 212° of Fahrenheit; but how many conditions this involves!

Until understood, how few could have guessed

that mechanical pressure could have so modified the degree of heat necessary, as to exalt it to more than double, or reduce it to less than half; and again, how few would have looked for the force which, under common circumstances, governed the point at which water was thus converted into steam, in the pressure of the atmosphere; yet so mutually influential are these conditions—namely, heat and a certain pressure in modifying this change of form or matter—that some of Faraday's most interesting results in experimental chemistry (we allude to his reducing several gaseous bodies to the liquid form) were obtained by *abstracting* heat and increasing pressure.

It is of very great consequence to remember these interferences in relation to disease, because most diseases may be regarded as examples of them. Considered as "abstract wholes," they are necessarily unintelligible entities; but when looked at as natural processes obscured by interferences, they either at once become intelligible, or, at least, as open to investigation as any other facts in natural philosophy.

When we investigate the laws of nature with a view to the development of the sublime objects of natural theology, the concurrence of the various conditions, necessary to the most ordinary phenomenon inclose the most irresistible proofs from natural evidence, of the Unity of the Creator.

Regarded in the light of facts, which we may not be able to generalise, the cases here recorded by Abernethy are very interesting, although we much regret that both cases were bodies brought in for dissection, in times when the circumstances baffled, if they did not forbid, any inquiry into the histories of them. It is lamentable to think of the state of the law with respect to Anatomy at that time.

Any surgeon who was convicted of *mala praxis*, resulting from ignorance of Anatomy, was severely fined, perhaps ruined ; and yet so entirely unprovided were the profession with any legitimate means of studying Anatomy, that they could only be obtained by a connivance at practices the most demoralizing and revolting.

Bodies were, in fact, chiefly obtained by the nightly maraudings of a set of men, who, unin-

fluenced alike by the repulsions of instinct or the terrors of law, made their living by the plunder of grave-yards.

Many a tale of horror, no doubt, might be told on this subject.

Graves were sometimes watched, and severe nightly conflicts took place with a deadly spirit, which it is not difficult to imagine. We believe all this has now passed away ; there is no necessity now for such revolting horrors. The public began to *think* for themselves, the real remedy for abuses. But to our cases. Both were curious ; the one was the body of a boy, who did not appear to have been imperfectly nourished, but in whom the alimentary canal was found to be less than one-fourth of its natural length, and in which also the relative length of its two grand divisions was reversed. The smaller in diameter, being usually very much the longest, was so much the shorter as to be only half the length of the division of larger diameter.

The other case presented a no less curious departure from the usual plan than a reversed

position of the heart, which, instead of being placed with its point as usual on the left side, was found to have that part situated on the right. In the ordinary arrangement there is a difference on the two sides of the body, in the manner in which the large vessels are given off to supply the head and upper extremities. These differences existed, but were reversed; the arrangement of vessels ordinarily found on the right, being here on the left side, and *vice versâ*.

The heart, however, would not be thus prevented from pumping the blood to all parts as usual, but another very singular arrangement was found in relation to the liver. To the unprofessional reader we should observe, that usually, whilst all parts are made, or secreted as we term it, from the purer or arterial blood; in the human body, the Bile is secreted from a vein which enters the liver for that purpose.

Now in the case before us, this great vein never entered the liver at all, so that in this instance the Bile was separated, like other animal fluids, by the arteries. In this case the arteries going to the liver being larger than usual.

Mr. Abernethy examined the bile by submitting it to various tests ; and comparing the results with those obtained from ordinary bile, he found them to be the same. His remarks are, as usual, ingenious and to the point, and very characteristic of the penetrative perception with which he seized on the proximate and practical relations of facts. “ When we see the “ unusual circumstance,” says he, “ of secretion “ taking place from a vein,* we are apt to con- “ clude that the properties of such a secretion “ require that it should be made from venous “ blood. But, in this case, we see that bile “ could be prepared from arterial blood ; and “ we are led, therefore, so far to modify our “ conclusion as to infer, not that venous blood “ is *necessary*, but that it can be made to “ answer the purpose.”

We must not omit that these remarks are supported by comparative anatomy. As we descend in the scale of creation from the more complicated organizations to those which are more simple in

* The ordinary plan in respect to bile in the *human* body.

their structure or their relations, the arrangement which I have stated as usual in man no longer obtains, but the bile is secreted from the arteries as the other fluids of the animal, showing, in fact, that the inference drawn by Abernethy was the legitimate conclusion.

Since the discovery of this case, one or two others have been observed ; and the opinions of several eminent men in relation to the bearing such cases have on the ordinary sources of bile, are described in Mr. Kiernan's interesting paper on the Anatomy and Physiology of the Liver, in the "Philosophical Transactions." It is very interesting, particularly to a professional reader, to peruse that discussion, in order to estimate Mr. Abernethy's comparatively simple, ready, and, as it would seem, correct view of the subject.

One other thing we learn from these cases—the extreme importance of examining bodies whilst their histories and symptoms can be recorded. It might have been highly useful to science, had the histories of these cases been known ; and the circumstance should be men-

tioned as, in some measure, tending to counter-balance in the public that not unnatural but (as regards their real interest) not less to be lamented aversion to the inspection of the dead—a branch only, it is true, but a very important one of physiological inquiry. It is the only means of which we can have the comfort of knowing that, however unable we may have been to arrest disease, we were at least right in the seat we had assigned to it; but it is infinitely more valuable in disclosing to us affections of organs which *had given no sign*, and in thus impressing on us the necessity of taking a wider range in our investigations, and comprehending in them all those injurious influences which have, at various periods, acted on the body; for we thus obtain an insight into the nature of disease which no mere symptoms can ever afford us.

The repulsions which the public have to overcome are admitted; but let us not, in common justice, forget those sacrifices of time, labour, and too often of health also, which are made by the profession. Nor is it immaterial to men-

tion that it is a service for which they seldom receive any remuneration, the only incentive being one which, if it excite no sympathy, is at least entitled to respect—namely, the desire to improve their knowledge of their profession. There is no doubt of the deep and common interest which the public and the profession have in this question; and it is from that conviction that I have ventured on these few remarks. Abernethy, when he introduced any subject in his lectures, was accustomed to say at once all that he intended to remark on it. I beg, in the foregoing observations, to follow his example, which I trust the reader will accept as an apology for the digression.

CHAPTER VII.

“L’art (de délicatesse) consiste à ne pas tout dire sur certains sujets, à glisser dessus plutôt que d’y appuyer ; en un mot, à en laisser penser aux autres plutôt que l’on n’en dit.”—BOUHOURS.

ONE of the most beautiful poems in the English language, perhaps, is Armstrong’s “Art of Health.” Whether it be that the title is uninviting, or from some other cause, I know not, but it is very little read ; yet scarcely any one who has read it, has done so without pleasure. Besides containing many admirable and valuable instructions, it shows how an ordinary, and to many even a repulsive subject, can be treated with such discretion, taste, and even

elegance, as to render it pleasing and attractive.

Such a writer could have conveyed, even in prose, explanations of disease, so as to interest and instruct his readers. With no such power we are almost inclined to regret the impossibility of doing Abernethy justice, without saying something of nearly all his works. If, however, in so doing, we make one more step towards familiarizing the public with matters which affect their best interests, we shall not regret any labour which this, the most difficult part of our task, may have required.

We so usually connect pain with disease, that in our haste we are apt to imagine that it is not merely the worst feature, but the only sign of it. "I am very well, I am in no pain whatever," is a common expression, and yet a person may be irremediably stricken, without suffering any pain. Pain is, in fact, often the best possible monitor, and has saved many thousands of lives by the necessity it has imposed of observing what is the best of all remedies, in a large class of cases. Amongst hundreds of

examples, we might cite several affections of joints, wherein pain alone has sometimes exacted the observance of that which surgeons were a long time before they had learned the full advantage of; which, when they had been taught it by Abernethy, they have often failed with all their endeavours to accomplish, but which, when efficiently secured, is of more consequence than any one other remedy, we mean "*absolute repose.*" There are plenty of diseases marked by little or no pain, or which, at all events, are not painful; but they are amongst the most fatal and insidious of human maladies. Let us commence the record of some of the numerous improvements we owe to the genius of Abernethy, by mentioning one of them.

We have too many of us, probably, observed something like the following on the assembling of a family of a morning; the usual greetings interchanged, and that cheerful meal, breakfast, fairly begun, our attention has been directed to some fine, comely, perhaps beautiful girl, who, to the hilarious spirits of her laughing sisters, has only contributed a somewhat languid smile.

We may, perhaps, have remarked that she is a little more spoken to by her mother than any other of the family circle ; we may, too, have observed a tone compounded of confidence and gentleness, somewhat different from that addressed to her sisters. Still, though less hilarious than the rest, she has chatted away with considerable cheerfulness ; she has, however, a languor in her manner, which but for the surrounding contrast, might not have occurred to us. On rising from the breakfast-table, we observe that her gait is peculiar. She is not exactly lame, but her step has something between firmness and faltering, that seems to indicate more effort or less power.

Poor girl ! she is about to have, if she have it not already, a stealthy and hitherto almost painless disease ; stealthy, because it is so far, a comparatively painless malady. Deep in the loins there has been the smouldering fire of disease, which is to result in what is called "Lumbar abscess." This grievous malady, which in *many instances* begins not less insidiously than I have mentioned, is found on inquiry not to have been *wholly* without some

of those premonitory signs, with which the beneficent laws of the animal economy almost invariably precede even the most insidious malady. Inquiry generally elicits that, however little complained of, there has been at times more or less of uneasiness, if not pain, felt in the loins, that it has not been so much lately, but that it has become less in force or frequency, since the appearance of some swelling, which may be in the loins, or some other part lower or more or less distant.

It is a malady very commonly connected with diseased spine, but frequently without any such complication; and it is curious that Mr. Abernethy at first met with as many as, I think, eight cases in succession, which were not complicated with any disease of the spine. Under any circumstances, it is a serious malady, and usually when the collection bursts, or is opened, severe constitutional symptoms supervene, which, though not without exceptions, gradually usher in what Armstrong calls

“The slow minings of the hectic fire,”

and destroy the patient.

Now, Mr. Abernethy's plan was intended to prevent this last and dreaded issue. The chief points of excellence in his recommendations are, first, the emphatic recognition of the constitutional origin and nature of the malady; secondly, the consequent necessity of a greater attention to the general health of the patient; and lastly, if it could not be dispersed, to relieve the interior of its contents, so that its extensive surface should never be exposed.

The mode of proceeding was extremely simple, and there is no doubt that a great many lives have been saved by the practice thus recommended. I have heard, however, that some surgeons think the merits of the plan overrated, which I can only suppose explicable on the ground that it has been imperfectly followed out; and I am the more disposed to this view, because nothing can be more entirely opposed to Mr. Abernethy's principles and intentions, than the treatment of many cases, said to have been treated after Mr. Abernethy's plan.

As a considerable number of families have really a painful interest in this question, I will,

at the risk of being a little professional, state what has occurred to me on the subject, in explanation of the apparent discrepancy. My own experience obliges me to coincide with those authorities on this subject, who, approving Mr. Abernethy's practice, adopted it. Amongst a host of eminent men, I will mention only two, Sir Astley Cooper, and a scarcely less eminent authority, Mr. Samuel Cooper, the laborious and distinguished author of the "Surgical Dictionary," who observes that Mr. Abernethy's plan deserves "infinite praise." Sir Astley Cooper, too, in speaking of a very dangerous period of the case, to which Mr. Abernethy's plan has an important relation, says: "We should adopt "the plan suggested by Mr. Abernethy, as it "is the best ever invented by any surgeon." The apparent discrepancy in the results of the experience of different surgeons, is rather a matter of degree, and admits of easy explanation.

The feature whence the disease derives its name is merely a partial exposition of an exceedingly deranged state of the whole economy, not unfrequently complicated with organic

disease. Although Mr. Abernethy's paper shows that even these cases are not necessarily fatal, still, in general, such, will sooner or later, terminate unfavourably under any treatment; but in many others, the explanation which I first suggested has been a satisfactory solution of the failure. In some, the local relief has been by no means conducted with the observance of those conditions which Mr. Abernethy has enjoined. In others, there has not been even any reasonable approximation to that careful attention to the general health which is the necessary basis of the plan.

Another point which has, in some cases, impeded the adoption of the practice is the increased responsibility it seems to involve. If a surgeon is to be mistrusted, and charged with either; the "laisser mourir" is less injurious to him than the "tuer." What we mean is this: Everything sometimes is going on well until the opening of the deposited fluid. If it be left to open by the ordinary processes of nature, the subsequent symptoms are ascribed to the usual course of the disease; but if the surgeon has

interfered, and, from any circumstance whatever, the opening does not heal, or bursts soon after from some slight accident (which has now and then happened), the surgeon is blamed. The only remedy for this is to impress the necessary caution; repose of the part, and so forth.

There is, however, a third point of great practical consequence on which Mr. Abernethy has been misunderstood: I allude to the local condition under which the puncture should be made. When, notwithstanding our persevering observance of all measures calculated to repress the diseased actions, or to procure the absorption of the deposited fluid, we perceive it to be increasing or approaching the surface, *then before any inflammation* of the skin has taken place, it should be discharged.

In many cases, *this* opening has been delayed until the skin has become inflamed or much attenuated. Now this risks the accomplishment of an object which it is a material point with Mr. Abernethy to secure—namely, the *immediate healing* of the puncture.

On this point, even so good an authority as Sir Astley Cooper has given a misdirection. "Let the abscess proceed," says Sir Astley, "until you observe a blush or redness on the skin, and then adopt Mr. Abernethy's plan." Now this direction does not absolutely prohibit the opening of the cyst with the object which Mr. Abernethy had in view; but, as before stated, it deprives us of one desirable condition. To settle this point, we quote Mr. Abernethy's own words. In discussing the point of time at which the opening should be made, he asks: "Are we to wait until evident *signs of inflammation* appear? "I think not." Accordingly, in a case where the surface had become red, we find he took care to *avoid* opening it *at that part*, because it risked the security of at once healing the puncture.

The truth is, that the *whole* of the plan is most valuable, but it must be carefully followed in its integrity; and that this may be done, the principles on which it is founded must be constantly kept in view. These are: the im-

provement of the general health, with the view of arresting the action of disease, and producing the absorption of the morbid secretion; this failing; to puncture the abscess, so as to secure the discharge of its contents without the admission of air, and on conditions calculated to *ensure* the immediate healing of the wound; then to favour the approximation of the sides of the cavity, by relieving it of its contents, by puncturing it anew, before it shall have become so much distended.

Another misapprehension has arisen with regard to Mr. Abernethy's object in excluding air; and unnecessary pains have been taken to show that the presence of air is not injurious to living surfaces. It was not from any apprehension of this kind that he was anxious to exclude the air, but from the tendency that the *presence of air* had to favour the *putrefactive decomposition* of the new secretion. We must not omit to mention the origin of this beautiful paper, as it is highly characteristic of Abernethy's acuteness of observation, and his promptitude in the practical application of it.

A lumbar abscess had been opened by caustic, and when the eschar partially separated, the cyst was partly emptied ; the sides of the cavity collapsing on the imperfectly separated eschar, the opening was closed, and none of the usual constitutional disturbance followed. When, however, the eschar finally separating, exposed the cyst, within twelve hours the usually dreaded disturbance of the system supervened. Abernethy took the hint thus disclosed to him, and produced the improvement, the merits of which we have endeavoured to give a brief representation.

CHAPTER VIII.

HIS ESSAY ON THE SKIN AND LUNGS.

“It is madness and a contradiction to expect that things which were never yet performed should be effected, except by means hitherto untried.”—BACON, NOV. ORG. APH. 6.

THIS simple and instructive aphorism, when we consider the object of the distinguished author in the immortal work whence it is taken, is highly suggestive to those who are aware of the present state of medicine and surgery, and who desire to see them become a definite science. Nor does it appear inappropriate to the consideration of Abernethy's experimental in-

quiries into the functions of the skin and lungs. An *extended* investigation of which this paper contains an excellent type, and is in part a practical application, would be a great step towards the creation of a real science, and would certainly fall within the "means untried" of Lord Bacon.

Although the latter part of the last century, and the first half of the present, have been very remarkable for the number of distinguished men who have flourished during that period, in almost every branch of knowledge, yet neither the bar nor the senate, neither literature nor any of the sciences can boast of greater men, nor lay claim to more positive improvement than Chemistry.

If we only consider that interval between the discovery of oxygen by Priestley, in 1774, and the conclusion of Sir Humphrey Davy's labours, Chemistry almost seems like a new science; and it continues to advance with such rapidity, and is daily opening out so many new questions, that the most accomplished chemist of one year is never sure how much he may have to

learn the next, nor, unless he reasons with great caution, how much he may have to *unlearn*.

To a physiologist who requires assistance *from all branches of science*, Chemistry must always be an interesting study. When we lay aside all speculations as to what is the abstract nature of Life, and study that which is the proper object of philosophy—that to which it seems the faculties of man are limited—namely, the *laws* in obedience to which the phenomena in nature occur; and apply the knowledge thus obtained to the occurrences which take place in the human body; we soon discover that, whatever the abstraction “Life” may be, we live proximately, in virtue of certain changes in various forms of matter; as food, air, the various constituents of our bodies, &c.—and that these consist of multiplied separations and rearrangements of their respective elements, which it is the special province of Chemistry to examine.

If we investigate the changes of the living or the structure of the dead with these objects, we shall be in no danger of abusing Chemistry to purposes to which it is inapplicable. When,

however, we proceed a step further, and seek to give a *chemical expression* to various uses and relations of different parts of the body, the greatest caution is required.

In the first place, in a machinery which is a practical application of a great many sciences, it is to the last degree improbable that they can be expressed by any one.

Again, to estimate the true meaning—the physiological interpretation of many changes which might be in their proximate sense chemical—a greater familiarity with the phenomena of *disease* is necessary than usually falls within the inquiries of the most scientific chemist.

To a person acquainted only with the ordinary phenomena of health, Chemistry is for ever suggesting tempting analogies, which are constantly tending to mislead him to conclusions on insufficient data; and to examine and rest too much on the *chemical* facts deducible from one or other function, without sufficiently attending to the *physiological* relations of that function with all others.

In fact, for want of due caution, or it may be

of a sufficient range of information, the assistance which Chemistry has hitherto rendered to Physiology has been attended with so many assumptions, that it is extremely difficult to say on which side the balance lies; of advantage or error. We are aware that at this moment there is a contrary feeling—a kind of *furor* for chemical solutions of physiological phenomena. We believe the caution we venture on suggesting was never more necessary.

The discovery of oxygen gas by Priestley, not only gave a great impetus to chemical inquiries, but affected Physiology in a very remarkable manner; when it was found that the *more obvious* phenomena of all cases of ordinary burning; lamps, candles, and fires of every kind, consisted mainly of the chemical union of charcoal and oxygen (carbonic acid), and again, when it was discovered that animals in breathing, somehow or other produced a similar change, one may conceive how ready every one was to cry: “I have found it! The heat of animals
“is nothing more than combustion! We inhale
“oxygen; we breathe out carbonic acid; the

“ thing is plain. This is *the* cause of animal
“ heat !”

It has always struck us as a curious thing that chemists should have attached such a dominant influence in the production of heat in animals, to the union of carbon and oxygen ; because nobody is necessarily so familiar as they are, with the fact that the evolution of heat is not at all peculiar to the union of these bodies ; but is a circumstance common to all changes of every kind, in all forms of matter ; there always being either the absorption or the evolution of heat.

There is no doubt that the analogy is very striking between the changes which *appear* to be wrought in respiration, and those which take place in ordinary combustion. A very little consideration, however, shows that the idea that respiration is the cause of animal heat, or that it is due to any other change of oxygen, is not only an assumption ; but in the highest degree doubtful. In the first place, the carbonic acid thrown out when we expire is certainly *not* made by the immediate union of the oxygen inspired with the charcoal expired ; secondly,

nothing is so clear that in respiration there is an immense quantity of heat *thrown out* of the body. But as it is very desirable that the subject of this paper of Abernethy's on the Skin and Lungs should be understood, we will give the reader a simple view of the nature of these important organs ; and as one (functionally considered) is as much a breathing organ as the other, we will say a few words first of the lungs.

In all animals,* the blood, or other fluid in which the elements of nutrition are sent to all parts, is exposed to the action of the air, and this is what we call breathing or respiration ; and the exposing of the blood to air is so arranged that both fluids are in *more or less* rapid motion. The staple constituents of the air, so to speak, are about one-fifth oxygen and four-fifths nitrogen gases, with about two parts perhaps in a thousand of carbonic acid ; and although, as we too well know, the air is occasionally polluted by many *additions*, yet whether we take air from the top of Mont Blanc, or a

* This statement does not hold, I believe, in regard to Entozoa (animals living in the bodies of others), or at all events is not proved.

cellar in London, the *staple* principles of oxygen and nitrogen have their proportions unchanged. The air breathed by animals, who live in the water is somewhat differently constituted; the proportion of oxygen is considerably greater, probably about as much as one-third or thirty-two parts in one hundred; so that fish breathe a more *highly oxygenated* air than we do.

Now it is found that when we inhale the air of the atmosphere (that is to say, one-fifth oxygen and four-fifths nitrogen), that we expire some oxygen, some carbonic acid, and some nitrogen also; and to ascertain the actual changes *which* took place, was the object of Abernethy's inquiry.

The subject is one of great interest to the public, and in justice to Abernethy we should remark that this essay was written more than half a century ago—1793.

Thousands die every year of affections of the lungs; and many diseases of these organs, if not in their nature incurable, have too generally in practice proved to be so. There are not

wanting, however, many persons who ascribe these mournful results, not so much to the abstract difficulty of the case, as to imperfect and erroneous views of the functions and relations of these important organs; and who entertain the opinion that the investigation of the subject has been either from preconceived notions, from a too limited view of the phenomena, or from some other cause, so infelicitously conducted, that the conclusions arrived at, have been either merely assumptions, extremely doubtful, or absolutely erroneous.

It is sufficiently obvious that if we are ignorant of the use of any part of a machine, it must be the most unlikely thing in the world that we should know how to set about repairing it when it is out of order; and the matter must be still worse, if we should happen to ascribe a use to it which is different or contrary to that which it really fulfils. So, in an animal, if we are ignorant of the use and relations of any organ, it is very improbable that we can understand the nature of its disorders, or treat them in any case successfully, except by the merest accident,

which, though it may waken us up to a sense of our ignorance, leaves us so blind to the causes of our success that we have no power of repeating it.

Now this is pretty much the actual state of affairs in respect to diseases of the lungs. No investigation of any organ is worth anything, unless it include its relations with other organs in the same machine.

What should we ever learn by looking at the mainspring of a watch, apart from the general machinery to which it belongs? Though we should look for ever, and employ a microscope to boot, it is clear we should never arrive at the perception of its true relations.

Abernethy's inquiry derived great interest from the investigation of the skin by which it was preceded, and which seems to have formed his primary object. A few words on this wonderful organ may help the unprofessional reader to form some estimate of its relations and importance. As in all animals, it is the surface in immediate contact with external influences—the first which attracts our

notice—so it is of all others the first which presents to us the evidence of design and adaptation. We tell the climate an animal inhabits, with moderate certainty, by looking at the skin; and if we occasionally meet with apparent exceptions, further examination usually shows that they exemplify the more strikingly the unity of plan. Thus we may find animals who inhabit *hot* regions furnished with a somewhat warm covering of the skin, as the tiger, for example; but when we examine the eye, and inquire into the habits of the animal, we find that he preys or feeds at night, when the atmosphere is charged with damp and cold.

We know that the animals whence we obtain our furs inhabit cold regions. The changes in the same animal are not less instructive. Animals placed in certain circumstances, in which they require greater warmth, have increase of covering, and *vice versá*. Again, the tendency to become white, in those inhabiting cold regions, is a very interesting adaptation, although I am not aware that it has been satisfactorily explained. Two things, however, are

certain, that they are placed in different circumstances as regards the relation to heat, and would reflect a great quantity of light, which, in its intensity in snowy regions, might be prejudicial, as there is no doubt of the influence of this principle in animals. Again, it is a very common arrangement that animals should take the colour of the ground they occupy; and this is sometimes very curiously exemplified. I have observed in the common hunting-spiders which inhabit some palings in a garden in the country, that they are of different shades, but they all more or less resemble that part of the old paling on which they are found. Those which we see on the ground are generally of some darker colour. Birds exemplify in a very remarkable manner the adaptation of their external coverings to the requisitions which their habits establish. All animals may be said to be surrounded by an atmosphere of their own, and they are not therefore, strictly speaking, in contact with the atmosphere; but when they are exposed to air in motion, this stratum is blown aside, and the atmosphere is brought in contact with the surface. Its refrigerating in-

fluence is now felt ; and just as a boy cools his broth by blowing on it, a fresh stratum of cold air is constantly brought to the surface.

This is variously met in different animals ; in the healthy human subject, by increased activity of the vessels of the skin, which induces greater heat. Birds, in their rapid flight, and especially in the more elevated regions of the atmosphere, are exposed to intensely refrigerating influences. These are met by the surface being clothed first by fine feathers, the worst of all conductors of heat, and these are overlapped where they meet the atmosphere in such a way that the bad conducting property of the feathers is increased by the mechanical arrangement of them. Again, the respiration of birds, which (as we contend) is a refrigerating process, is very restricted ; although for want of due consideration of all the circumstances, and especially of certain analogies afforded by insects, very opposite views have been entertained. Domestic animals (birds inclusive) impressively suggest the refined adaptation of colour even, of the whole surface to the altered

position of the individual. Nothing is more striking than the general uniformity of colour in wild animals, few things more familiar than their infinitely varied hues when domesticated. Now it is certain that these differences have a meaning, and that their relations are important; but when we extend these thoughts from the coverings of animals to the consideration of surface whether of animals or vegetables, what wonderful things occur to us. Every variety of colouring which we observe in domestic animals, every spot on an insect's wing, every pencilling on a flower, places the individual in a different relation, so far, to light, heat, and other powerful agents in nature.

Or if we look from another point of view; we cannot walk by a hedgerow in summer without observing how very small the differences of light and aspect are, which seem on the same soil to confer on the same species of flowers such numerous varieties of colour. I have most frequently observed this in the common cranes-bill, or wild geranium.

In order to estimate correctly the value of

these surfaces to the animal or vegetable, it is obviously of great importance to us to know what they do, and if they give off anything, to ascertain its nature. That either animal or vegetable may be healthy, the processes of nature, whatever they are, must be carried on; and we may be assured, that the fragrance of the rose is just as necessary an exhalation *from* the plant, as it is an agreeable impression *to* us.

But all animals may be said to breathe quite as much by their skin as by their lungs. Leaves, too, are the breathing surfaces of vegetables; and therefore to ascertain the facts in the one without inquiring into those observable in the other, would be likely to fog our reasoning and falsify our conclusions. The first impression we obtain from all animals is from external form and appearance—from, in fact, its outward covering. It was the first organ to which Abernethy devoted his most particular attention, and here again his investigations show how little those knew of his mind who imagined that his thoughts were restricted to any one set of organs.

In whatever light we view it, the skin is, in

all animals, a most important organ ; and so much so as drolly enough, with the exception of the human subject, to have been long popularly familiar. Yet so imperfect have been the investigation of its functions, that we are at this moment chiefly indebted to the early experiments of Abernethy for what we know that is positive on the subject. The original experiments of Sanctorius were quantitative and, as general truths, of sufficient importance to have excited more attention. Cruikshank's were highly acceptable, but they were less numerous and less varied than those of Abernethy, whilst the labours of Edwards, though exhibiting great industry and zeal, were by no means so conclusive as those of Abernethy. Edwards' experiments served to strengthen and confirm, by the analogy afforded by other animals, conclusions drawn by Abernethy from the more secure premises furnished by the *observation* of corresponding functions in man.

Mr. Abernethy's inquiry was first directed to ascertain what the skin actually gave off from the body ; and secondly, what changes took

place in the air which we draw into the lungs (inspiration). We will endeavour to give some idea of these experiments. They were very simple—they involved no cruelty like those of Edwards—and they were many of them such as the public might repeat without difficulty.

Very useful would it be if persons who have leisure would sometimes engage in physiological inquiries. They would find them to be extremely interesting, and a series of facts would be easily collected, from which the physiologist might obtain the most valuable information, but which, engaged as most of them are in applying physiology to the correction of disordered functions, they can seldom collect for themselves, except in a few hours stolen from those occupied in an arduous profession, and perhaps by the sacrifice of paramount duties.

Mr. Abernethy's experiments were very numerous, and commenced in the summer of 1791; but the winter's cold obliging him to desist, they were renewed in the spring of 1792. Having referred to the experiments of

Ingenhous and Cruikshank, together with an allusion to a paper (not then made public) by Lavoisier, he proceeds to describe his own.

Having a trough containing a large quantity of quicksilver, he filled a glass jar (sufficiently capacious to contain his hand and wrist) with that metal. He inverted it into the trough in the usual way of proceeding in collecting gases. He fixed the glass jar in a sloping position, that he might introduce his hand the more readily beneath the quicksilver. In this way, whatever was given off from the skin of the hand, rising through the quicksilver to the top of the glass, and of course displacing a proportionate quantity of quicksilver, could be made the subject of analysis.

He describes his first experiment as follows: "I held my hand ten minutes in the
"jar beneath the surface of the quicksilver,
"and frequently moved it in that situation, in
"order to detach any atmospheric air that
"might accidentally adhere to it, and afterwards
"introduced it into the inverted jar. The
"quicksilver soon acquired a degree of warmth

“ which rendered it not unpleasant. Minute
“ air-bubbles ascended to the top of the quick-
“ silver, more speedily in the beginning of the
“ experiment, more tardily towards the con-
“ clusion. After an hour had elapsed, I with-
“ drew my hand ; the bubbles of air, which now
“ appeared on the top of the quicksilver, were, I
“ suppose, in bulk equal to one scruple of water.

“ In *sixteen hours*, I collected a half-ounce
“ measure of air, which makes fifteen grains
“ the average product of an hour. No kind
“ of moisture appeared on the surface of the
“ quicksilver. Some sucking-paper was put
“ up, which was withdrawn unmoistened. My
“ hand was always damp when taken out of the
“ quicksilver. Whatever aqueous perspiration
“ was produced adhered to its surface, whilst
“ the æriform ascended to the top of the jar.
“ To the air I had thus collected, I threw
“ up lime-water,* when about two-thirds of
“ it were rapidly absorbed ; to the remainder
“ I added a bubble of nitrous gas ;† but

* The test for carbonic acid.

† A test for the presence of oxygen.

“could not discover any red fumes, nor any
“diminution of the quantity. I repeated this
“experiment six times with similar, though
“not uniform results. I believe it will be
“found that the air perspired consists of car-
“bonic gas, or fixed air, a little more than
“two-thirds; of nitrogenous gas, a little less
“than one-third. In one experiment, the
“nitrogen made only one-fourth part of the air
“collected; in another, I thought it exceeded
“one-third.”

He then made a series of experiments of the same kind, but substituting water for the quicksilver, sometimes heating himself previously by exercise. The results of these were not materially different from those in which he held his hand in quicksilver; but they are less clear because the carbonic acid gas given off seemed absorbed by the water. In the next series of experiments, he held his hand and arm in the atmospheric air. In this case, he found that, in addition to the giving off of carbonic acid, that a portion of the oxygen of the air became absorbed. This is exactly what

happens in the lungs. Now, as the carbonic acid, when given off, is in both cases accompanied by the disappearance of oxygen, and as carbonic acid is composed of oxygen and carbon, it had been usually conceived that the oxygen taken in, contributed to form the carbonic acid given off, and the idea is still entertained very generally.

The experiments of Abernethy, however, presently to be adverted to, in regard to the skin; and those of Edwards long after, in regard to the lungs, satisfactorily prove, we think, that the carbonic acid is not at all derived in the manner supposed.*

To test this matter, Mr. Abernethy confined his hand and arm in various gases containing *no oxygen*, as hydrogen, and then in nitrogen; but he found the carbonic acid gas still given off as before. He then placed his hand in a

* It is in this paper that he uses the significant expression "ventilating the blood," which looks as if the refrigerating effect of respiration—and which we have endeavoured to show is the real purpose of it—had not wholly escaped his notice.

gas *containing* oxygen (nitrous oxide), and lastly in oxygen itself, to see if it *increased* or otherwise affected the elimination of carbonic acid ; but in neither of those experiments was the carbonic acid thrown off, *increased*, or in any way affected by it.

In a subsequent part of the paper, he remarks on the idea that physiologists entertained of the carbonic acid given off by the lungs, being made by the oxygen inspired ; but he says very justly, that the quantity of oxygen is too small for the formation of so much carbonic acid gas as we find given out by those bodies, and that his experiments on the skin clearly prove that the exhaling vessels of the skin emit carbonic acid in a state of complete formation, and then adds, what it is difficult to estimate the merits of, without recollecting that it was said half a century ago (and before the experiments of Edwards), and, “doubtless, those of the lungs perform a similar office.”

This is one of those bold and, we believe, successful reasonings from analogy which were very characteristic of Abernethy. The truth is,

that even the experiments of Edwards, some of which some years ago we repeated ourselves, with the same results, are not, I conceive, so conclusive as the analogy of Abernethy. It is true they consisted of placing frogs and other animals in gases not containing oxygen, when it was found notwithstanding that there was *no* difference in the carbonic acid produced, and which therefore could not have been compounded of any oxygen in the gas. But even here many possible sources of fallacy suggest themselves. The previous expulsion *of all* the oxygen from the animal is obviously a matter of uncertainty. There are besides those sources of fallacy which are inseparable in some form or other from all experiments on animals which disturb their natural habits, especially when these disturbances are so great as to amount to suffering. From all such experiments Abernethy *instinctively* shrunk. His repulsion to them seems not to have rendered it necessary to him to have shown that they were as physiologically inconclusive as they are morally questionable. At all events, his present

experiments were not obscured by any such sources of fallacy.

Still the idea of the carbonic acid exhaled by the lungs, being made up of the union of the carbon exhaled, with the oxygen taken in, continue to be very extensively entertained. We can only say that to us it seems entirely a child of the imagination, what Horace calls

“*Mentis gratissimus error,*”

and shows not only, how few people can find leisure to investigate, but how few venture to observe or think for themselves. Abernethy also experimented by holding his hand in carbonic acid, when he found that in about nine hours three ounces, by measure, of carbonic acid were absorbed by the skin; and in the remaining gas, a considerable quantity of other gas which had been given off; which appeared to be nitrogen.

Desirous of ascertaining the quantity of carbonic acid gas given off by his hand, in different gases in a single hour, he introduced his

hand into various gases. In the experiment with

	Drs.
Nitrous oxide, there came off	6
Hydrogen	4
Atmospheric air	3

The test for the carbonic acid was, as before, in all cases, lime-water. He also found that the skin absorbed oxygen much more readily than most other gases. One remarkable experiment we will notice, to show how laborious all these investigations were, and for the interesting nature of the result. He placed his hand alternately in vessels containing each twenty-four ounces, by measure, of nitrogen and oxygen gases. After eight hours exposure in each, two-thirds of the oxygen had disappeared, whereas only *one-twentieth* of the nitrogen was absorbed. Indeed there is no one feature of these experiments perhaps more interesting than those which suggest the stronger aptitude of the skin to absorb oxygen in comparison

with other gases. For example, Abernethy found that the skin absorbed, by measure :

	Ozs.
Of oxygen gas, in eight hours . . .	8
Of nitrous gas, in five hours . . .	3
Of hydrogen, in five hours . . .	$1\frac{1}{2}$
Of nitrogen, in eight hours . . .	1

Mr. Abernethy then made some experiments on his own lungs, after the manner that Mr. Cruikshank had done, to find the quantity of water exhaled, by breathing into glass jars filled with and inverted in quicksilver, and by other methods, and also to ascertain the change produced in the air by respiration. These are all interesting, but we can only give general results, referring to the work itself, as full of material for thought and future observation. He considered that on the whole the change in the air was, that in one hundred parts, consisting of

	Parts.
Nitrogen	80
Oxygen	18
Carbonic acid	2

that about three parts of oxygen were absorbed, whilst about twelve parts of carbonic acid were exhaled, the nitrogen being little altered or even receiving some small addition. The quantity of inspired oxygen which disappeared varied in different experiments, probably depending on the depth of the inspiration, and the duration between it and the following expiration—the time, in fact, during which it was retained in the lungs. The smallest quantity which disappeared was one-twelfth, the largest one-sixth. The moisture (water) exhaled he found to be about three drachms in an hour.

These experiments, for the particulars of which we must refer to the book itself, contain a calculation of the extent of surface of the body, which he estimates at about two thousand seven hundred square inches—that is, about thirty-eight times that of the hand and wrist on which he experimented. Thus, if we multiply any of the results he obtained by thirty-eight, we shall obtain some idea of the prodigious power of this wonderful organ, and of the vast in-

fluence which its various conditions must exert on the whole animal economy. The whole of the experiments in the paper are just as interesting as ever, and would, we are well persuaded, be found amply to repay further investigation.

They exemplify in every line his clearness of thought, and his care in deducing no other conclusion from the premises than that which they logically justify. The observations which he has annexed to his paper also are just, and of great practical value; they discuss the bearing that the whole has to the relation which exists between the skin and lungs, and the influence of this on the causes of that fell destroyer, popularly known under the title of Consumption.

They are a portion of that investigation of relation between various organs, on which anything like the formation of a definite and practical science must ultimately depend. We shall endeavour in the sequel to explain the ulterior consequences which necessarily arise out of such considerations, when they are duly followed

out. We shall endeavour to point out the share they had, in conjunction with other considerations, in leading to those beautiful and simple principles which Mr. Abernethy was led more especially to advocate ; and show how far he went, as describing the starting point of those who have endeavoured at a fuller development of the consequences of his views.

He remarks justly enough on the determination to the lungs consequent on the repression of the surface, and the necessary *additional duty thrown on these* important organs engaged in a common function with the skin, where the duty of the latter is not performed ; and on the elements thus supplied for disease, *especially* in persons of restricted chest ; relations, be it remembered, which exist between the various other organs of the economy, and which exemplify in a single case truly, what has been, we trust, since shown in regard to organs generally ; how the organ, which may be the seat of the *disease*, may not be the seat of the original *cause*, but really a secondarily

affected organ, a hint which, when followed out, is of *immense practical importance*.

The skin is by no means the only organ which has a community of function with the lungs, or through which these important parts become affected; but if this be so, and diseases of the lungs be treated as an *integral thing*, it requires no great penetration to see how diseases so handled may be incurable; since the real cause may never be ministered to.

Again, if a case should be successfully treated by means which afford all possible relief to the *lungs*, whilst the *primarily affected* organ is also properly treated, it by no means follows that the treatment should be the same in *every case*; for the primarily affected organ may be different in different cases. There is in fact no organ in the body which, when subjected to disordering influences, may not *secondarily* affect the lungs.

The liver is especially apt to affect them. It is engaged, like the lungs, in throwing off large quantities of carbon or charcoal from the system, and has been not very improperly

termed the "abdominal lung." It is constantly also sending through the medium of the heart a large quantity of blood to the lungs. Now, if this blood have not the proper quantity of carbon extracted from it by the liver, or if even the blood be excessive in quantity, why the lungs must have more to do ; and many diseased lungs have been produced in this manner in cases where the chest has been well formed.

There are, however, many intimate relations between organs which do not depend on mere community of function. It is very important that the public should have clear views on this subject ; and if they would only give a little of that attention, which they so often bestow on things infinitely more difficult, there is no doubt many lives would be saved, that are irremediably damaged, as Abernethy says, sometimes even before any symptoms have suggested that there is anything the matter.

But if there be a shadow of truth in Mr. Abernethy's views, and still more in those extensions of them to which they naturally lead, we may learn how necessary is that discrimina-

tion which traces disease to primarily affected organs, and how little success we may expect by treating the lungs as the integral seat of disease, by specifics or such remedies, as tar, naphtha, cod-liver-oil, various gases, &c., which come in and go out of fashion, in a manner sufficiently significant of the claims they can have in a scientific point of view.

Mr. Abernethy also remarks on the comparatively restricted influence of scrofula in constituting consumption. "At one time," he observes, "I examined the bodies of many "people who died of consumption." After describing other appearances which he found, he says, "the greater number were bestudded "with larger or smaller tubercles, or *made uni-* "formly dense (consolidated)." He says, this disease (consolidation) is *very insidious*, that it is often established beyond the possibility of removal before it is suspected; but, he says, he thinks it might be known, for the capacity of the lungs is diminished; and suggests that this should be tested by allowing a suspected case to *breathe into a glass vessel over water*, by

which the quantity of air they can receive is rendered perceptible.

His remarks, too, on the treatment are highly interesting and discriminative, and will not only well repay attentive perusal, but that study which is necessary to the perception of their full force and beauty. When we have to sum up the various influences of the views of Abernethy, we may probably find space for a few facts on that which they exert on the treatment of the lungs and skin; and this not merely as affecting the health in general, but also complexion, and other conditions of these curious and important organs.

We are unwilling to dismiss this paper without directing attention to the illustration it affords of the erroneous views of those who imagine that Abernethy's investigations were confined to the digestive organs, and still less of course to one of them (the stomach). It would, on the contrary, be difficult to find any paper on physiology so comprehensive in its views, so simple and clear as to its object, so cautious and logical in its reasonings, so

free from any bias, or with so little reference, either directly or indirectly, to what are usually understood by the digestive organs. On the other hand, it is an investigation which (as regards the relation which exists between two organs having a common function) is an exact type of what physiological investigation should be. For we have only to extend the idea of a relation which exists between *two* organs, to those which exist between *all* organs ; to regard as their *combined* functions, the sustentation of the life and health of the individual, just as we have been regarding respiration the common function of the skin and lungs ; and we thus arrive at what must be the basis of any sound or comprehensive inquiry into the true relations of the various parts of the economy ; by which alone we can interpret the phenomena of health and disease.

Moreover, however presumptuous the assertion may appear on the one hand, or however humiliating the view it implies of the present state of medicine as a science on the other ; we must regard this investigation in every

philosophical sense of the term as still among the "means untried" of the illustrious author, whose words we have ventured to place at the head of this chapter.

CHAPTER IX.

HIS PAPER ON TIC DOLOREUX.

“ Quis talia fando
Temperet a lachrymis.”

VIRGIL.

PERHAPS of all known torments, there is none that can be compared, either in intensity or duration, with that curious disease which has been called Tic Doloreux. Like the term Neuralgia, it is merely a hard word to express a violent pain in a nerve. Conventionally, the term neuralgia, or nerve-pain, is generally used to express a case where the suffering is of a more or less diffused character. The term “tic” is more usually applied in cases where the seat

of pain is found in some superficial nerve. Neither term has much claim to the character of scientific nomenclature, they are merely equivalent to saying that we know very little of the matter. This obscurity, however, may be soon lessened, if not entirely cleared, by any one who will go to work in the way suggested by Mr. Abernethy's principles, and in which to a certain point they will conduct him. He must, however, recollect that the pain, though a most distressing symptom, is still a *symptom*, and not the *disease* which gives rise to it.

This disease teaches us how beneficently framed we are in relation to all around us, and how small a deviation from a healthy condition of our sensations converts all usual sources of pleasure into so many elements of agony. The breeze, of late so grateful and refreshing, may produce more suffering than would be excited by the most intensely-heated furnace. In other cases, the cool spring, or the most delicious fruit, become causes of torture. We should exceed all reasonable limits if we

were to enumerate all the usual sources of pleasure, which, in different cases, are converted into so many instruments of suffering.

Tic doloureux is indeed a horrible malady ; but one, which, when properly considered, becomes very instructive. It admirably illustrates the views of Abernethy ; and how ready he was to concede all that examination of the views of others, which modesty and common sense requires, as well as how superior his own were both in philosophical acumen and practical value ; first examining the views of others, and finding them defective, he, with the true philosophical spirit which first discovers what is wrong—

“ *Primus gradus est sapientiæ falsa intelligere,*”

then proceeds to develop his own.

The nerves are the organs from which we receive impressions from without, and when their ordinary sensibility is thus morbidly augmented, we may be persuaded that there is something very wrong within.

The tic doloureux is one of the examples showing how cautious and circumspect, and how

modest withal, Abernethy was in advancing to his own comprehensive views of disease, and how entirely antithetical the method he pursued in arriving at them, was to that which attempts to cut the knot of difficulty, by gratuitous hypotheses.

When this disease first began to attract attention, it was suggested that it might be cured by the division of the nerve. The phenomena of the nervous system afforded abundant grounds for mistrusting the soundness of this view. The tendency, however, to confound the more salient symptom of a disease with its intrinsic nature, caused such phenomena to be overlooked or little considered; and the consequence was that where the nerve was divided, the treatment was sometimes entirely confined to that proceeding.

In the end, the operation disappointed expectation; and that which careful reasoning might have predicted as probable, was left to be determined by experiment. In some cases circumstances concurred to produce temporary relief, but on the whole the operation was a failure.

In the case he here published, Abernethy

removed a little bit of nerve from a lady's finger. As she had suffered severely, and he was anxious to give her more permanent relief, he did not rest with merely dividing the nerve. For about nine months the lady was in comparative ease, but then the sensation returned. He remarks on the interest attached to this return of sensation, and observed on the analogy it suggests between the supply of blood and nervous power. For if the vessels conveying the former be tied or obstructed, the supply is gradually restored through collateral channels. The return of the nervous functions after the removal of a portion of the nerve, seemed to favour that view of the nervous system, which regarded as the proximate cause of the phenomena, some subtle principle or other, like electricity or magnetism, or some analogous power, of which the nerves might be the conductors.

Perhaps the most interesting fact of this case, however, was the significant bearing it had on those views which he was beginning to deduce from a multitude of other sources. The fact being, that when the lady died, which she did

about four years afterwards, she died of disordered digestive organs. Showing, therefore, at least, the coincidence of the most severe form of nervous disturbance with disorder of these important functions.

We shall see by-and-bye that Mr. Abernethy made this and other cases the instruments of much future good; but as we shall not be able to digress from that Summary of our obligations, which we shall then be employed in taking, we will add a few words here in aid of removing that difficulty which some people have in understanding how such dreadful pain can result from any organ in the interior of the body; where no pain is felt at all. In order to do this, it is only necessary to have a clear general notion of the nervous system. If you could take away everything but the nerves, you would have the brain, spinal marrow, and certain knot-like pieces of nervous substance (ganglions, as we term them) from which myriads of cords proceeded, varying in size from the smallest imaginable filaments up to moderate sized cords; the ends of the delicate filaments ter-

minating in the various organs and on the surface of the body; millions of messengers of the most extreme sensibility, by which impressions are telegraphed with the swiftness of lightning between all parts of the body. There is, however, a habit or rule which is ordinarily observed, and that is one of the most curious things in the whole range of physiology—namely, that the immediate cause of our recognition of sensation is never in the part itself, but the action is constantly transferred to the extremity of the nerve. When you strike the ulnar nerve at the elbow (popularly termed, sometimes, the funny-bone), you feel it in the fingers to which its branches are distributed.

If you place your finger in cold or warm water, the action that makes you feel it is in the brain; and we infer this, because if we divide the communication between the brain and the finger, you no longer feel the sensation. Now, bearing this in mind, you easily understand how anything disturbing the nerves of any internal organ may produce pain in some distant branch; and that this

is really so, many cases of tic doloieux have furnished conclusive and triumphant proofs. Now, as to *why* it should be seated in this or that particular site is a question of extreme difficulty, as also in what organ the primary disturbance is seated, supposing it to have been in any of them. The former, I believe, is a question we have yet been unable to solve; the latter may usually be accomplished if sufficient pains be taken.

Abernethy, in his lectures on this subject, when observing on the inefficiency of this division of the nerve; which was ministering to effects only, was accustomed to remark, with that peculiar archness of expression which his pupils must so well remember: "I wonder that
"it never entered into the head of some wise
"booby or other to divide the nerve going to a
"gouty man's toe." This was a very characteristic mode of terminating a discussion of any point which he wished to impress on the memory of the pupil.

SECTION.

ON OCCASIONAL CONSEQUENCES OF BLEEDING.

In these days of improved statistical inquiry, it would be a very curious document which should give us the comparative number of persons who are now bled, and that of only fifty years ago; and whilst it would present very instructive data as to the progress of medical science, it would give also some significant hints as to the relations of fashionable remedies. First, almost every barber was a bleeder; and within my own recollection, a lady, who for any serious ailment consulted the most eminent physician in the neighbourhood in which she lived, would allow no one to bleed her but the barber.

Formerly multitudes of people lost a little blood every "spring and fall." Accidents of all kinds afforded a fine opportunity for bleeding. The papers announced accidents generally by the usual "It is with regret that we learn "that Sir Harry —— was thrown from his

“horse in the Park. It was feared that the
 “honourable baronet had sustained serious
 “injury; but, fortunately, Mr. Sharpe was on
 “the spot, so that the patient was immediately
 “bled. He was conveyed home, and we rejoice
 “to hear that he is doing well. The accident,
 “which it had been feared was a fracture,
 “proved to be only a ‘dislocation.’”

The questions in regard to bleeding were said to be who, when, and how much (*quis, quando, quantum?*) but, to our minds, Aretæus has a better saying: “When bleeding is required, there is need of deliberation (*cum sanguinem detrahere oportet, deliberatione indiget*).” We like this better because, in addition to the little words quoted above, it suggests another more important than either—namely, *cur?* why—on many occasions, a favourite inquiry of Abernethy’s.

We recollect a surgeon being called to a gentleman who was taken ill suddenly, and he found two or three servants and the medical attendant struggling very vigorously with the patient. Whilst this was continuing, the first

question put to the surgeon by the medical attendant was :

“ Shall I bleed him, Sir ?”

“ Why should you desire to bleed him ?”

“ Oh ! exactly ; you prefer cupping ?”

“ Why should he be cupped ?”

“ Then shall I apply some leeches ?”

This, too, was declined ; in short, it never seemed to have occurred that neither might be necessary, still less that either might therefore do mischief.

It is the most curious thing to see the force of a well-grown conventionalism. As long as it led to moderately bleeding plethoric baronets in recent accidents, no great harm would have been done ; but the frequency in other cases, in which bleeding was instituted with “ apparent impunity,” was too commonly construed into “ bleeding with advantage,” until the practice became so indiscriminate as to be very extensively injurious. *Now*, comparatively, few persons are bled ; and some few years ago I had a curious illustration of it.

In a large institution, relieving several thou-

sand patients annually, and in which, a very few years before, scarcely a day passed without several persons having been bled, nearly a month elapsed without a single bleeding having been prescribed by either of the three medical officers.

No doubt many persons are still bled without any very satisfactory reason, but we believe that the abuse of bleeding is very much diminished, and that the practice is much more discriminate and judicious. From this, and perhaps other causes, a very important class of cases which engaged the attention of Abernethy, as it had that of Hunter before him, is become comparatively infrequent. But when bleeding was practised with as little idea of its importance, as some other of the barber-surgeon's ministrations, on all sorts of people, and in all sorts of disturbed states of health, and probably with no attention at all to the principles which should alike guide the treatment of the largest or the smallest wound, bleeding was very frequently followed by inflammation of the vein, nerve, or other contiguous structures. These

cases were most of them, more or less serious, often dangerous, and occasionally fatal.

Taking up the subject where it had been left by Mr. Hunter, Abernethy refers to the cases published in the two volumes of the "Medical Communications," by Mr. Colly of Torrington, and by Mr. Wilson, and then proceeds to give some of his own. It is in this paper that he first moots two questions which have since grown into importance, by an extension of some of the practices to which they refer. We allude to the division of fasciæ, and tendinous structures, and also of nerves in states of disease or disorder.

In many cases we see in the application of such measures, how much that clear and quick-sighted discrimination is required, which so eminently distinguished Abernethy. He, however, only *mooted* these questions at that time, for he observes that he had not sufficient experience to give an opinion. The chief value of the paper *now* is, the good sense with which it inculcates a more careful and cleanly performance of bleeding; a more scientific treatment of the

puncture, by neatly bringing its edges into apposition, and by keeping the *arm quiet* until it has healed. Neglect of these cautions in disordered states of constitution, had no doubt been not infrequently accessory to the production of some of the serious consequences against which it is the object of this paper to guard. I need scarcely observe that the whole subject is important, and should be thoroughly studied by the young surgeon.

In 1793, Abernethy, by his writings and his lectures, seems to have created a general impression that he was a man of no ordinary talent. His papers on Animal Matter, and still more his Essay on the functions of the Skin and Lungs, had shown that he was no longer to be regarded merely in the light of a rising surgeon, but as one laying claim to the additional distinction of a philosophical physiologist. The subject (of the skin and lungs) had engaged the attention of Boërhaave a long time before; Cruikshank also, and other very able men had followed in the same wake of investigation; therefore, there was an opportunity

of that test which comparison alone affords. Abernethy was, in fact, regarded at this time more in the light of a rising man, than merely a promising surgeon. He now moved from St. Mary Axe (as I am informed), and took a house in St. Mildred's Court, in the Poultry.

Sir Charles Blicke had moved to Billiter Square. I find by the rate-books, which Mr. R. L. Jones was so good as to inspect for me, that this was in April, 1793. He could hardly fail at this time to have had a very acceptable portion of practice, although we apprehend it was not as yet extensive. His reputation was, however, fast increasing, which the attention paid to his opinion at the hospital at this time, must have materially accelerated.

Certainly not later than 1795, there were very few cases of doubt or difficulty in which, independently of that participation in the consultation at the hospital common to all the medical officers, there was not especial value and influence attached to his opinion; and I have heard a pupil of that day assert, that in cases of real doubt and difficulty, there was

nothing more beautiful in itself, nor more characteristic of Abernethy, than the masterly way in which he would analyze a case, bring the practical points before his colleagues, and at the same time suggest the course he preferred. As from his other occupations it would often happen that some consultation might be pending whilst he was engaged at the theatre or in the museum, it would often happen that a consultation would terminate for the time by some one observing: "Well, we will see what Mr. Abernethy says on the subject."

In 1796, he became a Fellow of the Royal Society, his old preceptor, Sir William Blizard, being one of those who signed the proposal for his election. He only contributed one paper after this to the "Philosophical Transactions." After his death, the Duke of Sussex pronounced a very well-deserved eulogium, of which a copy will be found in the second volume. He had not been idle, however; but, in 1797, published the third part of the "Physiological Essays," and which we will, in the next place, consider.

CHAPTER X.

HIS PAPER ON INJURIES OF THE HEAD.

“Utiliumque sagax rerum.”

HOR.

IN estimating the practical penetration and clear judgment of Abernethy, it was almost necessary to see him placed by the side of other men.

His mind was so quick at perceiving the difficulties which lay around any subject, that it appeared to radiate on the most difficult a luminosity that made it comparatively easy, by at least putting that, which to ordinary minds might have been a confused puzzle, into the shape of an easy, definite, and intelligible proposition.

It was immaterial whether the difficulties were such as could be overcome, or whether they were in part insurmountable; both were clearly placed before you; and whilst the work of the quickest mind was facilitated, the slowest had the great assistance of seeing clearly what it had to do.

All this was done by Abernethy in a manner so little suggestive of effort that, like his lecturing, it was so apparently easy, that one wondered how it happened that nobody could ever do it so well.

But when we saw him placed in juxtaposition with other men, these peculiarities, which, from the easy manner in which they were exhibited, we had perhaps estimated but lightly, were thrown into high relief, and by contrast showed the superiority of his powers.

The second series of Essays he had dedicated to his old master, Sir Charles Blicke. The third, the subject of our present consideration, he inscribed to his early instructor in anatomy, Sir W. Blizard. The dedication is straightforward and grateful.

The first paper of the series is interesting in two points of view. First, it was an important improvement in the management of a difficult form of a very serious class of accidents, "Injuries of the Head;" and secondly, it derives a peculiar interest from the parallelism it suggests, between Abernethy and one of the most distinguished surgeons of France, the celebrated Pierre Joseph Desault. A parallelism honourable to both, yet remarkably instructive as to the superior discriminative powers of Abernethy. Desault's pupil, Bichat, himself one of the most accomplished anatomists of his time, has left an eloquent eulogium on Desault, which, although somewhat florid, is by no means above his merits. He says, he was the father of Surgical Anatomy in France; and certainly few men evinced more sagacity in that immediate application of a fact to practical purposes, which constitutes art, than Desault.

Bichat, in his glowing analysis of Desault's character, amongst other things in relation to his study of the profession, observes of him that, "Un esprit profond et réfléchi, ardent à

“entreprendre, opiniâtre à continuer, le disposa
 “de bonne heure à surmonter des dégoûts qui
 “précédent, et les difficultés qui accompagnent
 “son étude. A cet âge où l’âme encore fermée
 “à la réflexion semble ne s’ouvrir qu’au plaisir,
 “apprendre fut son premier besoin—savoir sa
 “première jouissance—devancer les autres sa
 “première passion.”*

A quick and clear perception, for the most part untrammelled by preconceived opinions, led Desault to a vivid appreciation of the immediate results of surgical proceedings; and as these were definite, successful, doubtful, or abortive, he either persevered with a characteristic tenacity of purpose, or at once and for ever abandoned them. He was remarkably happy in his selection and appreciation of the mechanical parts of surgery, and his quick perception disclosed to him several useful points in practice which depend on the more important truths of medical surgery.

Now *almost* all this, as applied to the active portion of Abernethy’s life, is equally

* Bichat, Eloge de Desault. Œuvres.

true of both. But Desault was by no means so deep or so original a thinker as Abernethy. Like Abernethy, he was clear and penetrative, but he did not see nearly so far, nor were his views nearly as comprehensive. Desault was quick at detecting an error in practice, and in sensibly rejecting it. Abernethy would unfold it, examine it, and, by his talents, convert the very defect into usefulness. Desault had by no means, in the same degree, that power of reflection, that suggestive faculty which, in endeavouring to interpret the meaning of phenomena, can point out the true question which it is desired to ask of nature, as well as the mode of inquiry.

All this and much more was strikingly developed in Abernethy. The paper before us involves a subject which had engaged the attention both of Abernethy and Desault. They had met with the same difficulty; and the practical solution of it which each obtained, though somewhat different, was extremely characteristic. We will try to make this intelligible. In severe injuries in which the cranium is broken, it frequently

happens that a portion of bone is so displaced that it presses on the brain. The consequence of this, in *many cases*, is a train of symptoms sufficiently alarming in themselves, but the actual cause of which many circumstances sometimes concur to complicate or obscure.

The same forces which produce the accident not unfrequently involve a violent shock to the whole body. Sometimes fracture or other injury of other parts. Sometimes the patient is deeply intoxicated. Then, again, patients are presented to the surgeon in different cases at extremely different intervals after the reception of the injury, so that a case may wear a very different aspect, according to period or the phase at which it is first brought under his observation.

These, and many other circumstances, give rise to various modifications of the symptoms, and, *under some complications*, constitute a class of cases which yield to none in importance or difficulty. There is something in the idea of a piece of bone pressing on the brain, which instinctively suggests the expediency of raising it to the natural level. This is, in fact, the object

of what is called "trepanning," or, as we generally term it, "trephining."

This consists in carefully perforating the cranium, and then by means of an instrument adapted for that purpose, restoring the piece of bone, which has been depressed, to its natural level. In many instances the operation was very successful, but in many others the cases terminated unfavourably. From what has been already hinted, it is clear that in many injuries of the head this operation must have been unnecessary, in others inapplicable, and in both (as adding to the injury) mischievous. Still surgeons went on trephining, so that, in a large class of injuries of the head, there was (if the bone was depressed) an almost uniform recourse to the trephine.

Again, in cases where it did not immediately appear that the bone was depressed, too often very unnecessary explorative operations were undertaken to determine that circumstance. In short, there was too much of analogy between the matter-of-course adoption of the trephine in severe injuries of the cranium, and that which

we have noticed in regard to bleeding in more ordinary accidents.

For correcting the abuse of this very serious operation, we are under great obligations to Abernethy and Desault, and we couple these illustrious names together on this occasion because, although the amount of our obligation to Abernethy is much the greater, we would not willingly omit the justice due to Desault.

Desault may have been said to have given the first blow, which so often determines the ultimate fate of a mischievous conventionalism—that blow which *compels the consideration* of its claims on our common sense.

Desault had become extremely disgusted with the results of the operation of the trephine in his hands at the Hôtel Dieu, and on consideration, although, as it would seem from Bichat's edition of his works, that he did not in theory absolutely ignore the occasional propriety of the operation, he practically for ever abandoned it; thus at once cutting the knot he felt it difficult or impracticable to unravel. As this was many years before his death, the

principal argument on which he supported the relinquishment of the operation was simply, that his success in the treatment of injuries of the head had been much greater since he had altogether laid it aside.

This is eminently characteristic of what people call "a practical man," but after all, it is not very sound reasoning. Now, here it was that the discriminative excellence of Abernethy began to tell.

In the first place, he observed that the raising of the bone could only be necessary *where it produced symptoms*. He also observed, that experience had recorded certain cases in which, notwithstanding that the bone had been depressed, the patients had recovered without any operation. Then again, he thought it not improbable that where the depression was slight, even though some symptoms might at first arise, yet if we were not too precipitate, we might find that they would again subside, and thus so serious an operation be rendered unnecessary. These and similar reasonings led him to recom-

mend a more cautious practice, and to refrain from trephining even where the bone was depressed, except on conditions which referred to the general effects of pressure *on the brain*, rather than to the abstract fact of depression of the bone.

He did not stop here ; but having thus placed restrictions on the use of the trephine, where it had been too indiscriminately employed, he then describes the practice which is to be pursued where the pressure is produced from *effusion* on the brain.

Although in laying down the rules to be observed in such cases, there is much of painful uncertainty as to the existence of effused blood, the site it may occupy, and other circumstances of embarrassment ; still the rules he proposes in relation to the avoidance of large vessels, the condition of the bone as indicative of the actual state of the parts beneath it, &c., are all clearly and beautifully stated as deducible from the anatomical and vascular relations of the parts. The result of all this discrimination is, that the

trephine is seldom employed, whilst the treatment of the various injuries of the head is much more successfully conducted.

He next proceeds to consider the distinction between those cases in which the brain has been *shaken* merely (concussion), and those where it has been subjected to mechanical pressure. There are two points in this part of the paper of great interest to the practical surgeon: the one in which he treats of the distinction of the two cases; the other, in which he marshals the discordant practices of different surgeons in cases of concussion, and defines the proper phase of the case in which we may make them respectively applicable. When, for example, we may by warmth maintain, or even by cautious stimulation excite the depressed powers: or by judicious abstinence from either, avoid provoking too violent reaction; and lastly, how we should combat the latter if it unfortunately supervene.

His Remarks on the Assistance to be derived from consideration of the Phenomena of Apoplexy, his reference to the cases which had occurred in

the practice of other surgeons, and the observations he makes on the lamentable omission of facts in the record of cases, are all worthy of profound attention. Equally excellent is the ingenuity with which he attempts the distinction between the cases of concussion and compression of the brain. His endeavour to discriminate the cases in which the effusion, or inflammatory action, respectively, affect one or other membrane, is also extremely sagacious and characteristic. Whether we consider all or any of these features in the paper before us, or lastly, that triumph of science and humanity with which he has so defined the limits of a dangerous operation, as to have achieved a comparative abandonment of it; we think most surgeons will be inclined to regard this essay as one of his happiest contributions to the improvement of practical science.

In 1804, he added some cases in illustration of the views unfolded in this paper; and one case which appeared to be exceptional, with what he considered to be its appropriate explanation. He also gives an interesting case

of a suicide, in whom he had tied the carotid artery, and in whom the operation was followed by an inflammatory state of the brain. Here, again, his quick perception suggested to him the significant idea that *similar* conditions of brain might result from different and even opposite states of the circulation; a conclusion now, I believe, well established, one of great practical importance, and one for which, so far as I know, we are greatly indebted to the observations of "Dr. Marshall Hall on blood-letting." In this case, Abernethy eulogizes the plan recommended by Desault, of feeding a patient by a tube introduced through the left nostril. In concluding this remarkable paper, which shows how much a great mind may extract from common subjects,

"Tantum de medio sumptis accedit honoris,"

we quote one remark which impresses the importance of a requisition, the essential basis of all scientific inquiries—namely, a careful collection of facts.

"In proportion as we advance in knowledge,"

says Mr. Abernethy, "we are led to record
" many circumstances in the progress of the
" disorder which had before passed without
" notice, but which, if known and duly attended
" to, would clearly point out to us the nature
" and remedy of the complaint. Hence the
" records of former cases are of much less value,
" as the symptoms about which we are now
" anxious to inquire, have in them been entirely
" overlooked."

CHAPTER XI.

ABERNETHY'S EXPERIMENTS ON THE MUSCLES IN
FROGS, &c.

“ THERE are more things in heaven and
“ earth than are dreamt of in your philosophy,
“ Horatio,” is a sentiment which, in some form
or other, occurs to the most uninformed peasant,
and to the most profound philosopher.

The very small difference between the acquisitions of the two, however marvellous when viewed abstractedly, sinks into nothing when compared to the secrets of nature which yet remain unexplored. This comparison is the true source of that humility which, while it adds dignity to the acquirements of intellect, is the

foundation on which we may most securely rest the hope of increasing possessions.

The intellectual vision of the wisest man confines him to a very small area, when compared with the boundless realms of nature. There are, indeed, a number of objects within the range of his perceptions whose nature and relations he has the power of examining; but there are also a multitude of others which, from their dimly sketched outline, he feels to be beyond the bounds assigned to his limited faculties.

One of the most curious things in animals is the rigidity or stiffness of their muscles after death. It is the last effort, as it were, of the living principle. This phenomenon may be indefinitely modified by particular states, by lightning, by poison, and other peculiar conditions, induced by the manner and the period at which the death may have occurred; and in all cases it continues but for a short time. It is the last exercise of that power which resides in muscles or flesh, of contracting, and thus moving the various parts to which it is

attached. In a very large sense this power is under the dominion of the will, and enables animals to move as their instincts or their wants suggest.

Now it is a curious thing to think that this power can be excited after death by placing the part between two pieces of metal, or galvanising them; so called, after the name of the discoverer, Galvani.

It is difficult at this day to imagine the astonishment of the wife of Galvani, or his pupil, when first they observed the leg of a dead frog thrown into convulsions on being touched by a piece of metal; such, however, was the apparently simple origin of a long series of wonderful discoveries. It has been well observed, however, that "discoveries, apparently the result of accident, always imply the exercise of profound thought;" and this was no less the case in respect to galvanism. A fact, which but for the mention of it to Galvani by his wife might have passed unobserved, was by the scarcely less than creative

power of mind, improved into a most important branch of human science.

Ignorant as men still remain of the intrinsic nature of the principle or power which gives rise to the phenomenon, the observation and study of its laws and operations have led to discoveries which in their value, their importance, and their surprising character, yield to no other yet achieved.

Abernethy, who at this laborious period of his life had his observation directed everywhere, made some experiments on this power—galvanism—in its relations to the muscles of frogs.

His object seems to have been as follows: Fontana (a celebrated physiologist, born in the Tyrol about 1734) had showed that a muscle which could no longer be excited to contract under water, might be excited anew if taken out of the water and exposed for some time to air. This observation had suggested the idea that air was in some way or other conducive to this “irritability,” as it was termed. Dr. Girtanner

had also endeavoured to prove that the irritability depended on the oxygen taken into the blood during respiration, and further that it was in a direct ratio to the quantity of oxygen respired, "an opinion which some writers in this country seem disposed to adopt."

Abernethy doubted the soundness of such a view, and he accordingly instituted some experiments, in the hope that if he could not absolutely determine the question, he might throw some light on it. His experiments were very numerous, but he published only a few of them. We will give one or two. "*Having killed a* "*frog* (for he properly objected to experiments "on living animals), he experimented on the "muscles of two legs; one was put into a bottle "containing oxygen gas procured from man- "ganese, and which was very pure; the other "into a bottle containing atmospheric air; the "quantity in each bottle was about six ounces "by measure; the limbs were supported in the "airs, and wholly surrounded by them. After "five hours the muscles had nearly ceased to

“act in both limbs; those, however, of the
“thigh belonging to that limb inclosed in the
“common air acted more vividly than the
“others, but in a little time even these could
“no longer be excited. Upon comparing the
“limbs afterwards, the muscles of that which
“had been exposed to the oxygen gas were
“evidently the most flabby. Several other trials
“were made with a similar result;” whence he
observes: “I am disposed to conclude that
“oxygenous gas has *no greater power* of sup-
“porting the irritability of parts *separated* from
“the animal than the common atmosphere.”

In some of his experiments the limbs continued to be excitable after eighteen hours, but with little difference in the two gases.

He next made several experiments by placing the limbs of frogs in nitrogen and hydrogen; the limbs in nitrogen lost their irritability in about two hours and a half, those in hydrogen in about four hours.

Experiments then follow which consisted in placing limbs in carbonic acid and nitrous gases

respectively ; when he found that in both cases the muscles ceased to act in an hour and a half.

He also placed limbs in carburetted hydrogen, and found that they ceased to act after the same period. In other experiments he found the correctness of Fontana's results ; viz., that limbs placed under water, and which had lost their irritability, had for a time, recovered it by exposure to air and moisture.

Perhaps the most interesting of the whole series are those in which he compared the results obtained *in vacuo* and atmospheric air. He says : " I put one prepared limb of a frog
" under the exhausted receiver of an air-pump ;
" it lay on a plate of glass, supported by a cup ;
" zinc was placed beneath the thigh, and gold
" under the leg ; and by means of a probe
" passing through a collar of leather, I could
" touch both metals, so as to excite the muscles
" to contraction. This I did occasionally, and
" found the limb capable of excitement for
" twenty-two hours. The corresponding limb,
" which was left exposed to the atmosphere,
" also contracted at the end of that time ;

“so that it was doubtful which of them
“retained their powers in the greater degree.
“The same experiment was repeated several
“times with results so nearly alike, that I am
“inclined to believe *irritability* continues very
“little longer in common air than it does in the
“exhausted receiver of an air-pump.

“I have frequently produced numerous con-
“tractions in the limbs of frogs inclosed in
“azotic, hydrogenous and other gases, which
“likewise tend to show that the cause of irrita-
“bility does *not depend on oxygen* for its power
“of action.”

He then remarks that, notwithstanding the great importance of oxygen, he thinks it has been overrated, for says he: “Different tribes of
“animals partake of it in different degrees; and
“those who have the least of it are far *from*
“*being the least vivacious.*”

He here reasons on premises which were then universally admitted, and which form at present a portion of many very questionable impressions in relation to respiration.

We mention one, “that fish, frogs, &c., breathe

less oxygen than warm-blooded animals." But whilst in respect to the frog, there are many conditions relating to the skin to be considered before we can admit this proposition, we hold it to be *demonstrable* that fish breathe more oxygen than most other animals; due attention not having been paid to the enormous proportion of oxygen in the air found in water; being in fact about one-third. In his concluding remarks, he says, that as regards nitrogen, hydrogen, and carbonic acid, it only shows what we knew before, that they are injurious to life, and that oxygen is not more beneficial than common air. The experiments "showing the long continuance of life and action in muscles in an exhausted receiver, he considers worthy of notice, as tending to show that the cause of irritability in muscles, when once formed, does not require the assistance of external matter."

Lastly, he gives an experiment on the blood (which shows how he was working in every direction), in aid of the opinion that the blood derives its scarlet colour from the action of

oxygen. "I took the coagulum of venous
 " blood left in a basin after bleeding, and turn-
 " ing it bottom upwards, waited till its surface
 " had become of a scarlet colour. I then took
 " slices of this surface, and similar slices of the
 " interior part of the coagulum, which had a very
 " dark appearance, and exposed them repeatedly
 " to azotic and nitrous gases. The scarlet colour
 " gradually faded upon such exposure; and the
 " azotic gas being afterwards examined, was
 " found to contain oxygen, while nitrous gas
 " was much diminished, doubtless by combining
 " with the same principle. The gases to which
 " the dark-coloured blood was exposed under-
 " went no change in this experiment. That
 " blood takes oxygen from the air, when it be-
 " comes florid, will not, I suppose, be denied,
 " and the experiment I have related shows that
 " it will again part with it, though slowly, with-
 " out *any alteration in its temperature.*"

The principal interest, as we think, of this paper on "Irritability," is the evidence it affords of his determination to keep his mind free from preconceived notions on a subject which was at

that time calculated to mislead him ; especially as he then participated in the general impression that the Oxygen was “ the great source “ of animal heat ;” a view which he afterwards, and as we think for excellent reasons, mistrusted.

This view has been revived, but, as far as we know, in no very philosophical spirit. Whilst we would respect the opinions of men, we can only reason on the paramount authority of nature ; and we see increasing ground to believe that he who would leave out of physiological inquiries so large a portion of the necessary induction as the phenomena of disease, no matter what be his authority, will only add to the number of those who have shown that, the moment we neglect the most comprehensive search for facts, of which our knowledge admits, we fall into error. Mr. Hunter has recorded his opinion of the impossibility of obtaining a knowledge of functions without considering the phenomena of disease ; and all experience hitherto has tended to give this observation the validity of an axiom.

CHAPTER XII.

OF EXPERIMENTS ON ANIMALS.

“ Know, Nature’s children all divide her care,
The fur that warms a monarch warmed a bear.”

POPE.

IN the foregoing experiments, the reader will have observed the significant words, “ having killed a frog,” Abernethy not approving of experiments on living animals. When we reflect for a moment on the thousands of dreadful experiments which have been made on living animals, and the utter inconclusiveness of them for any useful purpose, there are amongst the numerous errors by which so many

philosophical inquiries have been delayed or defeated, few that are more lamentable.

This mode of investigation has not, so far as we can see, produced any one useful discovery; whilst it has tended to obscure, by all that is disgusting and repulsive, the true mode of cultivating a most alluring science.

But as we write, however humbly, as physiologists, we may be regarded as advocating the claims and attractions of that science with something of the *esprit de métier*, rather than in the cautious spirit which should characterize a philosophical discussion; let us for one moment consider the claims of physiology on the attention of mankind.

Physiology has for its object the investigation of the functions and relations of the whole organic kingdom (the vegetable and animal creation), and cannot be successfully cultivated without consulting the phenomena in both these kingdoms of nature.

The branch of physiology most interesting to the medical philosopher is that which deals

with the functions of animals in general, and of man in particular. The special interest to the medical philosopher, is therefore obvious ; let us just glance at its more general claims. Linnæus said that the world was one vast museum ; and it illustrates the nature and attributes of the Deity.

But how ? In the first place, by the numerous evidences it *everywhere* presents even to our finite capacities, of design, wisdom, and power ; and further, of the Unity of that power. But, to our finite perceptions, it does not *everywhere* present evidences of love, mercy, and parental care ; not because they may not exist universally, but because our faculties do not allow us to connect these ideas with any but “sentient beings.”

This alone renders physiology one of the most elevating of all human studies—most general in its application—most comprehensive in the attributes it unfolds to us, and, therefore, most refining to our moral nature.

Although, therefore, we would claim the *special* theological evidences of physiology, as the distinguishing excellence of this science, it is not less commanding as regard the evidences which it affords in *common* with other parts of the Creation.

In animals, we see not less indications of design, wisdom, power, and beauty, than elsewhere; but we *also* see a provision for their wants and comforts, of such a kind as leaves no room for doubting that both have been the objects of design. We need not here go into the multiplied proofs of this proposition. *A priori*, then, it would seem very unlikely that a mode of investigating the functions of animals would be productive, which begins by ignoring one of their most striking relations.

This, too, at once suggests the moral question, Is it right? There is no necessity, for our present purpose, to moot that question. We have, over and over again, challenged investigation, but the case is too clear to admit of discussion. Again, although we humbly

submit that the moral bearing of philosophical questions is always a legitimate subject of inquiry, yet it is inexpedient to introduce that question where it is not required. The questions whether the progress of physiology has been accelerated by experiments on living animals, or whether the treatment of diseases has been improved by that mode of inquiry, or whether it has tended to mislead people into erroneous and mischievous views, are all things that admit of proof entirely independent of moral considerations. Now we should be sorry to appear to undervalue that which we most highly prize, or to represent that to be irrelevant which is, in all subjects, the great consideration; but it is wise to take the ground chosen by those who argue in support of a fallacy, not that which they would ignore or regard as disputable.

As we have already observed, we think it demonstrable, that experiments on living animals, involving cruelty, have been entirely unproductive, whilst they have tended to mis-

lead, more than any other mode of investigation whatever. Some years since we corrected some very unaccountable mis-statements in regard to the experiments of Orfila, Sir Charles Bell, and others, which could only be accounted for by a want of attention to the works from which they were selected ; for it is curious to observe that (though different in kind) the most conclusive evidence of the erroneous value attributed to the experiments, is furnished by the distinguished authors themselves.

Orfila wished to know what would be the effect of various poisons on the animal economy. He therefore set to work as follows :— He opened the gullet of a living animal, put in the poison, and then tied the tube ; and this to ascertain how the stomach dealt with substances of this kind taken into that organ. Now there have been, unfortunately, too many instances afforded by accidents and by suicides, of these very things in the human subject ; presenting us with a series of facts deplorable enough, it is true, but which, regarded merely

as grounds of philosophical inquiry, are free from objection; whilst the experiments made by Orfila on his tortured animals are obviously loaded with all the elements of fallacy. We say nothing of the horrible cries that Orfila describes these animals as uttering; but surely if the object had been to interfere with and obscure the processes of nature by every conceivable ingenuity, one could not have imagined any conditions better calculated for this purpose.

Sir Charles Bell was a physiologist who distinguished himself by a really important discovery, and it has been cited as an example of the successful application of the mode of inquiry in question. Whoever will read his book will at once perceive the truth of that which he himself judiciously observes—namely, that physiology is much more a science of observation than experiment. As to the influence of experiments on animals, in his own discoveries, we have his own authority for denying it. He states very clearly the object with which he

was reluctantly induced to make some experiments. They had, in fact, nothing to do with his *discovery*. They were made in reluctant concession to the slowly-paced perceptions of others.

This he had the manliness to acknowledge, and the benevolence to regret. In short, examine what series of experiments we may, we always find them either wholly unproductive, or if they appear to prove anything of value, it is always something that is much more logically deducible from sources altogether unobjectionable. But if this be so, is there no mischief in unproductive modes of inquiry? Again, putting aside the brutalizing tendency of such practices as part of the moral question: Is life so long? Is Science so easy? Is Physiology, and especially the deplorably halt condition of Medical Science in such a state that we can afford to waste time in vicious modes of inquiry? We think not. Is there nothing mischievous in our endeavour to obtain by the evidence of sense (the eye) that insight into nature which Lord Bacon has so emphatically

warned us, is the office of higher, in fact of our intellectual, perceptions? If we are not allowed to indulge in feelings of disgust and abhorrence at all that is revolting to common sense, and our best and kindest sentiments, can we read without distrust, of experiments which so disgust by their nature, that we know not how to describe them; or which are so revolting, from their cruelty, that the mind recoils from the contemplation of them? Is it possible to read many of the experiments of Spallanzani,* without feeling the same disgust that Abernethy used to express in regard to them; or to read of opening animals alive, dividing them with instruments, breaking their bones, or running red-hot wires into their cavities without feeling (if, indeed, anything better is to be regarded as merely "mawkish sentimentality") that at least valuable time has been wasted in pursuits which have been brutalizing and unproductive?

* See the extracts from his Lectures at the College in the Second Volume.

In a review of some Biography in the "Quarterly," one of the experiments was characterized by the writer as "Hellish;" we have no desire whatever to use unnecessarily strong terms, nor do we think that the one above mentioned was too strong for the case to which it referred; but we think that this extremely fallacious mode of investigation will be most quickly abandoned, by meeting fairly and in a mild and moderate spirit any allegations in its favour. Dr. Hull of Norwich, and several other eminent persons, have expressed their dissent from this mode of inquiry.

For our part, we have several times stated our willingness to discuss any class of experiments which may be selected; for, although we may not express ourselves so well as a late writer in the "Quarterly," yet to our minds heaven and hell do not present an idea of greater contrast, than that afforded by the notion, that laws which govern the whole animal kingdom, and which present at every moment accumulating evidences of goodness and mercy, should be auspiciously

sought, much less have their nature and relations developed by torture of those very objects for whom such benevolent provisions have been designed. We have paid some attention to this subject, and it is very curious to remark that observations or experiments, when they cease to be cruel, become instructive.

Indeed, if we reflect for a moment, we shall see that it must be so. If we desire to know the actual nature of any living being, it must be as if we were ourselves unseen—that is, that the animal may be in a perfectly undisturbed condition. The moment we *lose* this, elements of interference immediately arise and fog our reasoning; and the more refined the inquiry, the more the avoidance of disturbance becomes essential: so that, in fact, the utmost success in obtaining the conditions *philosophically* necessary, depends on maintaining as nearly as possible the natural condition—that is, the comfort of the animal.

In every path of life there are unpleasant duties, and it might have happened that the

functions of animals could only have been investigated by the means we would repudiate; but the simple truth is, that it is demonstrably otherwise.

Abernethy had a decided objection to experiments involving cruelty. He never made any himself that could fairly be so called, and he never alludes to the subject without some remark tending to show his disapproval of them. Nor is it, in our view, any disparagement that his benevolent feelings were largely influential in governing his opinions on this subject. He began his researches with the ability and inclination to investigate Life under every phase, at a time when no one had begun, so far as we know, to question this mode of investigation. But whilst he left no other untried, he only recognised experimenting on living animals, so far as to show that his benevolence could be sufficiently discriminative, to select experiments where the existence of suffering was doubtful, and that the doubt alone was sufficient to induce him to abandon the pursuit.

We are sorry to dismiss a subject of so great importance, with what we feel to be so meagre a discussion. But it would require more than our whole space to examine the many thousand torturing experiments, and expose the uselessness and fallacies which they exemplify. We have elsewhere discussed the subject somewhat more at large ; here we have only the opportunity of just touching on it. The greatest respect we can pay the memory of a great man is to apply carefully any principles which he may have left sufficiently matured for practical purposes ; and so to treat those of which he may have only *given us hints or elementary suggestions*,* as shall most searchingly examine their nature and claims to further development and cultivation. If every opportunity is not sufficient to do this in full, we must comfort ourselves with the hope that where there is not ability to produce conviction, there may appear sincerity of purpose sufficient to suggest what is even more valuable, "patient inquiry."

* See Extracts from Lectures in the Second Volume.

This is a duty we owe to every subject on which we venture to form any opinion, either in the study or the practice of our profession, and we have the utmost confidence that the scientific investigation and the moral argument will be found to coincide.

“Heaven’s attribute is universal care,
And man’s prerogative to rule, but spare.”

CHAPTER XIII.

HIS REMARKS ON TUMOURS.

“*Cogitatio in vero exquirendo maxime versatur. Appetitus impellit ad agendum.*”—CICERO.

“The Intellect engages us in the pursuit of Truth. The Passions impel us to Action.”

IN our brief sketches of Abernethy's works, we are quite as desirous of showing why he did not do more, as we are of setting down faithfully our many undoubted obligations to him. This, indeed, is the best mode of giving an onward impulse to those approaches towards a definite science, which (John Hunter excepted) he was the first to secure. If we would increase the usefulness of those beautiful principles

which he has left us, we can hardly do better than endeavour to point out any error or deficiency in the investigation of any subjects, to which such principles may be applicable. His work on "Tumours" contains much that is interesting in regard to the peculiar character of his mind, and his aptitude for simplification. He does not undertake a thorough investigation of the subject. His object seems to have been to place in an intelligible order; to chronicle and mark that which was *really* known; to pack together, as it were, that which was clear and positive, in a form convenient for consideration; to remove that disorder and obscurity which seem to hang about the threshold of all inquiries, and substitute so much of arrangement and perspicuity, as might invite, and perhaps facilitate further investigation.

He states the more important circumstances which he had observed, and conducts his classification of the so-called "Tumours" on a basis as scientific as it could be on an imperfect induction of facts. He did this in a way eminently characteristic of his quick perception, in seizing

those properties on which a nomenclature should be based, and in marking those distinctions which, in a practical science, must always be regarded as of the greatest value. He founded his nomenclature chiefly on certain resemblances observed in these diseases, to well-known structures of the body.

The simplicity of this plan, so long as the resemblance is obvious, is just that which constitutes excellence in nomenclature. To take an example, amongst others, he says there is a tumour the structure of which resembles the Pancreas or Sweetbread as it is popularly called, and to this tumour he gives the name of Pancreatic. Now every one knows a sweetbread, and the name implies no opinion whatever, as to its nature ; it simply declares a fact. Whatever we may ultimately discover with regard to tumours, a name of this kind, though it may possibly be exchanged for one more significant of the nature of the disease, will still leave us nothing to unlearn ; for the tumour in question will always have that resemblance from which Mr. Abernethy named it ; and if we

should find (as indeed we do find) in course of time, that diseases undergo alterations of type, the rarity of a tumour resembling the sweetbread, would record that circumstance.

Had he examined them by the microscope, and selected the appearances so elicited as grounds for his classification, it would have been much less useful. In the first place, comparatively few persons would have had the opportunity or taken the pains to *observe*; and secondly, we should have had the inconveniences resulting from that variety which we generally find in the reports of microscopic researches. There is just now a great disposition for microscopic inquiry, perhaps somewhat too much; but no channel should be neglected, if it be not too exclusively relied on. Abernethy amused himself at one period in examining ultimate structure by the microscope, but he seems to have had but a very measured reliance on this mode of investigation.

Judicious nomenclature is of immense importance in the framework of science, and a want of care in this has probably done as much

as anything to impede the course of rational investigation. There is nothing, perhaps, in the whole range of science more to be lamented than many—indeed, I might say all—parts of medical nomenclature. If our ignorance prevents us from giving a name to a thing which is descriptive of its nature, we might easily avoid applying such as are calculated to mislead; we can imagine the confusion which would result from a druggist labelling a bottle of water “poison” and a vessel containing poison “water,” yet we doubt whether he would more imperfectly express the true relations of these fluids, than the terms “fever” and “inflammation,” do the real nature of the conditions which they are employed to designate.

Abernethy's arrangement of tumours, not only illustrates his disposition to seize on the more salient points of a subject, but also his inclination to seek for the essential relations of (so-called local) disease in the general condition of the body. He consistently, therefore, mentions them in an order founded on such relations. He places those first which he

had found least dangerous in their nature, least destructive in their effects, and which appeared to him to have been attended by the least disturbance to the general economy. In like manner he placed those which had manifested more malignant or dangerous characters, in the order of their severity ; inferring their characters respectively from the disturbance of the constitution, the resistance of the disease to treatment, and the variety of structures destroyed in its progress.

Between these two extremes, he placed, as the step of transition, that tumour which he had observed to partake most strongly of intermediate characters. But besides the desire to throw some light on the subject of tumours generally, he had another special object in view. Few diseases exemplify the absence of scientific research more than tumours. In regard to most of these morbid depositions, it may be remarked that, even now, whenever a patient with one of these so-called tumours applies for advice, the practicability of removal is too often the only thing thought of ; and it must be

obvious to common sense that the mere cutting away of a deposition of this kind (however proper under some peculiar circumstances), can hardly ever exert any influence on the causes of its production. Indeed the manner in which these diseases are continually removed, without any previous inquiry that is really worthy of the name, is amongst the many grounds on which we found the opinion expressed in the sequel on the present state of medical surgery, as contrasted with that in which it was left by Abernethy. Now while the gravity of the subject rendered the consideration of all tumours important, there was one which in an especial manner had eluded all efforts to expose its nature and dependencies—this was the justly-dreaded cancer. In regard to this, Mr. Abernethy hoped that further information might be obtained, by investigating other tumours more closely, and thus bringing, as he expresses it, collateral knowledge to bear on it, “like light
“shining from various places to illustrate the
“object of our researches.”

Here was a suggestion in the true spirit of

philosophical inquiry; whilst, in taking so simple a basis for the names of tumours, and then associating them in arrangement with their respective constitutional tendencies, he adopted the best mode of recording in a general sense their more important relations. But the fault lay in the suppressed premise that the *relations* of the so-called tumours were comprehended by a division which is not founded in nature. Nothing indeed can be more artificial than that division of diseases to which surgeons usually restrict the term tumour; a defect which besets all medical inquiries. The old division in which all sorts of diseases were jumbled together under the general name of tumours, defective as it might be, was much more auspicious, had it ever been made the object of a really philosophical inquiry; because the very diversity of the phenomena they presented would, by the ordinary process of common sense or inductive reasoning, have only served to bring out their common characters; the most important first step in all investigations of this nature.

Had Mr. Abernethy extended that col-

lateral view which he justly insists on, to *all sorts of new depositions*, instead of confining it to the so-called "tumours," he would have detected how artificial was the division, and taken it at its just value; he would have found that he had excluded circumstances which not only led to a much more intimate knowledge of the relations on which those so-called tumours depend; but which confer a power of demonstrating easily, and in a more particular manner, to the most ignorant or prejudiced, those relations to a disordered state of the body, of which, without such assistance, it required a mind no less penetrative and suggestive than Abernethy's to give even a general enunciation. This defect essentially consisted in the vice we have before alluded to, and is nothing else but a violation of one of the rules most insisted on by Lord Bacon.*

It proceeds, perhaps, from the habit of looking at subjects through a medium too exclu-

* That the nature of a thing is not to be sought only out of itself, but from things more in common.

sively anatomical, and by which even Mr. Hunter was sometimes, though exceptionally, hampered. Popularly it was deducing conclusions from only a portion of the facts of the subject; but if Abernethy did not get the whole of the facts, and therefore missed some portion of the conclusions to be drawn from them, he at least avoided the error of inferring anything positive which the facts did not warrant. We hope, however, that the paper has been valuable in enabling some of us to arrive at further views, which serve to confirm the truth, and extend the application of those entertained by Abernethy.

Now to put the whole thing popularly, and to direct the public view to the common sense of the matter, it is obvious that if we want to know the real nature of any growth whatever—say a tumour, a plant, or an animal—we cannot do this by any examination of its structure *alone*. If we desire to know its nature, we must also examine its habits, food, climate, and the various influences to which it is subjected. If, indeed, this were once done, then it is very possible, on again seeing

the structure *merely*, we might recognize its real relations, although we might still be glad to have any well-known substance to which we could compare it, if only to *record* its identity. This is right enough, thus to *obtain* the general knowledge before we *assume* the particular. Again, suppose I had some ground growing all manner of plants and twenty different sorts of fungi, what should I get by *merely* examining the fibres of one or the other?

But I should easily discover that some plants grew best in one soil, some in another, some with more moisture, some with less; whilst the very circumstances of soil, moisture, and so on, which were essential to some, might be enfeebling or destructive to others. No one will for a moment doubt that the kind of nutrition was of great importance in all, and this would necessarily lead me to infer that, "If I desired to get such a fungus, I must have more moisture, less air, less heat or light, or another soil," and so on.

In a plant, you must also look to the roots and other parts of the organism. Now this is exactly what should be done in regard to

tumours ; and for no reason more cogent, than that the great beauty and beneficent effects of Mr. Abernethy's views may become practically useful ; for in the same manner that we would desire to influence the plant or the fungus through the sources whence it derives its nourishment, as air, water, various ingredients in the earth, and so on ; so the only channels by which *we* can effect any influence, are those organs by which these matters are ultimately changed into the structures we wish to maintain, or we desire to get rid of, as the case may be. Now, although the number and relations of these organs may render the investigation more difficult in one case than in another, as they become more multiplied, or as the animal or vegetable is more or less simple or complicated in structure ; yet whether we take our example from man, or any other animal—or, in fact, any organized being of the countless modifications we find in nature—still the instrumentality through which the vital power acts is neither more nor less than the assimilating organs.

If we have been too professional in this dis-

cussion, we plead, as an apology, that in no one point in the whole range of surgical practice would unnecessary suffering be avoided more frequently than on the subject before us; provided only that what is clear and positive, as distinguished from what is conventional and erroneous, were once popularly familiar; for, amongst other evils, most of the operations in this department of surgery are not only superfluous—to use no stronger term—but they practically interfere more than any *one* thing whatever with the progress of the scientific investigation of the nature of these maladies.

The removal of them by operation is too commonly undertaken, not only under circumstances which, as Abernethy said, “add cruelty to calamity,” but for reasons which logically forbid such a proceeding; and although there are conditions which call for such interference, yet those under which it is usually instituted, help only to obscure the real relations of the disease, and to throw the shadowy veil of an irrational empiricism over the operations of nature.

Those who recollect the remarkable results which Abernethy sometimes obtained in regard to this intractable, and often formidable class of diseases, will, I think, be disposed to agree in thinking that few maladies are more open to improved investigation, or promise a more encouraging prospect of enlarging the boundaries of philosophical medicine.

SECTION.

HIS PAPER ON A CURIOUS CIRCUMSTANCE SOMETIMES
FOLLOWING INJURY TO THE LUNGS.

Fractured ribs are common accidents, and illustrate very beautifully those conservative principles in animal bodies, which give such interest to the study of their economy.

When first we consider that the ribs form the greater part of that box in which the lungs and heart are enclosed, and by which they are protected, we are disposed to regard a fracture of one or more ribs as a very serious affair.

Nevertheless, these accidents generally do extremely well. In the first place, the gristles, or cartilages as they are called, by which the ribs are attached to the sternum in front, give in conjunction with the spine behind, considerable elasticity to the whole structure of the chest. Most injuries have therefore to overcome this elasticity, before anything gives way ; and when the rib has done so, and is fractured, the resiliency of the cartilage or gristle to which it is attached, tends to restore it to its place, or to set it, as we phrase it.

Another very common thing in accidents is the instantaneity with which muscles which are ordinarily under the dominion of the will, become reluctant to obey it, or altogether repudiate its authority. In all fractures, of course, the most material thing is absolute repose, and there is very little chance of a man moving his rib when it is broken. He instinctively begins to expand his chest for the admission of the necessary air, by other muscles, usually to the exclusion of those which are attached to the broken bone.

The Lung, which may be considered as a series of tubes, some conveying blood and others air, is often wounded, but the blood immediately stops the leak, from its tendency to coagulate when out of the vessels; and no harm ensues. Occasionally, however, a circumstance occurs, which, until it is understood, appears curious and alarming. Either from the extent, the scratching of the surface, or some other peculiarity in the wound of the lung, the air escapes from it, and the patient is as it were blown up, as to the chest, neck, and face, by the air impelled from the lung beneath the skin into the connecting tissue, exactly in the same manner as the butcher does when he is preparing veal. This blowing-up is called, from the Greek word for it, *Emphysema*, and it was on this feature in these accidents that Mr. Abernethy wrote a short paper.

There is not much which is absolutely new in it. It is chiefly remarkable for the clear manner in which it places before us what is required, as distinguished from what is officious and unnecessary, and, in fact, reduces the treat-

ment to that of ordinary cases, with one clearly defined modification.

He shows his familiarity with Pneumatics, so far as they are touched by the case, just as he does his knowledge of Chemistry elsewhere. The exceptional cases, in which the air is confined in the chest, the mode of procuring it an exit by operation, and the condition regulating this proceeding, are very simply and clearly laid down.

The paper also contains remarks on the collapse of the lungs when the chest is opened, and on certain exceptions which have been observed, which, from their general interest and suggestive character, will well repay an attentive perusal.

He next offers a few remarks on those mothers' marks, as they are popularly called, and which are technically styled nævi; they are generally little more than clusters of enlarged blood-vessels, and are usually removed by excision or other operative proceedings. As the essential character of these marks is increased action and size of vessels, Mr. Abernethy

thought that if well-regulated pressure were made on them so as to impede the flow of blood into them, and this were conjoined with Cold (which represses vascular action), that many of them might be got rid of in this manner. He found his idea realized, and publishes three cases of its success. The value of these suggestions consists, first, in the opposition they offer, *pro tanto*, to that absurd tendency there is to remove everything like a tumour; and the impediment thence arising to any searching inquiry into the causes on which they depend.

But there is another inconvenience which occasionally renders the excision of these nævi very inadvisable. It sometimes happens that they are so situated that they cannot be removed, without making the disfigurement greater, or from some other still more serious objection; as for example, when small ones occur in the face, or when they are placed near the eye. Under such circumstances, the contraction consequent on a wound of any extent, is a serious inconvenience; in some of these cases the

adoption of Mr. Abernethy's plan allows us to dispense with the operation by excision, as I have myself experienced. As it illustrates the advantage of the plan in a case where it was particularly applicable, I will briefly refer to one example. A young lady had one of these marks at the root of the nose, where, from the position, as well as from the contiguity of the eyes, any dragging from the contraction of a scar, would have been particularly undesirable. She was brought from the country to have it removed, but on representing the objections to that course, it was agreed to try Mr. Abernethy's plan, which was completely successful.

At this period Mr. Abernethy published sundry other interesting papers, showing in his observation of all that was passing around him, that his views were not less circumspect and comprehensive, than they were clear. His "surgical cases" are all excellent; and if they do not contain so full an account (the great vice of medical records) of all the circumstances which preceded them, as are sufficient to furnish future investigators with the elements of accurate gene-

ralization, they are remarkably valuable for the qualities of clearness and candour.

We may have an opportunity of briefly alluding to some of these papers in our Summary; but they are hardly practicable subjects for popular analysis, although they form some of the most valuable contributions to the practical literature of the profession. They show also that he was as penetrative and efficient in regard to the operative department of practice, as he was in those higher and more extended views, which in enlarging the *science* of surgery, has tended to diminish, of course, the number of operations.

About the year 1785, John Hunter had invented his celebrated improvement in the treatment of a disease of the arteries, called "Aneurism." It was a very simple deduction from observations on the state of the arteries; and although it was one of those inquiries which had been made the subject of experiments on living animals, it was one on which not the smallest light had been thrown by such investigations.

Mr. Hunter had found that, in addition to many other serious objections to an operation which had been usually performed for the relief of this disease—a giving way, or enlargement of a vessel (for it is sometimes one, sometimes the other)—a great cause of failure had been, that the ligature, which was placed round the artery, was too near the disease, and, in fact, involved a portion of the tube which was unsound. He accordingly proposed tying the artery a little farther off, and thus substituted, for an operation which was extremely severe, very hazardous, and too commonly fatal, a comparatively short and simple proceeding, which, under *moderately favourable auspices*, is almost uniformly successful.

Like most other discoveries, accident and similarity of views had suggested similar proceedings to others, so that continental surgeons were disposed to dispute the merit of the discovery in favour of Guillemeau, Guattani, Anel, Desault, &c., as their views favoured one or other; but there can be no doubt that for the first clear exposition of the principles of the

operation, as well as of the objects it was designed to accomplish, we are indebted to John Hunter.

John Hunter's operation applied to the main artery supplying the lower extremity, and surgeons have since extended the proceeding to many other arteries. The first extension of it, however, occurred to Mr. Abernethy, who, about this time—1797—placed a ligature on what is called the external iliac artery; and as he seldom touched anything which he did not improve, he made an important modification in the mode of proceeding.

Subsequent experience, it is true, has, in some measure, rendered that improvement no longer necessary, yet whenever circumstances arise which lead to any material disturbance of the artery from its situation, we apprehend the caution of Abernethy in tying it in two places close to its connection with the surrounding parts, is a valuable condition.

He also sent, about this time, an ingenious paper to the Royal Society, on certain small openings into the cavities of the heart. They

are called the "Foramina of Thebesius," from an anatomist who particularly described them. This is to us one of the prettiest of his physiological contributions. The facts are stated with great simplicity, their relations to disease beautifully pointed out, and the inference from the whole very striking as being in harmony with the facts whence it is deduced. Abernethy's idea being, that the holes were for the purpose of obviating excessive repletion of the nutrient vessels of the heart by allowing them to relieve themselves by pouring a portion of their blood through these holes into the general mass of the circulation. It could hardly, however, be made interesting to the general reader without going into the subject more than is suited to our present object.

In 1799, Abernethy's reputation had gone on rapidly increasing. His numerous pupils, too, had become the media for frequent consultations, in addition to those which arose from his own connection and reputation with the public.

He now moved from St. Mildred's Court,

and took the house in Bedford Row. This was some time previous to October, 1799, the September of that year being the last time his name appears on the rate-book of St. Mildred's Court. He never again changed his professional residence. The move was an important step, but it was only the precursor to one still more interesting.

In the January of the following year, an event occurred which seldom fails to exert a greater influence on a man's future prospects and happiness than any other—this was no less than his marriage—of which we must say a few words in a separate chapter.

CHAPTER XIV.

HIS MARRIAGE.

“Ye solvers of enigmas—ye
Who deal in mystery—say
What’s cried about in London streets
And purchased every day.

“’Tis that which all, both great and small,
Are striving to obtain,
And yet, though common and quite cheap,
Is daily sought in vain.”

OLD RIDDLE.

THERE are few subjects on which people are more agreed than the value of “good matches,” neither do they seem to differ very widely as to what that phrase is intended to convey. Not that everybody’s *beau-idéal* implies identity of

composition, but they are pretty well agreed as to the more essential elements.

But if we observe the different ways by which people seek to obtain a common object, we are puzzled to know how folks that set out in such various directions should ever arrive at the same point. The travellers are said, too, to provide themselves not unfrequently with various disguises ; not only in dress and externals, but even in manners and sentiments, which they do not usually entertain. Thus we have heard of one who professed a great love of music, who scarcely had an idea of melody ; of another who expressed an admiration of poets whom he had never read, or voted unmitigated bores. Others have been known to avow a perfect indifference to wealth who have had scarcely an idea unmixed with an instinctive admiration of the *æsa in presenti*.

We once heard a curious fellow say that he could marry any lady he liked, if he could only "bring himself to take the trouble ;" and we thought how happy he would be if he could live on as good terms with his wife as he

appeared to be on with himself. Some start with an apothegm which they carry about like an amulet or charm, such as "No greater rogue than he who marries only for money, and no greater fool than he who marries only for love." Apothegms, however, like many things in this world—MacIntoshes and umbrellas inclusive—are very apt to be left at home when most wanted.

We are not informed whether table-turning or mesmerism have yet discovered any prophylactics against the undoubted perils of an expedition in search of a partner.

We are unfortunately not sufficiently versed in these mysteries to know the "latest accounts," but from the reputed effects of platinum and other metals, we should not be surprised to hear that a person well mesmerised would be found very clairvoyant of gold. We are not aware of the achievements necessary to arrive at the exalted position of "a Professor," but it is said that "Professors" find gold without the necessity of going to the "diggings."

Table-turning, we hear, has not as yet been found successful. By shooting too much ahead of the slowly moving current of human affairs, it skipped over one generation, and thus recently entrapped an Irish gentleman of the "highest respectability" by giving a fortune to a lady too soon; it happening to be found still in possession of its "right owner"—or, as the technical phrase is, "in expectation."

Many aspirants for wedlock have sundry misgivings about certain traditionary repulsions which are said to exist between love and poverty, and uninfluenced by the charms of matrimony, think only of the possible consequences. Not a few, however, regard marriage as too serious an affair for sport or speculation. They think it very difficult for mortals who know so little of themselves, to know much about other people, and that though matches in rank and money are daily seen to be very practicable, yet that matches in mind are still as difficult as Dryden represented them—

"Minds are so hardly match'd, that e'en the first,
Though pair'd in Heaven, in Paradise were curs'd."

People of this sort contemplate marriage in a very unpoetical manner. They have great faith that correct intention and common sense are the best guides ; and although they may not feel less transported with their prospects than other people, they are apt to remember that it is "transportation for life."

A great deal has been said of the marriage of Abernethy, and very much of it in proof of his eccentricity of character.

If, indeed, the routine which many adopt as the preliminaries of marriage be the symbol of wisdom in such matters, Mr. Abernethy's proceeding might not improperly be regarded as eccentric ; but if a steady reliance on common sense, on an occasion on which it is sometimes laid aside, and the employment of the highest qualities of the mind for the most important purposes, be wise ; we must, if we allege the eccentricity of Abernethy, concede to him the less equivocal merit of practical wisdom. Himself a sensible and clever man, and a great admirer of these qualifications in others, he was not very likely to ally himself to any

lady who appeared deficient in such characteristics.

Abernethy had a very quick perception of character, and his profession afforded him ample opportunities for the exercise and the cultivation of this faculty. He would not have been very likely to lay it aside on occasions similar to those on which he had been habitually called on to employ it. There are difficulties in getting at the details on such occasions, too obvious to require the mention of them; and we cannot therefore be understood as pledging ourselves for the accuracy of the version we are about to give of the matter; but we would not give even that if we had not good reason to believe it to be substantially true.

Miss Anne Threlfall was the daughter of a gentleman who had retired from business, and who it appears had been residing in the town or neighbourhood of the far-famed Edmonton. This lady had been staying with some friends at Edmonton,* where Abernethy was visiting, and, as we have been informed, in his professional capacity.

* Not at Putney, as stated in the first edition.

He had there an opportunity of observing her kindness and attention, with which he was much gratified. But to these were added personal attractions of no common order, and lively, lady-like, and agreeable manners, which have been invariably appreciated by all who have had the pleasure of meeting Mrs. Abernethy.

The "situation" was not ill calculated to allow two clever people to form some opinion of each other, since they would meet under circumstances favourable to the exhibition of character. We shall have to deal with the subject of manner by-and-bye; and whatever exceptions we may have to record, we may here observe that no man could be more kind in his manner than Abernethy, and at all events he was pretty sure to be unaffected. He had always, too, a most sensitive appreciation of the value of kindness in others. Now, supposing his opinion formed, his resolution taken, there was still for Abernethy a difficulty: he was very shy, and extremely sensitive; wholly absorbed in teaching, studying, and practising his profession, his rising ambition just grasping at success.

How was resolution or opportunity to be found for the tardigrade, time-consuming progress of a regular siege? But we suspect that "shyness" was the real Rubicon he felt a difficulty in passing. Common sense said, you are about to ask a lady to entrust her happiness for life to you. Conscience said it was a great deal to ask, and timidity was equally afraid to make the request, or to brook a refusal. Surely it was a question not to be answered, as he used to say, "off-hand."

Should not some time be given for consideration? Now a short note would cut the Gordian knot of all these difficulties, and this was the course he adopted. He wrote a note expressive of his wishes, pleading the nature and variety of his occupations in apology for the method of making them known, and requesting the lady to take a fortnight to consider of her reply. We are not sure that something might not have been said in deprecation of the time wasted in too much "dangling" on these occasions. Be this as it may, as the world knows, the request was successful.

The marriage took place accordingly in the

parish church of All Saints, Edmonton, on the 9th of January, 1800, and is thus entered in the Register :

“John Abernethy, Bachelor, of the Parish of St. Andrew’s, Holborn, to Anne Threlfall, of this Parish, Spinster, were married in this Church by licence, the 9th day of January, 1800, by me,

“ D. WARREN, *Vicar.*

“This marriage was solemnized between us :

“ JOHN ABERNETHY,

“ ANNE THRELFALL.

“ In the presence of :

“ WILLIAM PATTEN,

J. HODGSON,

“ WILLIAM HODGSON,

MARY THRELFALL.

“ CHARLOTTE HODGSON.”

As we have said, we believe the foregoing is substantially the correct version of Mr. Abernethy’s marriage, but if there be any inaccuracy, this is at least certain, that on this occasion he secured a partner for life every way worthy of him. A lady who to personal beauty added those social and moral excellences which combine to form a superior woman, and one to

whom even such a man as Abernethy could look up with equal respect and affection; as the wife, the mother, and the friend.

If we forbear to enlarge on this subject—if we forego any particular mention of the reverence in which Abernethy's memory is held, and other evidences of the superior cast of mind to which he was so long and so happily united—we need only say that Mrs. Abernethy is still living, and well enough, we trust, to look back with pleasure on a retrospect such as, perhaps, comparatively few have been permitted to enjoy; and with enough of her characteristic kindness to excuse the few observations in which we have ventured to indulge.

One circumstance on the occasion of his marriage is very characteristic of him—namely, his not allowing it to interrupt, even for a day, a duty with which he rarely suffered anything to interfere—we mean, the Lecture at the hospital.

Many years after this, I met him coming into the hospital one day, a little before two

(the hour of lecture), and seeing him rather smartly dressed, with a white waistcoat, I said :

“ You are very gay to-day, Sir ? ”

“ Ay,” said he ; “ one of the girls was married this morning.”

“ Indeed, Sir,” I said. “ You should have given yourself a holiday on such an occasion, and not come down to lecture.”

“ Nay,” returned he. “ Egad ! I came down to lecture the day I was married myself ! ”

On another occasion, I recollect his being sent for to a case just before lecture. The case was close in the neighbourhood, and it being a question of time, he hesitated a little ; but being pressed to go, he started off. He had, however, hardly passed the gates of the hospital before the clock struck two, when, all at once, he said : “ No, I’ll be —— if I do ! ” and returned to the lecture-room.

CHAPTER XV.

OF ABERNETHY'S BOOK ON "THE CONSTITUTIONAL
ORIGIN OF LOCAL DISEASES," OTHERWISE "MY BOOK."

"From the barr'd Vizer of Antiquity
Reflected shines the Eternal light of Truth,
As from a mirror ; all the means of action,
The shapeless masses, the materials
Are everywhere around us. What we need
Is the celestial fire, to change the flint
Into transparent crystal bright as fair."

LONGFELLOW'S "SPANISH STUDENT."

IN all that Abernethy had hitherto published it was easy to perceive that, although he was carefully examining the prevailing opinions and practice of the day, he was emphatically one of those independent thinkers who had power

to overlay the most established conventionalisms with opinions of his own. That although hitherto his publications had related to particular diseases or accidents, and which were held as within the ordinary province of the surgeon, he was shadowing forth *principles*—views which, if they were true, must necessarily have a much wider range of application than to the particular cases which it had been his object to consider. In 1804, he had sufficiently matured his general views to think it right to publish them; and this he did in his book on the Constitutional Origin of Local Diseases, popularly known as the “My Book,” to which he not unfrequently referred his patients for a more detailed account of his views, than he could find time to give in the consulting room. When we reflect that diseases consist entirely of altered conditions in the structure or function of some part of the body, a formal announcement that they must be greatly influenced by the organs on which the whole body depends for its nutrition, seems to have so much the aspect of an obvious truism, that we scarcely know whether

most to wonder at so formal an announcement of it having been necessary, or the astonishing number and variety of the reservations with which it has been admitted.

But strange as this may appear, and although all the facts have been before the eyes of man for ages, nay, though their relations have been *more or less felt* and acknowledged in cases usually submitted to the physician, we venture to say that nothing like an attention at all adequate to their importance was obtained for them in the practice of physic, and scarcely any at all in surgery, until the time of Abernethy.

At the present time, a great deal has been done to establish by the most clear and indisputable demonstration, the practical usefulness and necessity of the principles to which Abernethy conducted us, in the cure of diseases whether medical or surgical. Still, these principles are much neglected, much misunderstood, or so *imperfectly* carried out, as to excite even in many of the public, expressions of astonishment. It is, indeed, not too much to assert that even in those cases in which their

successful application has been most incontestably exemplified, his principles are fairly carried out on comparatively few occasions.

The causes of all this are, we fear, too clear; the removal of them is more difficult. We may possibly discuss both in the sequel.

Instead of the exquisite simplicity and clearness of Abernethy's views, so far as he had gone, being carefully studied, and with a view to the *extension* of them beyond those limits which his time, his opportunities, and his caution had assigned to them; instead of examining into and testing the practical value of the deducible, and, in fact, necessary sequences, on views of which he had demonstrated the truth and value; practice appears to have taken a retrograde movement.

He who would advance even as far as Abernethy, is in danger of being regarded as crotchety or peculiar; whilst any who should strive by a more careful examination of his views to render their practical application more definite and analytical, must be prepared to be looked on simply as an enthusiast.

This has, indeed, been the case more or less in all sciences from the earliest times. The facts which conduct us to a true interpretation of the laws in obedience to which they occur, have been always before us; the very same facts on which, as Professor Whewell* observes, we have raised the stately structure of modern science. Butler† had before made a similar remark. Poets too, as even the motto to our chapter shows, have held the same sentiment; what everybody *knows*, how few *consider*! Neither Copernicus, nor Galileo altered or invented facts. Those they *observed*! what they *discovered*, were conclusions interpreting the true relations of them. Bodies fell to the earth, and the crystal rain-drop had shown the composite nature of light in the beautiful colours and wonderful illustrations of the rainbow, ages before Newton discovered the true explanation of the one, and the great law exemplified in the other.

The object of "the Book" is to set forth the great fact of the reciprocal influence existing

* "History of the Inductive Sciences."

† Butler's "Analogy."

between the nervous system and the digestive organs, and the power they mutually exert in the causation and cure of diseases ; and this, whether the diseases originate in disturbance primarily directed to the brain or any other portion of the nervous system, or to the digestive organs ; whether the result of accident, such as mechanical injury, or other local manifestations more commonly termed disease. In the book before us we shall find an ample refutation of many misconstructions and misapprehensions of Abernethy's views ; misconstructions which have tended to obscure principles which were remarkable for their simplicity and truthfulness ; to impede the beneficial application of them in a manner which has been equally injurious to the public and the profession, and which have impressed on mankind a very inadequate idea of the obligations due to the distinguished author. His views were said to be theoretical and exaggerated, whilst they were the *strictly* deducible conclusions from facts ; and so far from their pervading power in the causation and cure of disease having been exaggerated, the onward study of them only serves by the discovery of

more multiplied and refined applications of them, to fill in with additional illustrations the accurate outline which he has so truthfully drawn. He never wrests a fact to a conclusion to which it does not legitimately lead. In virtue of that suggestive quality of his mind, (so important an aid in philosophical inquiries,) he occasionally, in all his writings, puts forth suppositions, but these only as questions, the next in the order of inquiry, and these he asks of nature alone.

Mr. Hunter had been the first in this country to make the true use of anatomy, I mean in the sense that whilst it was no doubt the basis of our investigation into the functions or uses of parts, still it was only *one* of an extensive series of inquiries. He had examined the dead with no purpose more earnestly than to assist him in his endeavours to *observe* the living; examined *parts* that he might better understand the whole. He had made himself familiar with the economy of animals, and generally with the habits of organized beings, whether animal or vegetable, that he

might know their relations to each other, and that of the whole to the phenomena, habits, and laws, of the Human economy. As he neglected no source whence it had been customary to seek for information, so, notwithstanding his fondness for animals, he made various experiments on living creatures. But whilst these experiments afford additional proofs of the poverty, so to speak, of this plan of investigation ; they impress on us the truth of Sir Charles Bell's assertion, that physiology is essentially a science of observation. We have only to place Mr. Hunter's observations and experiments here referred to, in juxtaposition, in order to bring out in high relief the great meaning and value of the one, and the unnecessary, or inconclusive, character of the other. He also examined the various facts presented to him in the living body with unequalled patience and circumspection.

Amongst others, he had paid particular attention to those which exemplify that vivid, that watchful connection which exists between various parts and organs, and by which impressions or

sensations excited in any one part, are telegraphed, as it were, with the swiftness of lightning to any or all of the organs of the body; facts which may be observed by anybody, by no one better, and by few so well, as patients themselves. To take a common example: everybody is familiar with the fact that certain disturbances of the stomach produce pain or other annoyance in the head. Every one is equally familiar with another fact that there is very often no pain, and sometimes no sensation of annoyance in the stomach, so that were it not from an innumerable succession of such conditions, in connection with particular influences on the stomach, we should from the feeling of the stomach only, never dream of the cause being in that organ. Now about these simple facts, hang not only the most practical of all John Hunter's observations, not only the most valuable of Mr. Abernethy's; but, as far as we can see, the phenomena through a philosophical examination of which, we shall still most auspiciously seek to extend our practical knowledge of disease. We see here just that which

Mr. Hunter had asserted—namely, “that the “organ secondarily affected (in this case, the “head) sometimes appeared to suffer more “than the organ to which the disturbance “had first been directed.”

He observed also that the connection thus manifested, existed equally between all other parts and organs; that although it might be exemplified in different forms, still the association it implied was indisputable. He adopted the usual terms by which these phenomena had been designated. Parts were said to *sympathize* with each other, and no term could be better, as it simply expressed the fact of associated disturbance or suffering. It is true the *facts* were not at all new; they had always existed; nay, they had been observed and commented on by many persons ever since the time of Hippocrates; and if I were to mention the whole of them, there is scarcely one which would not be to some one or other, as familiar as a head-ache from disturbance of the stomach. Mr. Hunter, however, had a kind of instinctive idea of the yet unseen

value of the clue thus afforded to the investigation of disease ; and he observed these facts with a greater attention to all their details, than any one, or all who had preceded him.

Hunter's observations on the subject in his lectures were extremely numerous, and elaborate even to tediousness ; Abernethy, who used to give us a very humorous description of some of the audiences of John Hunter on these occasions, was accustomed to say, "That the more humorous and lively part of the audience would be tittering, the more sober and unexcitable quietly dosing into a nap, whilst the studious and penetrative few, appeared to be seriously impressed with the value of Mr. Hunter's observations and inquiries." Mr. Cline, an honoured name in our profession, and one who, had he lived in later times, would probably have been as distinguished in advancing science as he was for his practical excellence, significantly expressed his impressions of the future importance of the inquiries in which Hunter was engaged. Addressing Mr. Clift after one of the lectures, he said :

“ Ah ! Mr. Clift, we must all go to school again.”

Mr. Abernethy carefully treasured up, and pondered on what he heard. He placed himself as much as he could near Mr. Hunter ; took every pains which his time and occupations allowed, thoroughly to understand him ; and with his characteristic tendency to simplification said : “ Well, what Mr. Hunter tells us, resolves itself into this : that the whole body sympathizes with all its parts.”

His perceptivity, naturally rapid, was evidently employed in observing the bearing of this axiom on the facts of disease. The digestive organs, which if we extend the meaning to all those engaged in assimilating our food, compose nearly the whole viscera of the body, could not escape his attention, nor indeed fail to be regarded in all experimental investigations of any *one organ*. Accordingly, we have seen a very important application of the relations between organs engaged in concurrent functions, in his paper on the skin and lungs, in which, from physiological evidences of

their being engaged in a common function, and the sympathetic association it rendered necessary, he had observed relations of great moment, and pointed out the practical bearing they *must* have on consumption. He had, however, been paying attention for some time to the digestive functions, when his intimate friend, Mr. Boodle of Ongar in Essex, gave a fresh stimulus to his exertions. This gentleman requested him to investigate the functions and conditions of the liver in various nervous diseases, as also in certain affections of the lungs, which had appeared to him, Mr. Boodle, to originate in the former organ, Mr. Abernethy says: "I soon perceived that the subject was of the highest consequence in the practice of surgery, for local diseases disturb the functions of the digestive organs, and conversely a deranged state of those organs, either occurring in consequence of such sympathy, or *existing previously*, materially affects the progress of local complaints."

At the very commencement he hits on a great cause of evil, and boldly assails one of

the most mischievous of all conventionalisms. "The division of medicine and surgery," he observes, "is mischievous, as directing the attention of the two orders of practitioners too exclusively to the diseases usually allotted to them." There is indeed no exaggerating the evils of that partial mode of investigation, to which such a custom almost necessarily leads. We fall into error, not because of the difficulty of the subject, but because we never can, by looking at one set of diseased processes only, learn the whole of the facts belonging to the subject. It was just this that prevented Fordyce from arriving at correct views of fever. Nothing could be more excellent than the way he began to consider it; but he hardly begins before he tells us that he intends to exclude those febrile affections which fall under the care of surgeons. In doing this, he at once abandoned a series of facts which are absolutely essential to the investigation. It must be obvious, on a moment's reflection, that if a particular condition of a part have a relation to the whole body, that the study of one without

the other, or even if both be taken up by different persons, nothing but the most imperfect views can result. A jury, still more a judge, might in some cases guess from partial evidence the issue of a legal investigation, but who ever heard of either determining beforehand to examine a portion only of that evidence? Yet it is not too much to say, that hardly any legal question can be so recondite as many inquiries in physiology. The nature of the case is always more or less obscured by a number and variety of interfering circumstances. Diseases may be regarded, in fact, as nothing more than natural laws, developed under more or less complicated circumstances of interference.

Lord Bacon had warned all investigators of Nature of the danger of attending only to a portion of the facts; it had been one of the great bars to progress of knowledge in general. I regret to say, that it still continues the bane of almost all medical inquiries.

Abernethy's inference in relation to this mutilated sort of investigation, is too true when he observes that "the connection of all local

“diseases with the state of the constitution has obtained little notice,” whereas the truth is that “no part of an animal body can be considerably disordered without affecting the whole system.” Now here Mr. Abernethy claims, what? simply this: he claims for *function*—that is, the *various offices fulfilled* by the several parts and organs of the body—that which Cuvier has so beautifully insisted on, and which our own Owen has so instructively exemplified in regard to structure or formation—namely, a necessary relation between the whole and all its parts.

In speaking of affections of the nervous system, Abernethy observes that the brain may be affected by the part injured, and that then it may affect the various organs by a “reflected” operation; but that whatever *may be the mode* (thus carefully separating the opinion from the fact), “the fact is indisputable.” He adds that it may affect some organs more than others, and thus give a character or name to a disease. For example, it might affect the liver we will say, when the name which would be given would

probably be expressive of what was a secondary circumstance—namely, a disturbance of the liver. This does not so frequently happen, perhaps, nor so mischievously in relation to local injuries; but in other cases, it is the cause of a great deal of erroneous and misleading nomenclature.

As we have seen, it often occurs that when the organs of the body are disordered, the more salient “symptoms,” perhaps the *whole* of those *observed*, are referred to a secondarily affected organ, and the disease is named from that circumstance. The too frequent result is, that attention is exclusively directed to that organ, whilst the *cause* being elsewhere, and where there are no symptoms, wholly escapes observation.

This is a very important branch of inquiry, and as it closely connects what Abernethy left us with what appears to us to be one of the next things to be clearly made out, we will endeavour to illustrate it.

Suppose a person meet with a severe injury, a cut, bruise, fracture, or anything that we have

seen a hundred times before, and instead of being succeeded by the *usual* processes of repair, it be followed by some others; the simple expression of the fact is, that something has interfered with the *usual* mode and progress of repair, and as former experience had shown us that there was nothing in the nature of the injury to account for this, we are naturally led to look for the explanation of it in the state of the individual. But if the unusual appearance be one which we have agreed to call "Erysipelas," and we are accustomed to see long papers written upon this appearance as a distinct disease, we acquire a tendency, as every day's experience shows, to regard it as a kind of abstraction, or as an entity; something composed of precise and definite relations, contained in that particular description of case. Yet these relations may not be in any two successive cases exactly alike. Again, all of them may be subordinate to some more general character, probably a relation without which we cannot readily explain the phenomena; but at which we cannot arrive because we have not compre-

hended a sufficient number of facts in our inquiry to include it.

“Erysipelas” is nothing more than a natural law obscured, because, as we have just hinted, it is developed under circumstances of interference (from disordered conditions of the economy), which distort the natural features of the law, modify its effects, or which may prevent altogether, its full development. But now, if we study it by the means afforded by the various connected links, which other varieties of disease furnish, the ascertainment of the real relations becomes comparatively easy; and we find that whilst there are certain general relations which belong to all cases, there are certain others which may in a given number in succession be identical; or in no two exactly the same.

Partial investigations, leading, of course, to erroneous views, are sure to entail on us a defective nomenclature, and then the two do very materially contribute to continue the fallacies of each other. We may have an affection of a lung, perhaps, the cause may not be in the chest at all, although the lung may be inflamed

or otherwise affected ; but we call it pneumonia, or pleuritis, or some other name which simply refers to what is happening to the part ; but all these have reference only to effects ; they are extremely defective, therefore, as comprehending only a portion of the *nature*, and having no reference whatever to the *seat* of the *cause* of the malady. The consequences of all this may not be *necessarily* mischievous ; but they are so lamentably common, as to continue to form a very large share of the routine practice. The cause is elsewhere, but the remedies are directed to the chest—that is, they are, in such cases, applied to effects, not causes. If we must retain names so defective, it would be very practicable to combine them with something which should indicate that we had, at least, *looked* for the cause. This would, at all events, encourage a habit of looking beyond mere symptoms, and carry us at least one link higher up the chain of causation.

Abernethy, in demonstrating the connection between local disease or injury and general disturbance, judiciously takes cases where the

relation was most unequivocal—that is, where the local disturbance consisted of a mechanical injury—such as in a gentleman who had undergone an operation, in another who had met with a bad fracture of his leg. In order to amplify his illustrations of the connection between the brain and all parts with the digestive organs, he draws them from all sorts of sources—from diseases the most severe and dangerous, as well as from affections which are regarded as most common or trivial—from the last stages of cancer and serious diseases of the loins, to the common disturbances of teething in children—sources which, from their apparent dissimilarity, confer, of course, the strongest force on testimony in which they combine.

His delineation of the features by which disorders of the digestive organs may be generally detected, is remarkably simple, clear and truthful.

Every word has the inestimable value also of being alike intelligible to the public and the profession. His statement is interspersed with

remarks of great value, which, we trust, have not passed away altogether unimproved; such as, that he had observed disorder of the digestive organs produce states of health “similar to those” said to be characteristic of the absorption of particular poisons—a most recondite subject; but one, the obscurity of which has entirely, as we think, resulted from the determination to regard the diseases to which it refers as abstractions, and to investigate them under the impenetrable shadow of *pre-conceived* opinions.

Almost everything he remarks, has received more or less confirmation from the experience of the whole civilized world. There are few things in his observations, more interesting than the emphatic way in which they ignore the vulgar impression that he referred all diseases to the stomach. In the whole round of scientific literature, it would be difficult to find, in the same space, so complete or comprehensive a view of *all* those which we usually term the digestive organs.

Abernethy was very far from any such

narrow views ; whilst, in regard to other organs, to which some of our most distinguished men had paid particular attention, it is not too much to say that, more clear and precise than Curry, and equally careful with Hunter, not less painstaking than our excellent Prout, he is more *practically* penetrating and comprehensive on this subject than any of them. But as to the charge of exclusive reference to the stomach, we shall easily see there was no foundation for it.

In speaking of the reciprocal affections of the brain and the digestive organs, he says : “The stomach is said to be chiefly concerned “in producing these effects, but the cause of “the sympathetic affection is probably more “general.” Page 48. He then goes on to exemplify causes acting on the *Liver*, and so forth. Page 49.

He distinctly contends that other of the chylopoetic organs may disturb the brain as well as the stomach. Again, at page 52, he repeats a similar opinion, and especially adds, that when the alimentary canal is affected, we can never be sure that it is *primarily* so.

He also says, at page 53, that, in some cases, the disorder of the digestive organs is dependent on disease of the brain.

I have alluded to these passages because nothing is more unjust to Abernethy than to suppose that he attributed everything to the stomach, or restricted his attention to that or any other organ. Such a misapprehension also tends indefinitely to impede the practical application of his principles, and to deprive us of the advantages which are so constantly derived from them.

This is so important, that it may be useful to consider a little the circumstances which may have thus misled the public, and we fear not unfrequently the profession also, in the interpretation of Abernethy's views.

In conducting the treatment of diseases of the digestive organs, whatever organ we may desire to influence, either by inducing tranquillity of the nervous system, or by the selection of food appropriate to the actual condition of that organ, the stomach is necessarily a primary consideration.

The reasons for this are sufficiently obvious, but have not perhaps been always adequately regarded. Digestion is, on the whole, a manufacture, so to speak, of a raw material (food) into a fluid (blood) which is to be absolutely adapted to purposes for which it is designed. This is effected not by one but by several organs, which each produce their respective changes in the materials submitted to them. If we desire, therefore, to adapt the work to any organ which is engaged in this process, however remote it may be from the stomach, which, with the teeth and other auxiliaries, execute the first process in the manufacture; it is quite clear that we must begin with the first process to which we subject the said raw material or food. Say that in a machine for the manufacture of cloth the spinning apparatus were out of order, we must begin by giving out a less quantity of wool to the carding machine, or whatever represented the first process, because having once delivered the wrong quantity or quality, we have no means of recalling it, and we should only still further derange the defective machinery.

So in the body ; the liver, kidney, and other organs, not excepting the lungs and skin ; their work must all bear relation to the quantity or quality of raw material, whether their function be the manufacture of the new product, or the rejection of that which is useless. So that supposing there were no other reason, no other than this mechanical relation (which is very far from the real state of the case), still we must *de facto* begin with the stomach, even where we entertain no idea of any special derangement of that organ. The stomach, however, is very important in another sense, and has a power of indicating the necessity of attention to those points which I have endeavoured to illustrate by the homely similitude of a manufacture.

Wherever impressions first act on the body, nature has placed a most vigilant guard. This is variously managed in different cases ; the result is the same, and, as it would appear, the final cause also. In the eye there is the most beautiful contrivance for moderating the ingress of light, as also any abrupt increase of intensity.

Fringed curtains are provided which can close with electrical celerity. Again, the aperture by which light is finally admitted into the eye is vividly contractile or expansive, as the occasion may require; then again there are various media of different densities, through the influence of which even the velocity of light undergoes practical retardation by repeated refractions; and lastly, there are powers of sensual adaptation in the nerve with which the light is ultimately brought in contact, more wonderful than all.

The ear being likewise a portal for external impressions is guarded with equal care. Not a single vibration of air can ever reach the nerve of the ear with the crude intensity (if I may use the expression) with which it is generated. Passing over preliminary apparatus, by which the vibrations of air are first collected, the impressions of sound are first received on the parchment of a little drum, which parchment can be relaxed or tightened with the quickness of thought, so as to modify the force of the impression. This impression is then, by means

of a little chain of bones, conveyed across the drum, which is filled with air. It then reaches a portion of the ear in which are found very curious cavities and canals, of various forms, and taking different directions, and which from the curious and complex arrangement of the whole is not inappropriately called the labyrinth. This is the mysterious seat of those nerves which convey impressions to the brain. There is, however, here, an arrangement more exquisite than any we have yet mentioned.

In these cavities and canals, which are themselves so small as to be not unfit objects for magnifying glasses, there are corresponding delicate sacs and tubes, and these are filled with a limpid fluid. On this delicate apparatus, so exquisitely calculated to modify any undue force of impression, the sensitive extremities of the auditory nerves are spread out, which convey impressions to the brain. We see, therefore, how carefully these portals of the body are guarded; arrangements equally conservative prevail throughout. We might show a similarly exquisite arrangement in the laws governing the

mind, but that is not our present object. We have seen hitherto that, beautiful as the arrangement is for securing us against painful impressions, it has been in a great degree mechanical.

The stomach, however, is the portal to a vast series of important organs, and is protected by a phalanx of sentinels endowed with powers proportioned to the importance of the organ which they guard. There is little that falls within any idea which we can express by the term mechanical ; everything is subjected to an examination essentially sentient ; to powers residing in the nerves ; the *laws* and *operations* of which, we can with proper attention trace out, but which exhibit powers demonstrative of an intensity and refinement, of which our limited perceptions scarcely enable us to form a definite idea.

First, there is the olfactory nerve, between which and the stomach there is the most vivid sympathy.

Until our tastes become vitiated, the stomach seldom admits anything of which the nose reports unfavourably. The sense of smell, even

in the somewhat measured power possessed by man, is capable of detecting forms of matter so subtle as to be beyond our powers of imagination. Nothing which so plainly deals with "matter" impresses more strongly the immense range which must exist between the chemistry of life and that of the laboratory. We all know the extraordinary powers of musk. I have myself a small mass of odorous matter (a Goa ball) which, from the circumstances under which it came into my possession, must have been emitting the odour for little less than a century. It has been exposed to air, is covered by a film of gold (I believe), is in no respect visibly changed, and for the last thirty years not detectably in weight; yet at this moment it emits as strong an odour of musk as ever. How exquisitely subtle must be the matter thus emitted; or how still more wonderful if it merely so modifies the atoms of air in its neighbourhood as to produce odour. We have no intellectual powers which enable us to realize a conception of such infinite tenuity of matter; yet the sense of smell instantly detects its presence.

Next come the nerves of the tongue, and here again in natural conditions there is a constant harmony between them and the stomach—that to which the taste readily gives admission being in *undisturbed* conditions of the economy, some guarantee, that it is innoxious; but what these functions are to the stomach, the stomach is to the other organs. In the first place, in natural conditions it usually at once rejects any noxious material which from being disguised or from any other circumstances may have eluded the vigilance of the sentinels I have mentioned; but it has a vivid sympathy with every organ in the body. If anything deleterious be once admitted, it has to go through various processes which may render it a source of indefinite disturbance; therefore, if any organ in the series of the blood-manufacture be materially disturbed; that is, so as to be disabled, the stomach usually refuses food; because there is no other way of stopping the mischief. Illustrations of this occur in many disorders of the kidney, in many affections of the alimentary canal, as also of the liver, and other parts.

No doubt the stomach is therefore a most important organ; but to suppose that it is therefore always the seat of disorder, is not only a most mischievous error, but a complete blind to its most beautiful and instructive relations; and as opposite to Mr. Abernethy's views as the most narrow can be to the most comprehensive. Proceeding with his illustrations, Mr. Abernethy cites a number of most instructive cases, in which various nervous affections of the most serious character, including palsy; affections which we are accustomed to refer with too much truth to organic disease or mechanical pressure on the brain or spinal marrow, but which in the cases cited depended on disorder of the digestive organs.

It is impossible to exaggerate the interest or importance of these cases; not only from the fact that they almost certainly would have led to organic disease, but also for the value of that practical discrimination which they exemplify. Again, the very treatment which would have been proper, which had sometimes been begun, and which was not inappropriate

to cases of *organic* disease with which the symptoms were in part identical, would have inevitably, in the cases in question, only served to exasperate the very conditions they were designed to relieve; and to hasten those processes against which they were intended to guard.

No one can understand the force of these cases, without recollecting the intense difficulty of ascertaining that point at which disorder ceases to be merely functional, and at which organic disease begins. This is of all things the most difficult to determine in the whole circle of physiological inquiry.

The symptoms alone are absolutely useless in any case of real difficulty; of that Abernethy was well aware, and he did much to guard us against the error into which a reliance on them was calculated to lead. He knew that organs which were diseased, would sometimes afford indications not distinguishable from those of health; and that, conversely, organs essentially sound would sometimes only afford those signs which were indicative of disorder.

We have, we trust, made some little progress in this very difficult branch of inquiry; and although it is true that organic disease not unfrequently escapes detection during life, yet, so far as we have observed, it is only in those cases in which there is, notwithstanding the daily lessons of experience, an improper reliance on what are called the symptoms. We assert, without the least hesitation, that organic diseases should seldom elude detection where the investigation is sufficiently comprehensive; but it must include all the facts of the case, the early history, and such circumstances which, however remote, have been over and over again proved to be capable of exerting an influence on the body; an investigation which, however vainly pleaded for in medical science, however regarded as too exacting, involves nothing more in principle than is required as a matter of course in all other scientific investigations.

When these conditions are observed, it is very rarely that we cannot detect organic affections in organs in which there may be no *present* symptoms. In relation to the *extent*

to which they may be affected, it is true we have yet much to learn; still, if cases be judged of not by the history *merely*, nor by the symptoms *merely*, but by both in conjunction, and if to these be added a careful observation of the *amount* of work that the organs are separately or collectively doing, as *compared with their natural proportions*; together with a careful estimate of that which the actions of any visible disease may be eliminating from the body; then, indeed, we have good ground for hope, that means will be opened to us of distinguishing more accurately various states of the system; and additional principles and powers disclosed of readjusting the disturbed balance of the various functions, which is the essential element of disease.

CHAPTER XVI.

“MY BOOK” CONTINUED.

“La première chose qui s’offre à l’Homme quand il se regarde, c’est son corps. Mais pour comprendre ce qu’elle est, il faut qu’il la compare avec tout ce qui est au-dessus de lui, et tout ce qui est au-dessous, afin de reconnoître ses justes bornes.”—PASCAL, PENSÉES, NATURE DES HOMMES, VOL. II, P. 57.

ABERNETHY, in impressing any anatomical fact, would sometimes say that we carried about with us in our own bodies excellent means of refreshing our impressions on many points of anatomy ; but we may say this in a much more extensive sense with regard to the interpretation of that for which anatomy is alone useful—namely, the uses or functions of the body. It would be very possible for any observant person

who was moderately versed in the ordinary principles of correct reasoning, to detect many defects in medical investigations and practice ; in the correction of which many of Abernethy's practical contributions consisted ; but the mind, restlessly impatient to arrive at conclusions, often overlooks the most important facts, and deduces inferences directly from the evidence of the eye or other senses, without submitting it to such test as the intellectual faculty can alone supply. Nothing can exceed the mischief of this in serious matters, nor the absurdity of it, when we *think awhile*.

We should hardly refrain from laughter if we saw a man try to see with the point of his nose, or endeavour to examine the odour of a rose by his ear, or to listen with his eye ; yet this is not a whit more absurd than to try to deduce conclusions from the impressions furnished by the eye, which can alone be afforded by the rational faculty. Nothing is more common than this sort of fallacy, nothing more easy than its correction ; but then people must bestow at least a little of that time on their highest faculties,

which they so lavishly expend on inferior powers. How much time we consume, for example, in the study of various languages—those instruments for the communication of ideas—as compared with that bestowed on the collecting and marshalling of ideas themselves; which is little better than grasping at the shadow, and losing the substance; or, to use a humorous illustration, like a friend of our own, who, having a new dog, sent his servant forthwith to purchase sundry articles for him, in the shape of kennel, chains, engraved collars and food; all of which, at some expense, he safely accomplished to his master's satisfaction, expressing his sorrow at the same time for having accidentally lost the dog!

It is curious, however, to observe how the real business of the human mind is shadowed forth in the very abuses of its powers; nothing so bad but it is charged with a certain quantity of good; no error so great but carries with it the element of its own correction. The mind in its greatest aberrations is followed by the shadow of its real duty, which as it were waits on the

time, when clearer views shall burst on it. Nothing shows the real tendencies of mind more than its restless desire to arrive at *some* conclusion, *some* tangible evidence of its highest functions. It is the impulse of this instinct; the ungoverned abuse of a high faculty, impatient for illegitimate fruition, which lies at the bottom of much false reasoning, and which blinds men, even of great power, to obstacles which are luminously evident to the most ordinary capacity. Important as the next series of illustrations cited by Abernethy are, the conclusions he deduced from them were the necessary sequences of clear and correct reasoning, on familiar and established facts.

The illustrations in question, were those afforded by various cases of injuries of the head in which certain consequences, however exceptional they may be, are too commonly referred to the abstract nature of the injury. We *see* that a man has a blow, we *see* that he does not recover in the usual way, in which we have known many others recover; but we do not perhaps *consider* that if a similar, nay, per-

haps an identical force produces very different effects in different cases, that the cause will probably not be in the nature or direction of the force so much as the condition of the body. Now the value of these cases of Abernethy's consists, first, in impressing the influence of this condition as modifying, in other words, *sustaining*, the disturbance consequent on injuries (in their origin) purely mechanical; and secondly, in showing that in the cases in question *that condition* depended on a disordered state of the digestive organs. We hardly know any cases more valuable than those in question. When a patient receives a blow, and the *immediate* consequences having subsided, there still remains any impairment of sense or motion, the most usual thing, and no doubt very often the true view, is to refer it all to lesion of nervous structure. It is, therefore, of the highest consequence to know the facts of these cases; they not only prevent the hasty institution of treatment which would be injurious; not only secure the patient from being abandoned in despair; but supply at the same time the clues

to a rational treatment, and the hope of a favourable issue.

There can now be few observant surgeons who have not met with cases in illustration of these circumstances ; and yet I know not to whom the perusal of Mr. Abernethy's cases might not be useful. It is not without regret that I forego transcribing at least one of them ; forgetful how impossible it is to do Abernethy full justice in a work intended for all readers. In his "Book," the cases in question begin at page 97, and occupy but a few pages.

The next class of cases, from which Abernethy illustrates the prevailing influence of the digestive organs, receives additional importance from the *imperfect* manner in which the phenomena have been interpreted in a vast variety of diseases ; like small-pox and others, ascribed to the action of particular poisons. We may possibly have an opportunity of saying something more on this subject, but we may remark that when any disease has been presented to the physician or surgeon, supposed to be the result of specific poisons, it is just the last case in

which any special attention is paid to the digestive organs. Now Abernethy observed that disorders of the digestive organs would sometimes *produce* diseases resembling maladies, said to result from specific poisons; this is about the first indication or hint of that which, duly carried out by an advancing science, will, we trust, ere long demonstrate what to *us* has long appeared only part of a general law; of this we may by-and-bye say a little more, when we endeavour to show the small quantity of truth which there is mixed with some of the prevailing errors; and how their occasional success results from blundering, as it were, on small portions of the principles enunciated by Abernethy.

In the meantime, we may refer to the illustration afforded by small-pox of the remarkable influence of the digestive organs in diseases called specific. We adduce this, because it is one which is popularly familiar, and a disease that, had it been studied under any but one particular phase, would have proved, of all others, the most instructive. There is

no malady, under certain circumstances, more extensively fatal.

In the Spanish conquest in America—a history scarcely less interesting in a medical than in a moral point of view—it seems that not all the cruelties of the Spaniards were more destructive than the small-pox. In less than a century after the arrival of Columbus, it was computed that it had destroyed more than half the population; and in one year (1590), it so spread along the coast of Peru, that it swept away nearly the whole of the Indians, the Mulattoes, and the Mestichos, in the cities of Potosi and De la Hay.*

As is well known, before the discovery of vaccination, persons were *inoculated* with the small-pox, because it was found that the disease could *be thus rendered* comparatively harmless; whilst if it was taken naturally, as it was termed, it was always serious, and too frequently extremely fatal. The preparation for inoculation consisted of *measures addressed to the digestive*

* Clench's History. Letter from Ch. Uslano, to Gonsalvo de Solano, July, 1590,

organs; now the effect may be judged of by this fact: Inoculation was at first violently opposed, and in reply to the alleged safety of it, an opponent wrote to prove that *one* in *one* hundred and eighty-two had died of it. I wish we could say so of many other diseases.

That such persons had nevertheless the genuine malady, was proved by the fact that they were capable of infecting others unprepared, with the disease in its most malignant form. But our notions of the mode in which the laws of the animal economy deal with injurious influences of this kind, are mischievously conventional. What quantities, for example, of mercury in its different forms have been administered in almost all diseases; and yet unquestionably there is a great deal of false reasoning in regard to this poison. Effects are attributed to it *as mercury*, which only belong to it in its general character of an injurious agent. All the specific effects of it, most of which are become popularly familiar, may occur without any mercury at all. We have seen

them induced by aloes, by scammony; and in a case where no medicine had been given, and where the only detectable poison was one which was to be sure bad enough, an enormously loaded liver.

We are obliged to say but little here in connection with this subject. Abernethy's cases were very important in relation to the influence of the digestive organs, although he did not see the generalization to which, as it appears to us, they help to conduct the pathologist. The subject is too extensive for discussion here; we will attempt something of a popular view of it, when we endeavour to explain in the next volume the fallacy to which we have already referred.

Abernethy next adduces various illustrations from cases of other diseases; as indurations, tumours, carbuncles, scrofulous affections and others, in proof of the dependence of a "numerous and dissimilar progeny" of so-called local diseases, on that "fruitful parent," disorder of the digestive organs. Of one of the most interesting and remarkable cases of tumour,

Mr. Abernethy did not live to see the termination. It was of a lady who consulted him previous to the proposed infliction of an operation; she had been recommended by my father, in the country, to consult Abernethy before submitting to it; because he disapproved of it, as did Abernethy, not because they doubted of the nature of the disease, but because it was not confined to the part on which it was proposed to operate.

The lady used to call on Abernethy when she came to town; and after his death, she came to me, as she said, just to report her condition. She had at times various disturbances of her digestive organs, but always from some imprudence; for although habitually very simple in her habits, she would be sometimes careless or forgetful.

She died at a very advanced age—between seventy and eighty—but there had been no return of the disease for which she had originally consulted Abernethy, nor had she undergone any operation. It is a significant circumstance, too, that she had a sister who died of cancer.

The whole of the cases are, however, scarcely less valuable. In the fifth section he treats of disorders of parts having continuity of surface with the alimentary canal, certain affections of the nose, of the eye, and of the gullet or œsophagus. His observations on the latter are especially valuable. They strike at that meddling practice which is too common in the treatment of diseases of these parts. Many of us have recommended a practice which, without neglecting either, relies less on manipulatory proceedings and more on measures directed to the general health in such cases; as producing effects which are not to be obtained by other means; but if we are to judge from the medical periodicals, without much success; so inveterate is the habit of imagining, that whatever the causes of disease may be, if the *results* be but *mechanical*, that mechanical means can alone be applicable. Public attention and the perusal of such cases as those of Abernethy can alone correct these errors.

Lastly, he describes the results of his dissections as bearing on the whole subject.

Here he shows that whilst disordered function may take place coincidentally with or as a consequence of change of structure, yet that such change so *as to afford visible or detectable departures* from natural appearances is by no means necessary, in *organs which, during life*, had afforded the most incontrovertible evidence of impaired function. He also shows that disease has *terminated* in *disorder* which had its original seat in the digestive organs; and again, that in cases where the cause of death had been in the abrogated *function* of the brain; that he found no actual *disease* in that organ but in the *abdominal viscera*. He very justly observes that the conclusions he has drawn cannot be *neither* ascertained or disproved by anatomical evidence *alone*. He mentions especially, and illustrates by a remarkably successful case, how *diseases of the lungs* may be engendered by disorders of the digestive organs and *entirely* subdued by correction of that disorder.

He speaks also suggestively of the possibility of that which is certainly now an established fact. He says: "In cases of diseased lungs,

“where no disease of the digestive organs is
“discovered yet considerable *disorder* does exist,
“and may continue for many years without any
“*organic* disease being *apparent* ; it is pos-
“sible that such disorder may excite disease of
“the lungs, and thus produce a *severer* disease
“of the latter organs that what existed in the
“former. Accurate attention to the *digestive*
“*organs may determine this important subject*
“*and lead to the prevention and cure of the*
“*sympathetic diseases which I have men-*
“*tioned.*” “This attention must not be merely
“of that general kind which adverts only to the
“quality of the ingesta, &c., but one which
“more strictly observes whether the viscera ”
(that is, reader, not merely the stomach, not
merely the digestive organs, but the whole
viscera of the body) “and whether these
“secretions are healthy or otherwise.” After
speaking of the heart also, as affected by the
digestive organs ; and of the infinity of dis-
eases which arise from the reciprocal disturb-
ance excited between them and the brain ;
—he says : “But even these are not the worst

“consequences. The disorder of the sensorium,
“excited and aggravated (by the means which
“he has described), affects the mind. The
“operations of the intellect become enfeebled,
“perplexed and perverted ; the temper and
“disposition irritable, unbenevolent, and des-
“ponding. The moral character and conduct
“appears even to be liable to be affected by
“these circumstances. The individual in this case
“is not the only sufferer, but the evil extends to
“his connections and to society. The subject,
“therefore, appears to me to be of such im-
“portance, that no apology need be offered for
“this imperfect attempt to place it under
“general contemplation.” Here is that sug-
gestion which, when carried out, leads to the
detection of cases of insanity which depend on
disturbances of the digestive organs.

Lastly, as if, notwithstanding his own pre-
vious attention to the important question of the
influence of the digestive organs in disease, he
felt that the inquiry had grown upon him in
consequence of Mr. Boodle's endeavour to con-
centrate his attention to the subject, he con-

cludes by expressing his past obligations to Mr. Boodle ; for he says, with admirable modesty and candour, “ for Mr. Boodle first instructed “ me how to detect disorders of the digestive “ organs, *when their local symptoms were so “ trivial as to be unnoticed* by the patient.” He urges Mr. Boodle to publish also his own observations on the subject, because any remarks from one who observes the progress of disease, “ with such sagacity and accuracy, “ cannot but be interesting.” We are quite aware how feeble our attempt has been to do justice to this admirable book. But nothing can do that but a careful study of the various principles which it either suggests, dimly shadows forth, or deeply and beautifully unfolds.

Through not a very short life, we have had ample opportunity of testing these principles by the bed-side, and of endeavouring to connect some of them with the laws in obedience to which they occur ; and we are free to declare our impression that when the book is studied with the requisite previous knowledge, and freedom from preconceived opinion ; and when tested

and carried out in *principle*, as distinguished from any adhesion to mere matters of *detail*; we think it infinitely more valuable than all other professional works whatever. In examining the truths it unfolds, or in our humble endeavours elsewhere at a more analytical or extended application of them, like Abernethy, we have rested our reasoning wholly on facts and observations which are acknowledged and indisputable.

Whilst other views have only led to a practice in the highest degree empirical, or what is worse, conjectural; those of Abernethy's lead often directly, but always *when duly studied*, to a practice at once clear, definite, and in the sense in which we shall qualify the word, "positive,"—that is, one which gives us the power (when we really have the management of the case) of predicting the success or failure; which is at least a ripple indicative of a coming science.

In order, however, to carry out this clearly, we shall at once add what we think necessary to the profession and the public on the subject. The *general relation of Abernethy's labours* to a real and definite science will be better de-

veloped in our concluding Summary; when we may have an opportunity of stating what further appears to have been done and what is yet required. It will have been perhaps already observed that Abernethy's views involve a few very simple propositions: first, that disturbance of a *part* is competent to disturb the whole system; and conversely, that disturbance of the *whole system* is competent to disturb any *part*. That the disturbance may *commence* in the brain or nervous system, may then disturb the various organs, and that these may again by reflected action disturb the brain, and so reciprocally; and that in all these cases tranquillity of the digestive organs is of the very first consequence; not merely from its abstract importance, but from the influence it exerts on the state of the nervous system.

With respect to any influences immediately directed to the nervous system, these we apprehend to be few and simple; some kinds of medicine, are, no doubt, in particular cases useful, none are susceptible of *general* application. None of them are *certain*, and

sedatives of all kinds, which appear to have the most direct influence on the nervous system, either require to be employed with the utmost caution, or are in the highest degree objectionable. But there are other *direct* influences, certainly ; and very important they are. Quiet, avoidance of disturbing external impressions, whether of light, sound, temperature, &c., whether in fact of mind or body ; but in the majority of mankind, how few of them we can, in a strictly philosophical sense, command. We are therefore driven to other sources of disturbance ; and in the digestive organs we find those on which we can exert great influence, and in which tranquillity, however procured or under whatever circumstances, is *certain, pro tanto*, to relieve the whole system. This Abernethy attempted, and with a success which was remarkable in no cases more than those which had resisted all more ordinary modes of proceeding ; by general measures, by simplicity of diet, by occasional solicitation of this or that organ, by air and exercise, and measures, which were directed to the general health. No doubt

in some cases he failed, and so we shall in many ; but let us look boldly at the cause, and see whether we do not fail a great deal more from our own ignorance than from any natural impossibility.

To examine the question, we must for the moment forget our admiration of Abernethy ; be no longer dazzled by his genius, but look only to our duty ; endeavour to discover his defects, or rather those of the state of the question when he left us, and see what further investigation has afforded in aid of supplying them.

In the first place, we must examine a little further that proposition which we have seen both in Hunter and Abernethy under different forms. Hunter says the disturbance of the organ sympathising is sometimes more prominent than that of the organ with which it sympathises. Abernethy says, that the organ primarily affected is sometimes very little apparently disturbed, or not even perceptibly so.

Now, from both these statements, we find that there may be no signs in the primarily affected organ ; which practically rendered is nothing more or less than saying that in many cases we must not seek for the primarily affected

organ where *the symptoms are* ; and this is a great fact : because although it does not necessarily teach us what we must do, it exposes the broken reed on which so many rely. Now the further point, which, as we would contend, time and labour have supplied, is first this—that what Hunter mentioned as one feature in the history of the sympathies of different organs ; and Abernethy as an occasional or not unfrequent occurrence, is in disorders of any standing, and with the exception of mechanical injury, *in fact the rule*—the *symptoms* of disorder being almost *never* in the primary organ ; nay, even organic change (disease) is for the *most part* first seen in a *secondarily* affected organ. In regard to primarily affected parts the skin only excepted, they will be found in the vast majority of cases, to be one or other of the digestive organs.

I will endeavour to render the cause of this intelligible. A minute examination of what happens in a living person, especially if it be extended to some thousands of cases, will soon disclose to the most unlettered person a few instructive facts, showing, that Nature has a regular plan of dealing with *all* injurious influences, which, however

various many of the details may be, is in general character exquisitely simple, surprisingly beautiful, and intelligibly conservative; and that the various modes on which she exercises this plan from the cradle to the grave, are in frequency, directly in the order of their conservative tendency. Let us explain. There is no dearth of illustration, the *facts* are bewilderingly abundant; the difficulty is which to choose, and how to give them an intelligible *general expression*. Let us take a single case. We know that if a mote gets into the eye, there is irritation, immediately there is flow of blood to the part, a gland pours forth an abundant supply of tears, and the substance is probably washed out. Very well, we say that is intelligible. But suppose you have the vapour of turpentine, or any other irritant, the same thing happens, but still you cannot give quite the same *mechanical* explanation.

Again, substances which affect the mouth, nose, and stomach, will irritate the eye without any contact, and cause a flow of tears.

Lastly, you know that affections of the mind will do this, and where even we have no *mechanical* irritant at all.

In *all* these cases there has been activity of the vessels of the eye, and in all it has been relieved by secretion. Now this is the universal mode throughout the body ; all irritation of the organs is attended by secretion, and where this is done there is no disorder, or rather the disorder is relieved ; but if organs are irritated continuously, another thing happens, and that is, that an organ becomes unable to secrete constantly more than is natural, and then *some other* organ, less irritated in the commencement, takes on an additional duty—that is, the duty of the animal economy is still done, but not equally distributed.

This is the state in which most people are in crowded cities, and who live in the ordinary luxury or the ordinary habits of civilized society, according to the section to which they may belong. It is easy in such cases to detect those differences which distinguish this state from what is called condition or perfect health, as we have elsewhere shown.*

* “ Health and Disease,” see Treatise on Tumours.

But of course there is a limit to this power in organs of taking on additional or compensating actions; and when this limit is exceeded, then those actions are instituted, which we call Disease. The site is seldom found to be that of the original disturbance, and usually for a very plain reason, because there it would be more dangerous or fatal. It would be scarcely less serious in many cases even though placed on organs *secondarily* affected, and therefore it is more usually determined *to the surface* of the body; where, taking them simply in the order of their greatest number or frequency, we find the first class of diseased appearances, and which strikingly impress the real nature of the law. They are the most numerous, most obviously dependent on general disturbance, and most conservative, as being least fatal. Diseases of the skin are those to which we allude, and which in the characters I have mentioned they exceed all other diseases.

Again, the next surface is that involution of the skin which covers the eye, and which lines the mouth, throat, and the whole of the interior surface of the respiratory tubes and the

digestive organs. Here again we find the *next* seat of greatest frequency, and the conservative tendency to coincide. We need only refer to the comparative frequency of what are called colds, ordinary sore throats, and so forth; as contrasted with those more serious diseases which occur in the corresponding surfaces of the respiratory organs and alimentary canal. In tracing diseases onwards in the order of their number, we never lose sight of this conservative tendency. When *organs* become involved in disease we find that for once that the *substance* of the organ is so *affected*, the *membrane covering* it is affected a hundred, perhaps a thousand times. This is equally observable in respect to the brain, heart, lungs, digestive organs and some other parts, and it is of great importance practically to know how readily affections are transferred from the *lining* of the alimentary canal and other parts to the *membrane covering* it, rather than to the intermediate texture of the organ; again, impressing, though now in a dangerous type truly, the conservative *tendency* of the law.

Finally, then we arrive at diseases of Organs;

and here we see this conservative tendency still typed in the site first chosen, which is almost always (where we can distinguish the two structures) not so much in the *actual tissue* of the organ as in that which connects it together, what we term the cellular tissue.

This is remarkable in the lungs; where tubercular deposits are first seated, not in the essential structures of the organs, but in those by which they are joined together. All those various depositions also, which are called tumours, generally begin and are very frequently entirely confined to the *cellular tissue*, and even though there is in certain malignant forms of tumour, a disposition to locate themselves *in* organs, there is a very curious tendency towards such as may have *already fulfilled* their purposes in the animal economy.

We might multiply these illustrations to a tedious extent. We might show, for example, in the eye how curiously the greatest number of diseases in that organ are placed in structures least dangerous to the organ, and even when the organ is spoiled, so to speak, how much more frequently this is in relation to

its function as an optical instrument, than to the structure which forms the link with the brain, as an organ of sensation. I must, however, refer those who wish to see more of the subject to the work* in which it is more fully discussed, under the term the "Law of Inflammation," which is a bad phrase, as imperfectly expressing the law; but as the greatest evils it exposes occur in cases of Inflammation, and as it shows the essential nature of that process to be entirely distinct from the characters which had usually been ascribed to it, every one of which may be absent: so that expression was somewhat hastily given to the generalization which seemed best to express a great practical fact.

To return to the bearing of all this on Abernethy's views, and in relation to organs primarily or secondarily affected. In obedience to the conservative law, to which I have above alluded, defective function in one organ is usually accompanied by increased action in some other; and thus it happens that the symp-

* "Medicine and Surgery one Inductive Science," London, 1838. Highley.

toms are almost always in one organ, whilst the cause, or originally injurious influence has acted on another. The general reader will of course understand that we are not speaking of direct mechanical injury to an organ. *Now* all the most recondite diseases of the kidney are already acknowledged by many, to be seated in a secondarily affected organ. Still the practice is in too many instances, a strange mixture of that which is in accordance with the true view, more or less marred by much that is in opposition to it; because it often includes that which is certain more or less to *disturb* the organ which it should be the object to tranquillize or relieve.

In the same manner, the lungs and heart are continually disordered, and ultimately diseased, from causes which primarily act on the liver; and I have seen such a case treated with cod-liver-oil and bitter ales, with a result which could not but be disastrous. The liver sends an enormous quantity of blood to the heart and lungs, from which it ought to have extracted a certain quantity of carbon (bile);

if this be not done, the heart and lungs are oppressed both by the quantity and the quality of the blood sent to them. If nothing happen in either of the various sites I have mentioned, the blood must be got rid of, and it is so. In many cases a vessel gives way—or blood is poured out from a vessel—or the blood is employed in building up the structures of disease; but then the symptoms are frequently altogether in the chest, and not a sign of anything wrong in the liver.

I cannot go on with the multitudinous illustrations of these principles. The law is to determine injurious influences to the surface. Deposition in the cellular tissue of the lung is bad enough, but it is better, that is, less certainly fatal there, than in the respiratory tubes, and that is the explanation.

But now comes the practical point; how is the primary organ to be got at, because that is the way to carry out the removal of the impediments to the sanative processes of nature, which in many cases, no *mere general* treatment can accomplish. This is to be found by an examination into the *whole* (that is the former

as well as the more recent) history of the case, and adding the further test of a real, and careful observation of the various secretions.

By going back to the former life of the patient, we shall seldom fail to discover the various influences to which he has been subjected, and the organs to which they have been originally addressed. Having made up our minds from our previous knowledge of injurious influences, on what organ they will most probably have acted, we now test this not merely by inquiry after symptoms, and it may be not by symptoms at all; but by careful observation of the actual work of the suspected organ; in this way we almost certainly discover the real offender, in other words the organ primarily affected. This is of immense importance; for we confidently affirm that one single beneficial impression made on it will do more in a short time—nay, in some rare instances, in a single day—than years of routine treatment, that has been nevertheless of good *general* tendency.

In treating it, *i. e.*, the primary organ, how-

ever, great discrimination is necessary. If it be already organically affected, that treatment which would be, under other circumstances necessary, becomes either objectionable or requiring the utmost caution. For although an organ diseased in structure will, under some circumstances, as Abernethy long ago observed, yield its characteristic secretion, yet unless we know the *extent* of the disease, which is just the thing we can almost never be certain about; excitement of it is never without danger. We should therefore excite the primary organ with more or less energy, with more or less caution, or not at all, according to circumstances. If we determine on not exciting it, we should then act on organs *with* which it has ordinarily closest *community* of function, or on whose integrity we can most depend; for choice, we prefer organs which, in a natural state, have nearest identity of function, as having the readiest sympathy, it may be, with each other. Yet so universal is the sympathy between all the organs, that there is no one, that will not, under certain circumstances, or which may

not be induced, perhaps by judicious management, to take on *compensating* actions.

We must not here pursue this subject further. We have endeavoured to sketch certain extensions of the views of Mr. Abernethy, and can only refer the profession and the public, for the facts and arguments which demonstrate and illustrate them, to those works in which they have been enunciated.* They have now been subjected to severer trials, and abundant criticisms; so far as we know they have not been shaken, but if there be any merit in them, if they shall have made any nearer approach to a definite science, or sketched the proofs that Induction alone can place us in a position to talk of science at all; they are still sequences easily arrived at by a steady analysis of Abernethy's views. It was he who taught us, in our pupil days, first to think on such subjects; to him we owe the first glimpse we ever had of the imperfect state of medical and surgical science; and if we do not wholly owe to him the means by which we conceive it can alone

* "Medicine and Surgery, one Inductive Science," and "On Tumours."—Art. Treatment of Organs.

be rendered more perfect and satisfactory, he has at least in part exemplified the application of them. If we have made some advances on what he left us, and added to his beautiful and simple general views, something more definite on some points, something more *analytical* on others; still, inasmuch as they are clear deductions from the views he has left us, and from such views alone; such advances remind us that the study of his principles serves but to demonstrate their increasing usefulness, and to augment the sum of our obligations.

SECTION.

Mr. Abernethy's book "On the Constitutional Origin of Local Diseases," had an extensive circulation, and excited a great deal of attention from the public as well as the profession.

As a work, which may be read, as it were, in two ways, so as a person read it, with one or other subject, it produced a great variety of impressions. It may be read simply as a narrative of a number of facts, with the inferences immediately deducible from them,

All this is plain and intelligible at once to anybody, and of great practical value; but the work contains numerous observations of a suggestive kind, that require careful thought, and some previous knowledge, to enable a person to estimate their value, or to trace their onward relations. The impression made by the work on different minds varied, of course, with the reader, his information, and, in some sort, with the spirit in which it was studied; some who had, in their solitary rides, and in the equally solitary responsibilities of country practice, been obliged to think for themselves, recognized in the orderly statement of clearly enunciated views, facts and principles which they had already seen exemplified in their own experience, and hailed with admiration and pleasure, a book which realized their own ideas, and supplied a rational explanation of their truth and value.

Some, who had never thought much on the subject, and were very ill-disposed to begin, regarded his ideas as exaggerated; and hastily dismissed the subjects, with the conclusion

that he was a clever man, but too full of theory, too much disposed to look to the stomach or the digestive organs. Others, making very little distinction between what they heard of the man, the book, or his practice; and probably not having seen either, but deriving only a kind of dreamy notion of a clever man, with many peculiarities, would say that he was mad or an enthusiast. Still, a great many of the thinking portion of the Public and the profession, held a different tone. The book was recognized as an intelligible enunciation of definite views; rather a new thing in medical science. The application of them became more and more general, his pupils were everywhere disseminating them more or less in the navy, in the army, in the provinces, and in America.

Still, it must not be imagined that his principles became diffused, with that rapidity which might have been inferred from his numerous and attentive class. Constituted as medical education is—but more especially as it was at that time, for it is slowly im-

proving—pupils were almost entirely absorbed in the conventional requisitions for examination. There, they were not questioned as to the laws of the animal economy, nor even on any real axioms in approximation to them, but simply as to plain anatomy, the relative situation of parts, and such of the ordinary surgery of the day, as had received the approbation of those who were, for the time, the authorities in the profession. Therefore, out of a large number, there were comparatively few whose attentions were not too much absorbed by the prescribed curriculum of hospital routine, to study principles; a curriculum constructed as if the object were to see how much could be learnt in a short time, without detriment to the very moderate requisitions of the examination at the College of Surgeons. But if comparatively few had time to study Abernethy's lectures at the time, a great many had treasured up his remarks. As the impressions we receive in our childhood, before we are capable of thinking of their value, are vividly rekindled by the experience of real life;

so many of the more suggestive lessons of Abernethy's lectures, which passed comparatively unheeded at the time, or were swamped in the "getting up" of the requisitions for an examination at the College, recurred in after days, in all their force and truthfulness. Many, however, with more time and perhaps more zeal, endeavoured to thoroughly master his views, and now and then he was gratified by evidence, that time had only served to mature the conviction of the pupils; in dedications and other complimentary recognitions, in the works of such of them, as had been induced to publish any portion of their own experience.

However various, too, the impressions made by his book, there are two things certain, viz.: that he was much talked of, and the book had an extensive sale, went through several editions, and served to give the *Public* some notion of those principles which he was so beautifully unfolding to the younger portions of the profession, in his lectures. Besides, although there were not wanting those who spoke disparagingly of him, still as an old and very far-seeing col-

league of our own used to say, with perhaps too much truth, when canvassing the various difficulties of a medical man's progress in the metropolis: "A man had better be spoken ill of, than not spoken of at all." He was now beginning to be very largely consulted. The Public had "got hold of him," as we once heard a fashionable physician phrase it, and he soon obtained a large practice. A great many consulted him for very good reasons, and probably many for little better reason than that he was the fashion. Abernethy had a great deal more practice than he or any other man could do full justice to; finding it impossible to make people understand his views in the time usually allotted for consultation, he now referred his patients to his book, and especially page 72. This has been made the subject of a great deal of quizzing, and of something besides not altogether quite so good-natured. For our parts, we think it the most natural thing in the world to refer a patient to a book, which may contain more in full the principles we desire them to understand, than we can hope to find opportunity to explain

at the time of consultation. We think that if asking a few questions, and writing a prescription (and we are here only thinking of a reasonably fair average time visit), be worth a guinea, the explaining a principle, or so placing a plan before a patient, that his following it may be assisted and secured, is worth fifty times as much ; and it came particularly well from Abernethy, one of whose lessons, and a most excellent lesson too, was the remark : “That if a medical man thought he had done his duty when he had written a prescription, and a patient regarded his as fulfilled, when he had swallowed it, they were both deceived.” As we are convinced that, *cæteris paribus*, success in medical treatment is indefinitely promoted, by both patient and surgeon *clearly understanding* each other as to *principles* ; we think it would be of great use if every medical man who has any definite principles of practice, were to explain them in short printed digests. Nay, we have sometimes thought it would be useful to both parties, if, in addition to the inquiries and advice given at consultation, a medical man should

have brief printed digests of the *general* nature and relations of most of the well-defined diseases, a careful perusal of one of these would help the patients to comprehend the nature and objects of the advice given, tend to the diffusion of useful knowledge, and in time help them to understand whether their treatment were conducted on scientific views, or merely a respectable sort of empiricism. What is here intended, might be printed on a sheet of note-paper; and whilst it would be of great service to the patient, would form no bad test of the clearness and definite principles of the medical attendant. There is no doubt that Abernethy did good service by referring patients to his book; it led some to think for themselves, and it also assisted, *pro tanto*, in doing away with that absurd idea, which supposes something in medical practice inappreciable by the public.

At this time, whilst, with a considerable indifference to money, he was making a large income, still he was obliged to work hard for it. He had yet no emolument from the Hos-

pital, he was still only an assistant surgeon. The tenacity of office, which assistant surgeons so commonly complain of, they have themselves seldom failed to exercise when they have become surgeons (as we shall see, Mr. Abernethy excepted). This long tenure by his senior wearied him, and was at times a source of not very agreeable discussions.

On one occasion, Sir James Earle, his senior, was reported to have given Abernethy to understand that on the occurrence of a certain event, on which he would obtain an accession of property, that he, Sir James, would certainly resign the surgeoncy of the Hospital. About the time that the event occurred, Sir James, happening one day to call on Abernethy, was reminded of what he had been understood to have promised. Sir James, however, having, we suppose, a different impression of the facts, denied ever having given any such a pledge. The affirmative and negative were more than once exchanged, and not in the most courteous manner. When Sir James was going to take his leave, Abernethy opened

the door for him, and as he had always something quaint or humorous to close a conversation with, he said, at parting: "Well, " Sir James, it comes to this: you say that " you did not promise to resign the surgeoncy " at the Hospital, I, on the contrary, affirm " that you did; now all I have to add is, " —— the liar!"

In 1813, Abernethy accepted the surgeoncy of Christ's Hospital, which he held until 1828, a short time before he retired from practice.

In 1814, he was appointed Professor of Anatomy and Surgery to the College of Surgeons; an appointment which could be, at this period, of little service to him, whatever lustre it might reflect on the College, where he gave lectures with a result which has not always followed on that appointment—namely, of still adding to his reputation. He was one of the few who addressed the elders of the profession without impressing the conviction that he had been too much employed in addressing pupils. He had given lectures two years in succession, when in 1816, circum-

stances occurred, which will occupy us for some little time ; a new scene will be opening on us, and this suggests the period (1815-16) as convenient for taking a retrospect, and a sort of general view of Abernethy's position.

CHAPTER XVII.

“ Sperat infestis metuit secundis
 Alteram sortem bene preparatum Pectus.”

HOR.

“ Whoe'er enjoys th' untroubled breast,
 With Virtue's tranquil wisdom blest,
 With hope the gloomy hour can cheer,
 And temper happiness with fear.”

WHEN we look abroad amongst mankind, nay, even in the contracted sphere of our own experience, it is interesting to observe the varied current of human life in different cases. In some, from the cradle to the grave, life has been beset with difficulties, it has been a continued struggle; the breath seems to have been

first drawn, and finally yielded up, amidst the multifarious oppositions and agitations of adversity. In other instances, Life seems like an easy, smoothly gliding stream, gently bearing Man on, to what had appeared to be the haven of his wishes, and the little voyage has been begun and completed without the appearance of a ripple. All varieties are no doubt the result of constantly operating laws. Of these, many are probably inscrutable by us; many more, perhaps, escape our observation. The unforeseen nature of many events, confers the character of mystery on any attempt at foresight; yet, when we take a careful retrospect of a life, it is curious to observe how naturally the secondary causes appear to have produced the results by which they were followed, but which, beforehand, no one had thought of predicting.

Varied, however, as is the course of human life, few men have arrived at eminence without difficulty. We do not mean that ephemeral prominence of "position," which makes them marked in their day; but that which leaves the

impression of their minds on the age in which they lived, or on the science or other pursuit which they had chosen—original minds who have striven to enlarge the boundaries of our knowledge. Such men usually have the ample gifts of nature, with which they are endowed, somewhat counterbalanced by the difficulty experienced in the successful application of them.

Abernethy had not been altogether exempt from such difficulties. With a sensitive organization, he had had to make his own way; he had experienced the difficulties which attend the advocacy of opinions and principles which were opposed to, or at all events, different from those generally entertained. He had had to encounter that misconstruction, misrepresentation, ridicule, even malice, save the mark! which is too frequently provoked by any attempts to tell people that there is something more correct than the notions which they have been accustomed to value. Still, when we compare Abernethy's course with that of many, we had almost said most, benefactors to science, he might be said to have been a fortunate man.

If a man has power and a "place to stand on," and Abernethy had both, truth will tell at last.

A retired spot, in an obscure street near St. Bartholomew's, had been by his almost unaided talents expanded into a theatre within the walls of the Hospital. This was becoming again crowded; and although it formed a satisfactory arena for the development and illustration of his principles, the increasing audiences were significant of the coming necessity of a still larger building, and which in fact, was a few years afterwards constructed. He had, indeed, arrived, as we imagine, at a point which was comparatively smooth water, and which we are inclined to regard as the zenith of his career.

In the opening of his beautiful lectures at the College, Abernethy, in one of his warm and earnest endeavours to animate his audience, to regard benevolence, and the love of truth, as the impulses which could alone urge on and sustain industry in cultivating the "Science" of our profession, had observed that, "unfortunately, a man might attain to a considerable share of public reputation without being a real

“student of his profession.” There have been, indeed, too many examples of that, as also of those who, after years of labour, have failed to obtain a scanty living.

Abernethy had been a real and laborious student in science, and he was now reaping an abundant and well-deserved fruition. Few surgeons have arrived at a position so calculated to satisfy the most exacting ambition. Although the full extent and bearing of his principles were by no means universally understood, yet the general importance of them was so, and in some measure appreciated. In a greater or less degree, they were answering the tests afforded by the bedside in all parts of the world.

Ample, therefore, as might be the harvest he was reaping in a large practice, he was enjoying a still higher fruition in the kind of estimation in which he was held. He had a high reputation with the public, one still higher amongst men of science. His crowded waiting-room was a satisfactory evidence of the one, and the manner in which his name was received here

on the continent, or in America, a gratifying testimony of the other. He was regarded much more in the light of a man of enlarged mind—a medical philosopher, than merely as a distinguished surgeon.

From the very small beginnings left by Mr. Pott, he had raised the school of St. Bartholomew's to an eminence never before attained by any school in this country. I think I may say that, in its *peculiar character*, it was, at that time (1816), unrivalled.

Sir Astley Cooper was in great force and in high repute at this time; and combining as he did the schools of *two* large hospitals, had, I believe, even a larger class. Both schools, no doubt, endeavoured to combine what is not, perhaps, very intelligibly conveyed by the terms practical and scientific; but the universal impression assigned the latter as the distinguishing excellence of Mr. Abernethy, whilst the former was held to express more happily the characteristic of his eminent contemporary.

Whatever school, however, a London student might have selected as his Alma Mater, it was

very common for those whose purse, time, or plans permitted it, to attend one or more courses of Abernethy's lectures; and it was pleasing to recognize the graceful concession to Mr. Abernethy's peculiar excellence, afforded by the attendance of some of Sir Astley's pupils, and his since distinguished relatives, at the lectures of Abernethy.

As I have said, his practice was extensive, and of the most lucrative kind—that is, it consisted largely of consultations at home. Still, he had patients to visit, and as he was very remarkable for punctuality in all his appointments, was therefore not unfrequently obliged to leave home before he had seen the whole of those who had applied to him. The extent of his practice was the more remarkable as there was a very general impression, however exaggerated it might be, that his manners were unkind and repulsive. His pupils were enthusiastically fond of him, and it was difficult to know which was the dominant feeling—their admiration of his talents or their personal regard.

Some of the most distinguished men had been of their number ; and it would be gratifying to us to enumerate the very complimentary catalogue of eminent men who have been indebted for much of their eminence and success to the lessons of Abernethy ; but as in so doing we might possibly, in our ignorance, omit some names which ought to be recorded, we forego this pleasure, lest we should unintentionally appear to neglect any professional brother whom we ought to have remembered.

In 1812-13, the pupils had presented Mr. Abernethy with a piece of plate "as a testimony of their respect and gratitude." The arrangement of the matter was confided chiefly to the present Sir James Eyre, Mr. Stowe of Buckingham, and Mr. George Bullen. In a very interesting letter, with which I have been favoured by Mr. Stowe, amongst other matters hereafter to be mentioned, it is stated that the plate was delivered at Abernethy's house on the 1st of April ; and as he had no more entirely escaped such things than other medical men, he at first regarded it as a hoax ; but when the

contents were exposed, and he discovered the truth, he became much affected.

The regard of the pupils was always the thing nearest his heart. On meeting the class at the hospital, he essayed to express his feelings; but finding that he should only break down, he adopted the same course as he had employed on another memorable occasion, and *wrote* his acknowledgments, a copy of which was suspended against the wall of the theatre.

It is due to our worthy and kind-hearted contemporary, Sir James Eyre, to add that Mr. Stowe observes in his letter, that of all others, Sir James was the most zealous promoter of a movement so creditable to all parties. Some years after this another subscription was commenced by the pupils for a portrait of Abernethy, which was painted by Sir Thomas Lawrence, and engraved by Bromley. Sir Thomas, and the engraver after him, have been most successful. He has caught one of Mr. Abernethy's most characteristic expressions. We see him as he often stood when addressing the *anatomical* class. In his surgical lecture

he was generally seated. We think it impossible to combine more of him in one view. We fancy we see his acute penetration, his thoughtful expression, his archness and humour and his benevolence, all most happily delineated, whilst the general position and manner is eminently faithful.

In 1815 he had been appointed surgeon to the hospital, after twenty-eight years tenure of the assistant surgeoncy; a subject that we merely mention now, as we shall be obliged to revert to it when we consider the subject of the "Hospital System."

At the time to which we allude, lecturing had become so easy as to appear little more than amusement to him, yet there were (we speak of about 1816) no signs of neglect or forgetfulness. His own interest in the subject was sustained throughout; but as his unrivalled lecturing will be more fully described, we must not anticipate. Few old pupils visited London without contriving to get to the hospital at lecture time. The drudgery of the early morning anatomical demonstration was taken

off his hands by Mr. Stanley,* who performed his task with credit to himself, and with justice to the pupils.

Every morning, punctually at nine o'clock, would Mr. Stanley, in an amusingly declamatory tone, shout forth the dry but necessary truths of descriptive anatomy. His delivery was accompanied with not a little of metropolitan peculiarity, numerous facial gesticulations, and with occasional solemnities of tone which assorted oddly with the homely subject of the course of an artery. But this excited no satire; it was always received with smiles and good-nature, and gave room for a little fun which served to light up the foggy mornings of a London winter, and the occasionally not very lively details of an anatomical demonstration.

If the style was faulty, the duty was well done. The endless, but perhaps necessary, repetitions, impressed the facts; a subordinate

* Mr. Lawrence has for many years performed most ably the duties of Demonstrator, and on Mr. Lawrence's resignation, in 1815, Mr. Abernethy had conferred the appointment on Mr. Stanley.

but important branch of the school was well supplied, and Mr. Stanley had a numerous and attentive class. Abernethy, at this time, in addition to a successful school, a large and attached class, a solid and world-wide reputation, was receiving numerous proofs that his principles were recognized; that, however, imperfectly adopted, they were gaining ground, and that if all his suggestions were not universally admitted, they, were becoming axiomatic with some of the first surgeons, both in this and other countries.

We think it not improbable that it was somewhere about this period, that it was proposed to confer on him the honour of a Baronetcy. We had long been familiar with the fact, but not regarding it as very important, and having nothing in proof of it, but the generally received impression, we omitted any reference to it in the first edition of these Memoirs. Finding, however, more interest attached to the circumstance than we expected, we have communicated with the family on the subject, and have ascertained

that all the circumstances are fresh in their recollection, although they cannot recall the exact period at which they occurred.

His first announcement of the fact to his family was at table, by his jocosely saying: "Lady Abernethy, will you allow me to assist you to—?" &c. Having had his joke, he then formally announced to them the fact, together with the reasons which had induced him to decline the proffered honour — namely, that he did not consider his fortune sufficient, after having made, what he regarded as only a necessary provision for his family.

It is probable that his motives were of a mixed character. We do not believe that he attached much value to this kind of distinction, and that had he availed himself of the offer, it would have been, rather from a kind of deference to the recognition it afforded of the claims, and as thus indirectly promoting the cultivation of Science, than for any other reason. It was not but that he held rank and station in the respect which is justly due to them; but, that he regarded titles as no very certain tests

of scientific distinction. Enthusiastic in his admiration of intellectual, still more of moral excellence, he had something scarcely less than coldness in regard to the value of mere titles; whilst he beheld, with something like repulsion, the flattery to which their possessors were so often exposed.

There are men, who have so individualized themselves that they seem to obscure their identity by any new title. John Hunter was scarcely known by any less simple appellation. We hardly now say "*Mr.*" Hunter without feeling that we may be misunderstood. It begins to have a sound like "*Mr.*" Milton or "*Mr.*" Shakspeare; Abernethy and John Abernethy are fast becoming the only recognized designations of our philosophical surgeon, for even the modest prefix of *Mr.* is fast going into disuse. Be this as it may, it is certain he declined the honour, and to us it is equally so, that he felt at least indifferent to it; for although the good sense and good-feeling implied in the reasons alleged were characteristic, yet, had they constituted the only motive, he might, with his abun-

dant opportunities, have removed that objection in a very reasonable time, without difficulty.

He told me once of an interview he had with Lord Castlereagh, which may, perhaps, be not out of place here. When Sir T. Lawrence was painting the portrait, and Abernethy went to give him a sitting, Abernethy was shown into a room where another visitor, a stranger to him, was also waiting. The stranger, looking at a portrait of the Duke of York, observed, "Very well painted, and very like." "Very well painted," Abernethy replied. The other rejoined: "A good picture, and an excellent likeness." "A very good picture," said Abernethy. "And an excellent likeness," again rejoined his companion. "Why, the fact is," said Abernethy, "Sir Thomas has lived so much amongst the great, that he has learnt to flatter them most abominably." On being shown in to Sir Thomas, Sir Thomas said: "I find you have been talking to Lord Castlereagh."

He had not, we think, as yet sustained the loss of any member of his family, nor hardly

experienced any of those ordinary crosses from which few men's lives are free, and which sooner or later seldom fail to strew our paths with enough to convince us that perfect peace cannot be auspiciously sought in the conduct of human affairs. He was soon, however, to receive an impression of a painful nature, and from a quarter whence, whatever might have been his experience, he certainly little expected it. Long accustomed to be listened to by admiring and assenting audiences, whether in the theatre of the hospital, or in those clusters of pupils which never failed to crowd around him whenever he had anything to say; he was now to have some of his opinions disputed, his mode of advocating them impugned, his views of "Life" made the subject of ridicule, and even his fair dealing in argument called in question. All this, too, by no stranger; no person known only to him as one of the public, but by one who had been his pupil, whose talents he had helped to mature and develop, whose progress and prospects in life he had fostered and improved, and to whom, as was

affirmed by the one, and attested by the other, he had been a constant friend.

That this controversy was the source of much suffering to Abernethy, we are compelled to believe; and it is altogether to us so disagreeable, and difficult, a subject, that we should have preferred confining ourselves to a bare mention of it, and a reference to the works wherein the details might be found; it is, however, too important an episode in the life of Abernethy to be so passed over; it suggests many interesting reflections; it exhibits Abernethy in a new phase, illustrates, under very trying circumstances, the

“ Virtus repulsæ nescia
Intaminatis fulgit honoribus,”

and brings out in stronger relief than any other transaction of his life, the best and most distinctive traits of his character (benevolence and Christian feeling), under temptations which have too frequently disturbed the one, and destroyed the other.

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G. M.





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