Lectures on practical and medical surgery, comprising observations and reflections on surgical education : on the investigation of disease; and on the ordinary duties of the surgeon; forming part of an extended course on the principles and practice of surgery, delivered in 1828 and 1829.

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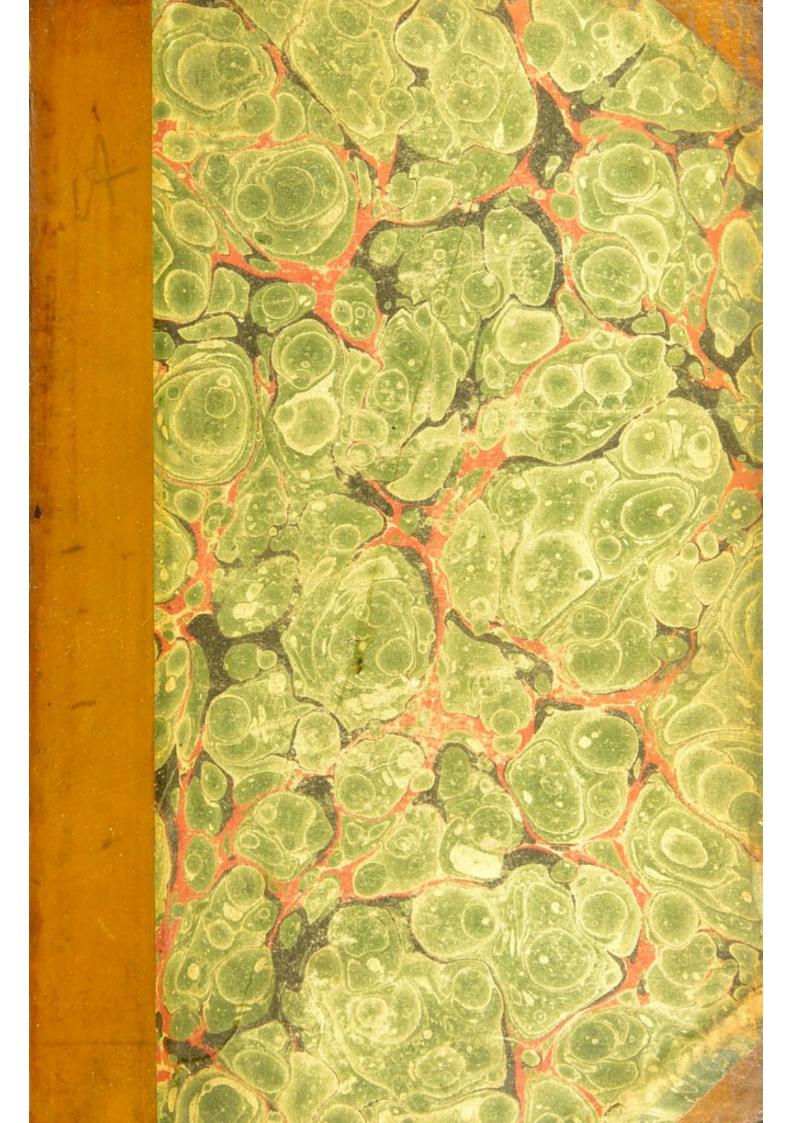
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The Artery wounded in Blood-letting -condition of the arm after the first Operation for securing it. ( Bugraved for Alcock's Surgiaal Locures, 1830) Ba PLATE 1

# LECTURES

ON

# Practical and Medical Surgery,

#### COMPRISING

OBSERVATIONS AND REFLECTIONS ON SURGICAL EDUCATION; ON THE INVESTIGATION OF DISEASE;

AND ON THE

ORDINARY DUTIES OF THE SURGEON:

FORMING PART OF AN EXTENDED

# Course

ON THE

### PRINCIPLES AND PRACTICE OF SURGERY,

DELIVERED IN 1828 AND 1829.

ILLUSTRATED BY ENGRAVINGS.

# BY THOMAS ALCOCK,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON, ----- OF THE MEDICAL AND CHIRURGICAL SOCIETY, ----- OF THE MEDICAL SOCIETY OF LONDON, &c. &c.

"He that waits for an opportunity to do much at once, may breathe out his life in idle wishes; and regret, in the last hour, his useless intentions and barren zeal." JOHNSON.

#### LONDON:

PUBLISHED BY BURGESS AND HILL, GREAT WINDMILL STREET, HAYMARKET.

1830.

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LONDON: PLUMMER AND BREWIS, PRINTERS, LOVE LANE, EASTCHEAP. TO THE

PHYSICIANS AND SURGEONS

WHO ARE MEDICAL OFFICERS OF HOSPITALS,

AND OF

OTHER PUBLIC CHARITIES, IN THE UNITED KINGDOM;-

то

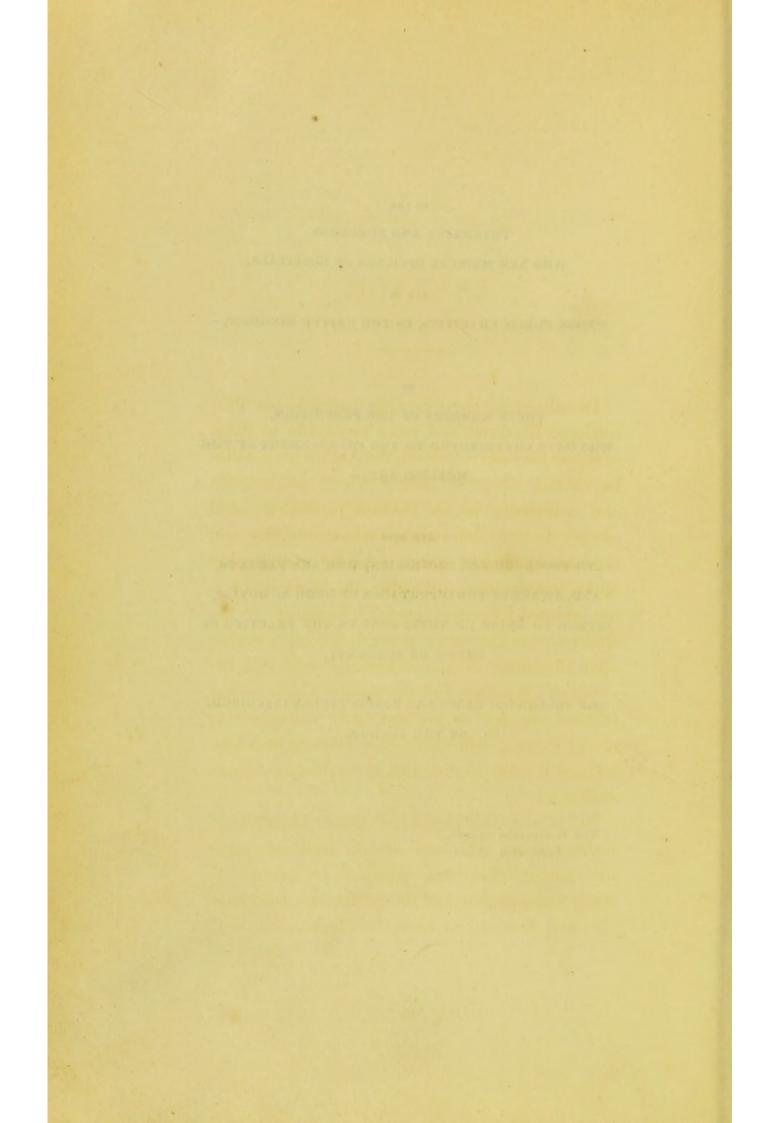
THOSE MEMBERS OF THE PROFESSION, WHO HAVE CONTRIBUTED TO THE IMPROVEMENT OF THE HEALING ART ;--

#### AND ALSO

TO THOSE (OF THE PROFESSION) WHO ARE PARENTS, AND, AWARE OF THE IMPORTANCE OF MEDICAL DUTIES, INTEND TO BRING UP THEIR SONS TO THE PRACTICE OF PHYSIC OR SURGERY;

THE FOLLOWING PAGES ARE RESPECTFULLY INSCRIBED, BY THE AUTHOR.

NEW BURLINGTON STREET, SEPT. 1829



In submitting the following pages to his Professional Brethren, and more especially to those to whom they are inscribed, the Author knows that he submits them to judges whose attainments and experience in an arduous profession, well qualify them to determine,-whose integrity and honourable conduct insure a candid examination and a just decision,-whether the work is, or is not adapted to convey useful information to the student, or to the young practitioner just entering upon the duties of his profession?-whether the views of the author and the means which he has pointed out, are or are not fairly calculated to render surgical education more efficient and useful, and thereby to diminish the extent of human suffering?

It is not the object of these Lectures to instruct those who are already well informed: the author does not presume or profess to teach those members of the profession, who have observed, reflected, and practised their calling with

honour to themselves, with benefit to the community,-who have, in the true sense of the word, acquired experience : should the facts adduced, and the sentiments and conclusions of the author be found in accordance with those of such members of the healing art, in whatsoever department of the profession they may happen to move, it is as much as he can expect. But whilst he freely makes this admission, he is aware that what occurs in those limited associations or societies for the discussion and diffusion of medical knowledge, takes place in a greater degree in the republic of science; namely, that every individual who contributes his mite of information, may yet reap much more abundantly from the facts and suggestions elicited from others engaged in the same pursuits: so that every one contributing what he conceives may be interesting or useful as bearing upon the point discussed, yet rises from the discussion with more or less improvement,with his ideas confirmed, corrected, or enlarged by the observations proceeding from the collective stores of the whole assembly.

The labours of any individual, in his attempts to promote the usefulness of the healing art, are but as a speck compared to the immensity of the field already successfully cultivated by his predecessors : he who has faithfully endeavoured to qualify himself for the various duties of medical

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or surgical practice, is much more likely to feel humility from the contemplation of the vast extent of science in relation to medical knowledge, than to be elated with the little he may have been enabled to effect (even though his good intentions and his zeal in the pursuit may have stood the test of years) or to suppose that he alone is in possession of stores which are not, either wholly or in a great measure, in common with others, who have paid as fully the price of intellectual labour, without which, excellence or even efficiency in any of the higher departments of art or science, is unattainable.

Feeling deeply the humility arising from such reflections, and candidly stating that this publication is chiefly designed for the use of students, and of young practitioners, the author is nevertheless induced to hope, that his professional brethren, his equals, or his superiors in attainments, may not find the suggestions offered and the facts adduced, wholly without use; not as instruction, but as affording materials for their examination and reflection, by which useful discoveries or further improvements may be effected. He would beg leave to direct the attention of the experienced practitioner, to the Observations relating to the Investigation of Disease, generally; and to the Observations on the Inflammations of the Mucous Membranes of the Organs of

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Respiration, more particularly; as connected with some of the most dangerous and fatal diseases incident to childhood, (though not absolutely confined to any age) as offered in this spirit, --- to engage others in the further investigation of the diseases therein alluded to, and of the means of remedial treatment. By such views, unless the author greatly deceive himself, the diminution of mortality, the alleviation or rather the prevention of protracted suffering, may be effected to a degree beyond even that which the philanthropist could anticipate;unless his prospects were cheered by the known ameliorations in the healing art,-by which diseases have been averted or subdued, which formerly acted and still do act occasionally, under unfavourable circumstances, as scourges of the human race.

The author has added, in various parts of the work, Observations on the means of rendering Surgical Instruction more efficient, which he submits to his professional brethren engaged in instruction, whether as private practitioners, in relation to their pupils or apprentices, or as public teachers, for adoption if they approve, or for the suggestion of other preferable methods.\* He has also glanced at a list or series

\* The author will be glad to receive any such suggestions, which he will candidly consider, and if he find them worthy of adoption, will not fail to avail himself of them, with due acknowledgement to the proposers-should the revision of the

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of practical Exercises performed by the students upon the living body, designed to give precision in the use of the means of treatment required in the diseases and accidents of frequent occurrence, in which surgical apparatus is necessary.

In the Appendix will be found a series of Exercises and of Operations performed on the dead subject, an essential preliminary to the safe performance of surgical operations on the living body.

The preceding Exercises and Operations were performed under the Lecturer's immediate superintendence, by those of the students of his class who conformed to the arrangements by which these extra instructions were regulated, and were conducted with the same attention to precision and completeness, as if performed in actual practice.

Such preparatory exercises the author believes to be most useful to the student, and, in addition to sufficient elementary knowledge, essentially necessary to guard against the dangers of incompetency,—to prevent the recurrence of scenes of horror at which humanity shudders, and of which,

work afford him opportunity. Such communications are requested to be forwarded (postage free) to his residence, 11, New Burlington Street, or under cover, addressed to him, at the publishers of this work.

unfortunately, there are on record too many distressful examples.

In the Lectures addressed to students, the author has abstained from the discussion of the subject of Surgical Legislation, conceiving that their time might be more usefully employed; whilst their imperfect knowledge of its bearings disqualified them from that consideration of the matter, which should lead to just conclusions; but in the Introductory Lecture, the delivery of which was honoured by the presence of many Physicians, Surgeons, and General Practitioners, distinguished and experienced members of the profession, he did not hesitate to touch upon the dangerous ground. Would that the system could justly bear that commendation which every upright member would wish to bestow on institutions established to promote the advancement of an useful and honourable profession!

From the best consideration and reflection which he has been enabled to give the subject of medical and surgical education,—as subservient to the duties of an arduous profession, he is fully persuaded that many of the discussions which have occupied the attention of the profession and of the public, have been confined to too partial views, relating to the members of the profession; as to whether the few should rule, tax, and degrade the many, or whether the many should select or

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elect the few, who were to be their masters : not that injustice ceases to be injustice, because it may be inflicted upon a limited or small proportion of the community;-but there remains yet almost untouched, one consideration, compared to which, the partial interests of the members of the profession may be estimated as mere dust in the balance. The author alludes to that higher influence, as a matter of humanity, which the medical profession exerts upon the community;--to the benefits which it confers, or to the miseries which it inflicts, in proportion to the due qualification or the incompetence of its professors. That the healing art, exercised with intellect, with diligence and humanity, must prove a blessing, is a truth which those acquainted with the history of our art, will not be likely to call in question .---That the inflictions arising from ignorance, inattention and indifference to the dictates of humanity, prove a curse to those subjected to them, is not less true, although it may be less obviousfor "the grave tells no tales." \*

"It is seen in the history of the French Academy, that the princes and generals of France willingly took the field when they could prevail upon Parée to go out along with them; and

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<sup>\*</sup> Among many other names of surgeons who have rendered signal service to the community, that of Parée affords an example worthy of remembrance. Mr. John Bell relates a remarkable instance of the estimation in which this deserving man, as good as he was great, was held.

In examining the objects of the healing art upon these grounds,-of humanity and of utility to the community at large, the author believes it would be perfectly practicable, without asperity, to put the matter in that point of view which should be consistent with duty and truth. Were he to undertake this task, he would not attempt, by any assertion of his own, to supersede the judgment of others, but endeavour to divest the subject of its obscurity and complexity, and to place it distinctly in that point of view, which should enable every one of good common sense, of unprejudiced mind, and of clear understanding, to examine the principal bearings of the question, and to deduce those conclusions which the justice of the case demands.

In errors of judgment, which minister to self-

at the time when all the noblesse of the kingdom were shut up in Mentz, which was besieged by Charles V. in person, at the head of 100,000 men, they sent a sort of embassy to the king their master, beseeching him to send Parée to them. An Italian captain, for a great reward, introduced him into the city. They instantly sent at midnight to awaken the prince, who commanded the city, with the good news of his arrival. The governor begged of him that he would go next day and show himself upon the breach. He was received with shouts of triumph; Mentz was then the bulwark of France; and it has always been ascribed to the presence of this single man (so perfect was their confidence in him) that they kept the city till the gallant army which lay around it perished beneath its walls."

importance,—which extend "a little brief authority,"—which, however free from any taint of unworthy motives, increase the gains in proportion to the extent of error,—it is not surprising that the road to them should be smooth and easy—the *facilis descensus* of the poet;—but the retracing of footsteps is indeed quite a different labour.

It is not, however, by virulent abuse and by rancorous personalities that the honour and dignity of the profession are to be sustained: truth and justice neither require nor admit of the use of such means. A cause which involves the welfare of thousands, and the best interests of a noble profession, merits at least a calm and dignified consideration. If, thus considered, it can be demonstrated that errors of judgment amount virtually to injustice, and are highly detrimental to society;-that humanity, the welfare of the community at large, the honour of the profession-all demand rational ameliorations;-the power of public opinion-of the worthy, the enlightened, and the disinterested-will sooner or later enforce the adoption of them; whilst the separate interests of the members of the profession may safely be trusted to find their level in proportion to the services rendered to the community. Did the disinterestedness, the philanthropy of JENNER pass unrewarded? Did he suffer because he nobly communicated a Discovery,

by which the lives of thousands, nay of millions, in all human probability, have been already preserved? Certainly not:—A GRATEFUL NATION REWARDED HIM! whilst beyond all pecuniary reward, he enjoyed the esteem—the grateful acknowledgments of the good and wise of all civilized countries—the homage due to those of superior mind, whose labours have rendered essential service to the cause of humanity.

The consciousness of intellectual superiority does not stoop to pitiful expedients—to the degradation of others to establish its own preeminence:—neither does it grasp at wealth and advantages *per fas aut nefas*, as if they were the great objects for which life was given. The truly elevated mind, whilst grateful for the benefits which Providence bestows, can contemplate the diffusion of good, as in strict conformity with the Divine Precept " Love thy brother as thyself."

The writer of these remarks is well aware of the indirect means sometimes resorted to in order to oppress, to oppose the pretensions, nay even the just claims, of those who may dare to question the infallibility of others, possessed of a little brief authority, or placed in situations of public trust;—as if, the appointment to office or trust must preclude the common imperfection incident to human nature—the liability to error! Does the consciousness of intellectual power,—of du-

ties faithfully performed, shrink from the candid scrutiny even of public inquiry? They who cannot tolerate such scrutiny without wincing or resentment, must indeed be objects of great commiseration. Such a morbid sensitiveness affords a strong presumption, that the appointment to such offices may depend more upon fortuitous circumstances, than upon the peculiar fitness of the individuals to fulfil the duties appertaining thereto.

Such stations are of great importance, when viewed in their relation to the interests of science, which, speaking comprehensively, are neither more nor less than the interests of humanity. Such situations, when ably and honourably filled, when the duties which they impose are faithfully and disinterestedly performed, ennoble and shed a lustre around their possessors :---but should it unfortunately happen, that the high moral responsibilities, which such appointments involve, are not appreciated ;-that the habits and pursuits of the individuals, as well as their intellectual attain ments, are far, very far from being in accordance with that tone of mind which is essential to the faithful performance of exalted duties-of duties that can only be fulfilled by the frequent sacrifice of personal convenience and interest :- should their acts or conduct unfortunately evince (for, be it remembered, the Tree is known by its Fruit)

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that they are strangers to that tone of mind, which makes no distinction between the sufferings of human beings, whether they fall to the lot of the most abject and friendless, or to those possessed of wealth and power; but, in the even tenor of its way, affords to the utmost extent, consolation and relief to all subjected to its influence :---should it unfortunately happen, that individuals thus unqualified for the higher duties of their offices, should flounder on again and again, content with the indirect emoluments, which are sometimes of enormous amount in proportion to any services rendered, arising from such situations-the miseries resulting are incalculable; even amounting in many instances to the loss of life. Under such circumstances, does it, or does it not, behave every honest man dispassionately to inquire—what is the distinction, in a moral point of view, between the conduct of a charioteer who heedlessly drives over a passenger, who may have stumbled and fallen in his way, and destroys a life, which might by a little care and foresight have been spared-and that of an individual, in a highly honourable station, by whose inefficiency, obvious error of judgment, or supineness, a life is heedlessly sacrificed ? A sacrifice which might, by a more prompt and efficient use of the means which science places within the reach of humanity, have in all human probability been averted, as certainly as in the supposed

instance of the charioteer and the luckless passenger.—Which of these two individuals—the heedless driver, or the reckless man of education —is the more amenable to that high Court of Equity and Justice, the Moral Influence of Public Opinion?—A Court to which, in this favoured land of rational freedom—abounding in examples of exalted conduct, appeal, in the Cause of Humanity, is never made in vain.

The records of the profession furnish, alas! unequivocal and distressful evidence of numerous fatal errors, which might have been averted. Is then the allusion to such surgical catastrophes a crime, and yet the infliction of the miseries, which lead to them, none? Is there, or is there not, any imperious necessity for their recurrence?—Let common sense and humanity supply the answers!

However important such considerations may be, in their relation to the welfare of the most friendless part of the community, the mere personal interests of any individual in the profession, were it a question of prudence and not one of humanity, might well deter him from even alluding to such a subject; for he must possess but little knowledge of the world—of the feelings of many, who have ample influence either to serve or to decry, who is not aware that freedom of opinion, in matters concerning the well being of the surgical profession, is virtually considered

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and visited as a sin of no less magnitude than that of heresy in matters of religious belief. Be it so! The author of these pages has dared to think for himself; and whilst he willingly pays the homage due to superior minds, where that homage is merited, the willing homage of his approbation to conduct founded upon justice and liberality; he can yet contemplate without envy or repining, nay, he can look down with commisseration upon the possessors of, the highest advantages, which have been attained by unworthy means. He who from conviction believes that independence and peace of mind, —that the tranquilla silentia vitæ, are blessings worthy of purchase, will not hesitate to make the sacrifices,to pay the price, as it were, of maintaining them; and whilst he values the approbation of the good and worthy, he will not be regardless of the comprehensive principle, " Mihi pluris est Conscientia quàm omnium sermo."

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\* For the accommodation of those Gentlemen who may wish the work for the Library, a few Copies have been printed on large paper, (Svo.) with the Plates carefully coloured from the Original Drawings; whilst for the convenience of the Student who may desire to have his books in a small bulk, and at a less cost, the work has been printed in 12mo. with the Plates uncoloured.

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# EXPLANATION OF THE PLATES.

PLATES I, II, III and IV, refer to an unfortunate case, in which the humeral artery was wounded in performing the simple operation of blood-letting.—The sufferer was previously a healthy man, aged thirty-five.—He had lost alarming quantities of blood day after day, between the injury of the artery and the first operation performed for securing it.

## PLATE I.

Represents the condition of the arm six days after the accident, and the day following the operation for securing the artery. This operation was performed in the night, and consequently under the disadvantage of candlelight, in addition to the difficulties arising from the blood having been so much driven into the surrounding parts as greatly to alter their natural appearance. The limb was much swollen and discoloured; the wound had remained open, without any covering or dressing; the artery was seen pulsating at the bottom of the wound.

# XXVI EXPLANATION OF THE PLATES.

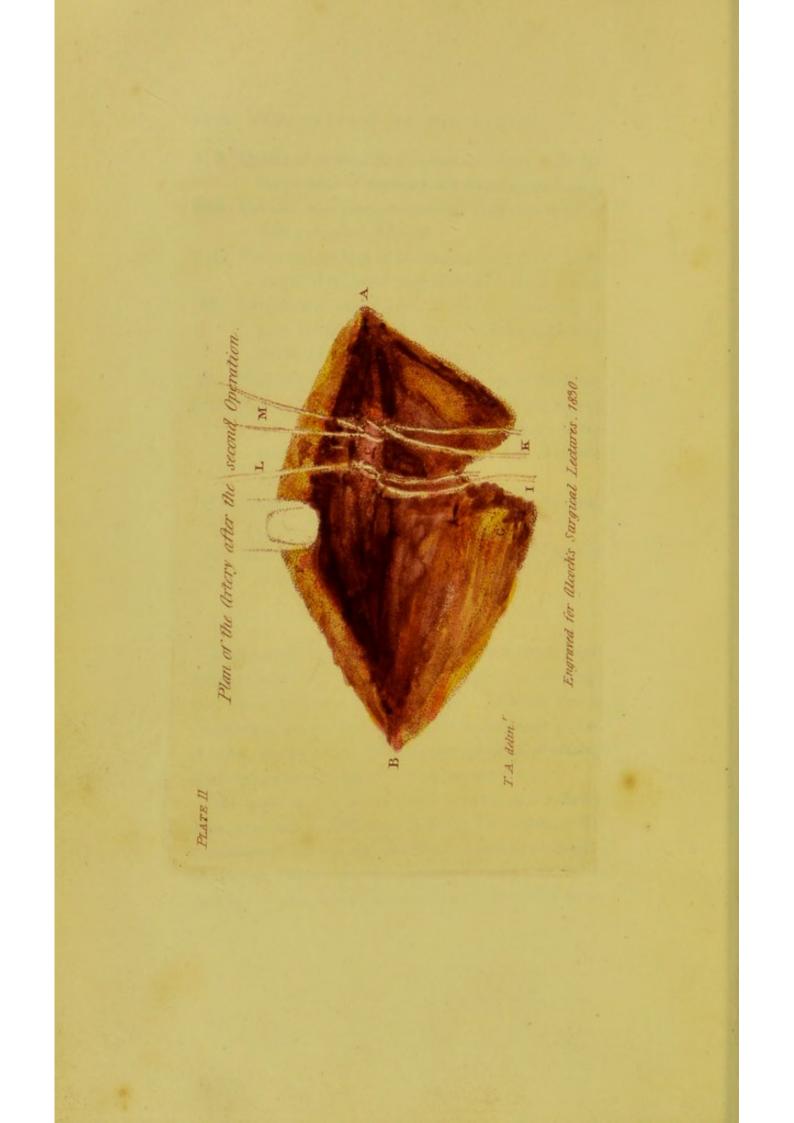
- A, A. Extent of incision (five inches in length) made for the purpose of exposing and securing the artery.
- B, B. Cellular membrane, containing numerous spots of dark extravasated blood.
- C, C. Two unequal flaps of integuments and cellular substance, at the inner edge of the arm and fore-arm.
- D. Integuments and cellular substance, containing a large quantity of dark extravasated blood, forming the outer boundary of the wound.
- E. Place where the orifice had been made in bleeding.
- F, G. The ligatures by which the wounded artery was tied. The artery was so thinly covered above the ligatures, that its pulsation was distinctly seen.
  - H. Flexor-muscles of the fore-arm, not distinctly seen, owing to the extravasated blood, &c.
  - I. Muscles of the arm, indistinctly seen, from the same cause.

#### PLATE II.

In the night, or early in the morning (from twenty-four to thirty hours after the preceding operation) hæmorrhage took place again to an alarming extent, the blood having soaked through the bed, and flowed into a vessel placed beneath. In the forenoon, the second operation of placing ligatures around the artery was performed.

This plate is a PLAN of the ARTERY, (on a reduced scale, the extent from A to B being five inches) at the conclusion of the second operation, necessarily an imperfect sketch, and not a strictly accurate drawing; but indistinct as this sketch may seem, it is more distinctly made





# EXPLANATION OF THE PLATES. XXVII

out than the parts appeared when exposed during the operation. From the thickness of the parts inclosed within the ligatures, more than the artery might be included.

- A. The upper angle of the wound.
- B. The lower angle.
- C. The humeral artery, with the aperture (the original wound of the artery) from which the secondary hæmorrhage proceeded.
- D. Supinator longus muscle.
- E. Pronator teres and flexor muscles.
- F. Integuments, &c. at the outer edge of the wound, held aside by the finger.
- G, H. Integuments, &c. at the inner edge.
- I, K, L, M. Ligatures surrounding the artery, two of which were applied during the first operation, the other two during the second. The parts bore scarcely a trace of their natural appearances; the artery was much detached, and surrounded with matter.

They who have not experienced the difficulties, nor witnessed the dangers which frequently supervene in the treatment of accidents or diseases of no unfrequent occurrence,—who have not reflected upon the apparently trivial circumstances which often in surgery make the difference between safety and the loss of life, may suppose that when the principal artery of a limb, which has been wounded, is tied above and below the wound, further hæmorrhage must needs be prevented :—the disastrous results of this and of too many similar instances shew that an artery may be surrounded, nay, loaded with ligatures, and yet the bleeding return again and again, so as to induce the

### XXVIII EXPLANATION OF THE PLATES.

surgeon at last to amputate the limb, or to suffer the patient to bleed to death.

This, however, is not the place for entering into a discussion of the various circumstances relating to the surgical treatment of the wounds of arteries, nor of the precautions which, either in ordinary cases, or under peculiar difficulties, may be more or less essential to the safety of the sufferer. To deduce practical conclusions which may avert disaster in similar instances, requires that the entire facts should be candidly stated, and carefully analysed; but such materials are rarely furnished in the publication of unsuccessful cases.

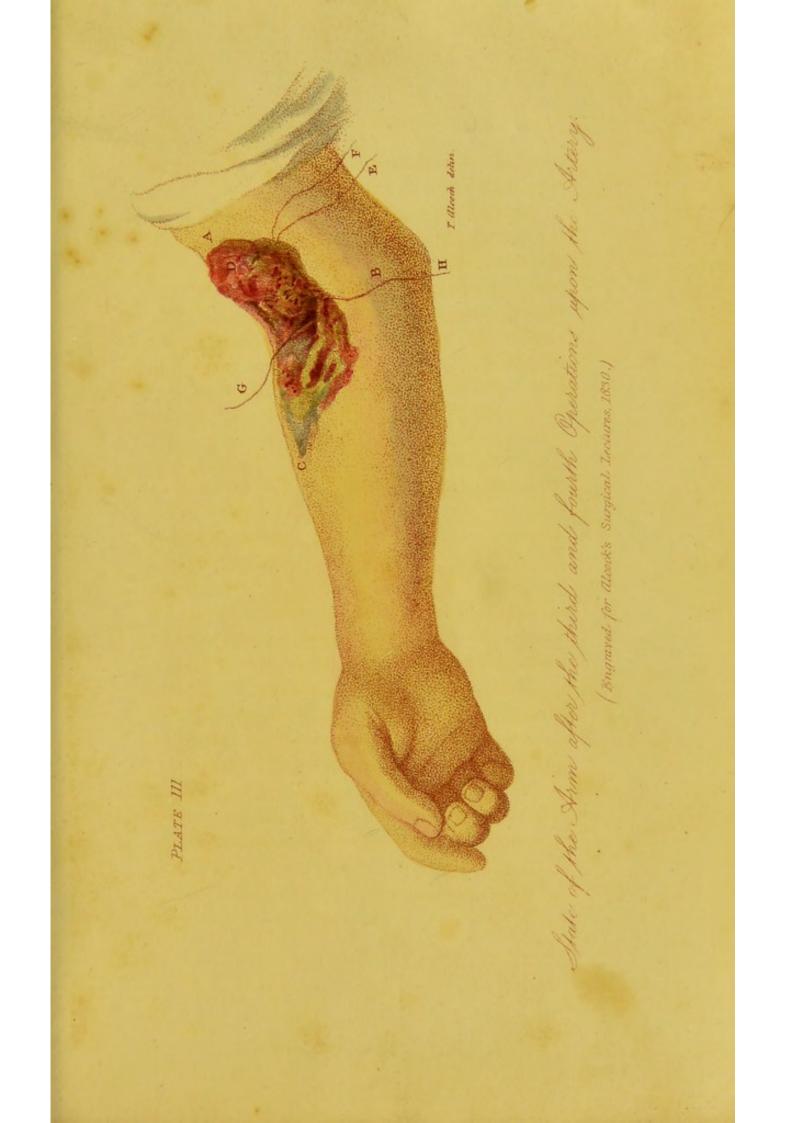
The fifth, sixth, and seventh days after the second operation, there was slight hæmorrhage, and in the forenoon of the seventh, the blood flowed so largely, as to blanch the patient. It flowed from the lower part of the wound, and was at length restrained by the use of the needle and ligature, the attempt to secure the vessel by the tenaculum having failed, owing to the parts giving way under the ligature. Some sloughing, extensive suppuration, and the formation of sinuses.

Several days after the third operation, the bleeding recurred, and the operation of tying the humeral artery higher up the arm was had recourse to; but hæmorrhage again took place, after the operator had left the patient.

### PLATE III.

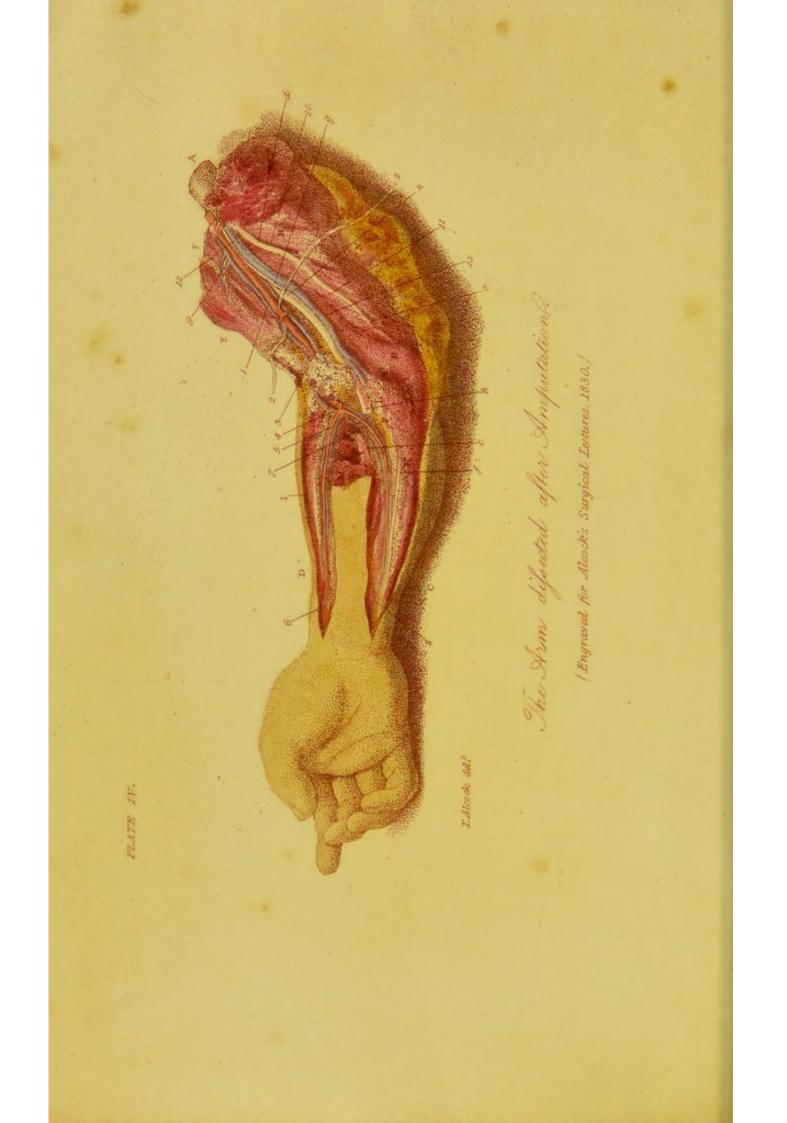
Shews the state of the limb after the third and fourth operations.

- A. Front of the arm.
- B Inner condyle.









# EXPLANATION OF THE PLATES. XXIX

- C. Lower angle of the cicatrix, the lower portion of the wound having healed.
- D. Granulations over the biceps muscle.
- E, F. Ends of the ligature applied round the brachial artery at the fourth operation.
- G. Ligature of the third operation. The lower end of the ligature marks the hollow from which the blood has flowed in the hæmorrhagies which have lately occurred.
- H. Another ligature also terminating in the same hollow.

Notwithstanding the sufferings and repeated operations which this poor fellow had undergone, the desired security against further loss of blood was not obtained. On the day following the fourth operation, he again lost blood beyond what his enfeebled condition could well sustain: amputation of the arm was performed; but, alas! the wretchedness of this hapless being, (the father of a family) who bore his severe afflictions with great fortitude, terminated in death.

### PLATE IV.

### The Arm Dissected after Amputation.

- A. The humerus, seven inches above the centre of the inner condyle.
- B. The inner condyle.
- C. The ulnar edge of the fore-arm.
- D. The radial edge \_\_\_\_\_
- N. The integuments, &c. dissected back.

### XXX EXPLANATION OF THE PLATES.

MUSCLES.

E. The biceps turned forwards.

F. Coraco-brachialis.

G, H. Triceps.

I. Supinator longus.

K. Flexor carpi ulnaris.

L. The upper portion of the flexor muscles, which were divided to show the ulnar artery.

M. The lower portion of the same muscles.

A deep sinus extended under the heads of the flexors of the fore-arm to the bone. There were numerous superficial sinuses between the integuments and the muscles.

### ARTERIES.

 The humeral artery, above the ligature last applied. It is seen between the venæ comites, one of which had been included in the ligature.

2,2. The ends of the ligature surrounding the artery.

3. The termination of the humeral artery: the portion included between the ligatures applied at the first and second operations, had been scooped out with the coagula in one of the subsequent operations. At this point (3) it was thinly covered, but closed by a clot, the upper part of which appeared to be coagulum, the lower part lymph, resembling adventitious membrane, when inflammation and adhesion of parts have taken place. A small portion of the injection appeared in the upper part (below the ligature) supposed to have passed through the part surrounded by the ligature. The extremity, (3) is ulcerated : the part

### EXPLANATION OF THE PLATES. XXXI

of the ulcerated surface of the wound between 3 and 4, sloughy.

- The point of bifurcation, or division of the humeral 4. artery into the radial and ulnar, the edges thin, transparent and like jelly, the open mouth somewhat turned forward. From this the injection had escaped, and no doubt the hæmorrhagies, during the latter period of the case, had proceeded from the same. On raising the thin transparent edge, the injection could be traced in both the radial and ulnar arteries, the inosculations between the branches of the humeral artery, and those of the radial and ulnar being sufficiently free, not only to sustain the circulation of the limb after the main artery was tied, but to distend the vessels below, and produce hæmorrhage by the reflux of the blood through the communicating arteries.
- 5. The radial artery at its upper part, accompanied by its veins.

6. \_\_\_\_\_ at the wrist.

7,8. The ulnar artery, accompanied by its veins.

Both the radial and ulnar arteries contained injection throughout their whole extent, although less distended than in a successful injection of a healthy arm.

9. A branch passing under the biceps.

10, 11. Branches passing downwards in the direction of the ulnar nerve.

VEINS.

12. The humeral vein, so much thickened, that after the amputation, it was mistaken (by gentlemen of

# XXXII EXPLANATION OF THE PLATES.

high reputation) for an artery, and in conjunction with the real artery designated as a high division of the brachial artery. It is seen on the inner edge of the artery, with the internal cutaneous nerve passing over it.

13. The basilic vein -

The veins contiguous to the humeral, ulnar and radial arteries do not require references.

NERVES.

- a. The radial (median) nerve, on the inner edge of the artery.
- b. Upper portion of the same nerve, at about two inches below the inner condyle, divided across to shew the course of the ulnar artery.
- c. Lower portion of the same nerve.

d. Ulnar nerve.

- e. Ditto, where it passes behind the inner condyle.
- f. Ditto, in the fore-arm.
- g. Internal cutaneous nerve.

The whole of the nerves were very large and opake. The veins also were much thickened: some branches of the basilic, which terminated near the edge of the wound, and immediately under the integuments, were thicker than arteries in the arm in their natural condition.

The arteries were healthy, except the exposed parts contiguous to the sinuses, or to the ulcerated surfaces of the wounds resulting from the various operations.

The extravasation of blood into the cellular membrane extended down to the wrist, and partially as high up the arm as the place of amputation. The sheaths of the nerves shewed it very clearly.

### EXPLANATION OF THE PLATES. XXXIII

Such cases, observed in practice, afford impressive lessons, which can never be conveyed in words, of the importance of Surgical Duties. Let the student reflect that all the sufferings of this hapless being, (on whose labour the support of a family depended) terminating in the loss of life, arose from the unskilful performance of so simple an operation as blood-letting.

Should it be asked—But supposing the artery to be accidentally wounded, ought such disastrous results to be anticipated ?—What has happened, may again happen; unless the causes of disaster be ascertained and averted.

There are few subjects in surgery of more practical importance, of deeper interest in relation to the safety of individuals, than the treatment of diseases and injuries of the blood-vessels. The causes which produce secondary hæmorrhage after wounds of arteries, whether accidental, or in the performance of surgical operations, are often very obscure and difficult to be traced, requiring a degree of accurate observation and of patient research, if not incompatible with the hurry and vagueness of mere routine practice, at least, rarely met with under such circumstances ; not to mention that a danger, which, under skilful management may be *slight*, when surgical assistance is first solicited, may become formidable, perhaps irretrievable, through injudicious or heedless procrastination. In many instances the causes of disaster have remained undiscovered until after death has closed the scene, and not unfrequently, concealed in obscurity, they have eluded vague research, or have been passed by unnoticed, without inquiry.

# XXXIV EXPLANATION OF THE PLATES.

### PLATE V.

Represents the Surgical Anatomy of the bend of the arm, as shewn by a superficial dissection, from the right arm of an adult male subject.

- A. The integuments dissected back from the outer edge of the arm.
- B. \_\_\_\_\_ inner edge of the arm.

C. The integuments covering the front of the arm.

- D. \_\_\_\_\_ of the fore-arm.
- E. The inner condyle.
- F. The biceps muscle.
- f. Part of the round tendon of the biceps.
- G. The supinator longus covered by the fascia of the fore-arm.

H. The pronator teres.

#### ARTERY.

 The humeral artery, covered by and indistinctly seen through the fascia at the inner edge of the biceps.

### VEINS.

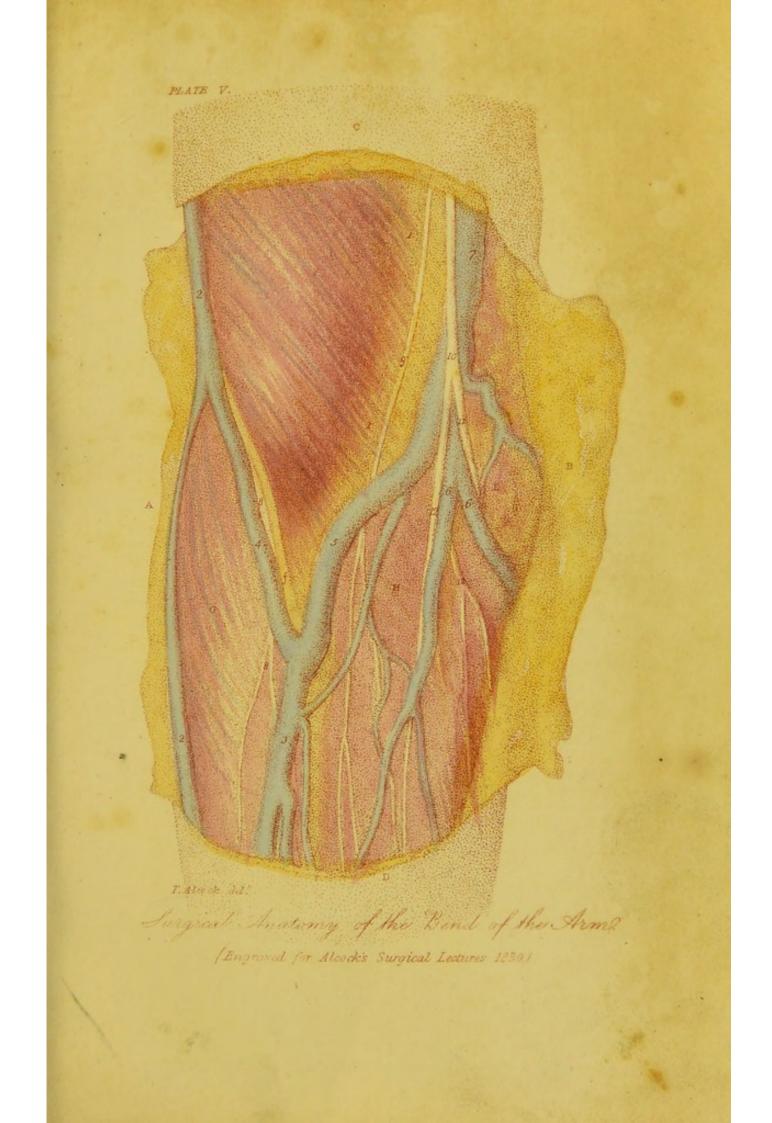
- 2. The cephalic vein.
- 3. The median vein.
- 4. The median cephalic.
- 5. The median basilic.
- 6, 6. The basilic.
- 7. The humeral.

### NERVES

- 8, 8, 8. External cutaneous and its branches.
- 9. Outer branch of the internal cutaneous.

10. Internal cutaneous.

11, 12. Branches of the internal cutaneous.





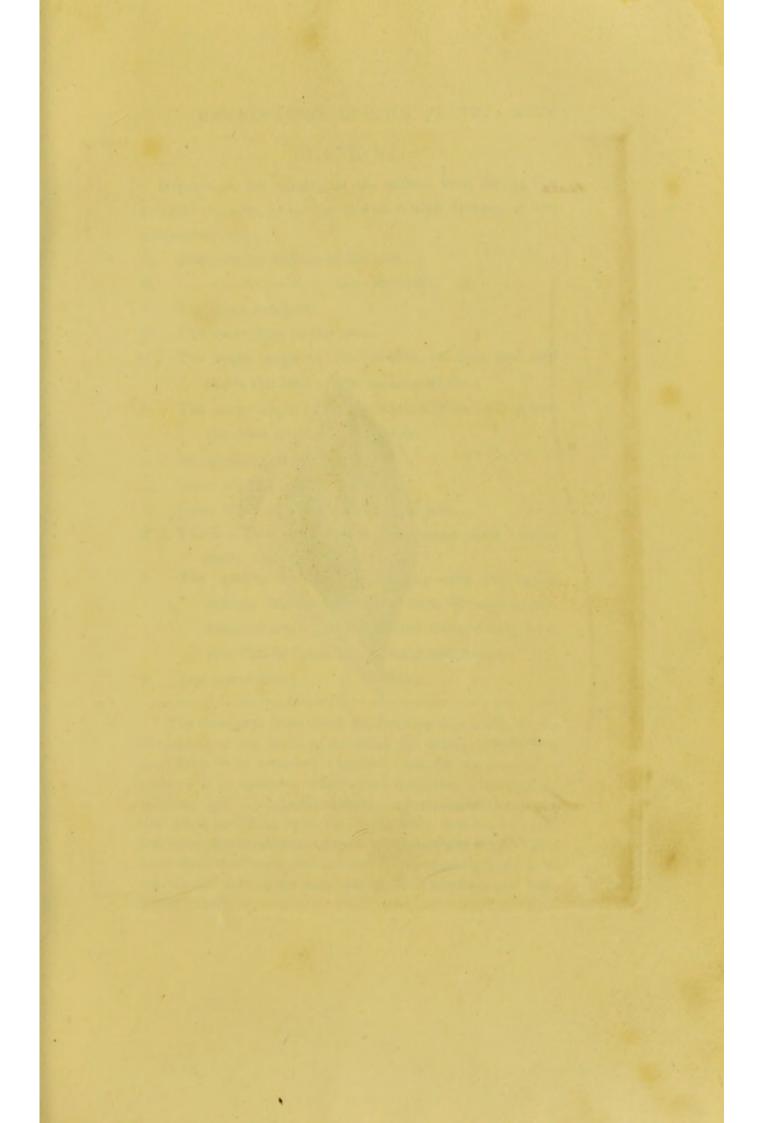


PLATE VI. T. Alcock. del! Surgical Anatomy of the Bond of the Arm? (Engraved for Alcock's Surgical Lectures. 1830.)

# EXPLANATION OF THE PLATES. XXXV

## PLATE VI.

Represents the relation of the artery, vein, &c. at the bend of the arm, in an instance of a high division of the humeral artery.

A. The anterior surface of the arm.

B. \_\_\_\_\_ fore-arm.

C. The inner condyle.

D. The outer edge of the arm.

- a. The upper angle of the incision, an inch and half above the level of the inner condyle.
- b. The lower angle of the incision, half an inch below the level of the inner condyle.

c, d. Integuments, held aside.

1. Inner edge of the biceps muscle.

2. Some fibres of its tendinous expansion.

- 3, 4. Fascia covering the vein and adjacent parts, imperfectly dissected.\*
- 5. The median basilic vein, crossing over the radial artery, (in this subject a high division of the humeral artery) and separated from it only by a thin film of fascia and cellular membrane.

6. The radial artery. 7, Fascia.

\* The dissection from which the drawing was made was in illustration of the mode of exposing the artery, where it is most liable to be wounded in blood-letting, for the purpose of securing it by ligature. The limited dissection is in strict accordance with what I consider to be a very essential precantion when operating upon the living body, namely, to avoid insulating the vessel more than is absolutely necessary. The aneurismal needles in common use are so clumsily large as to tear up and destroy the *vasa vasorum* to a needless and dangerous extent.

# XXXVI EXPLANATION OF THE PLATES.

## · PLATE VII.\*

FIG. 1 represents a front view of the principal arteries of the right arm, in their usual distribution. Those arteries are seen which are placed under the integuments and aponeurosis.

- 1. The brachial or humeral artery, proceeding from the hollow of the axilla.
- 2. The profunda humeri, descending between the heads of the triceps.
- 3. The humeral artery where it passes under the expanded tendon of the biceps muscle.
- The humeral artery where it divides into the ulnar and radial arteries.
- 5. The ulnar artery passing under the pronator teres and flexor muscles arising from the inner condyle.
- 6. Continuation of the ulnar artery to the wrist.

7, 7. The radial artery.

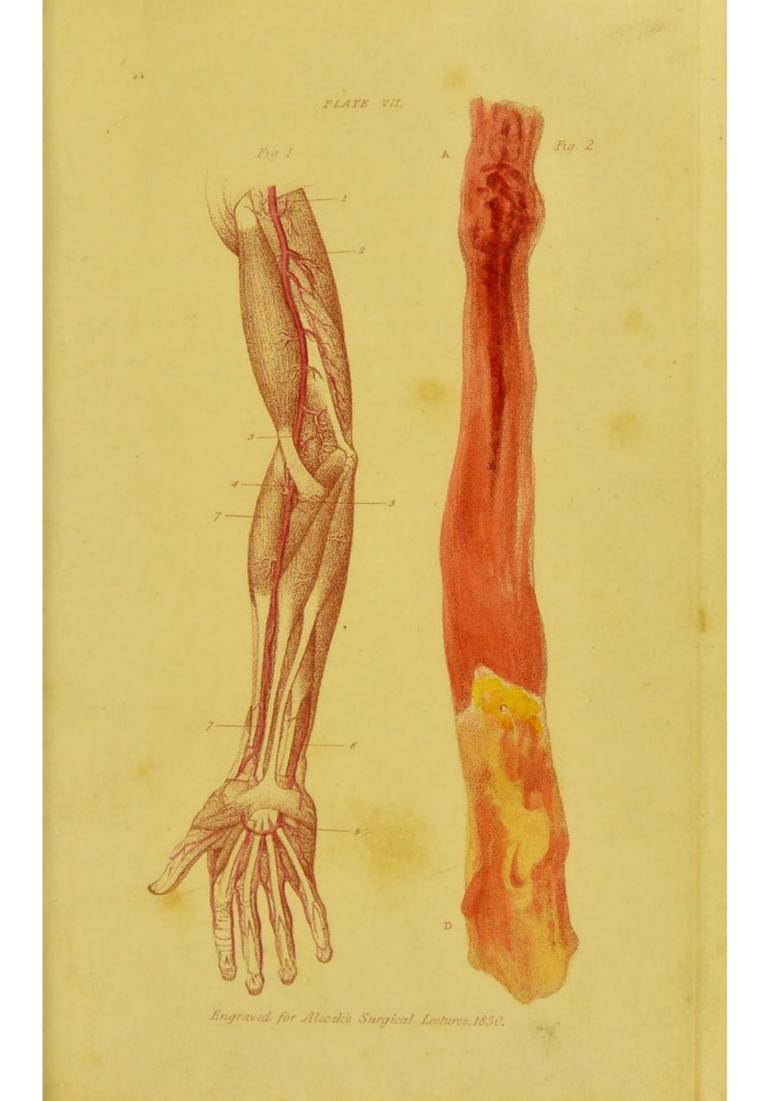
8. The superficial palmar arch, formed chiefly by the ulnar artery.

FIG. 2 represents the inner surface of an inflamed vein of the arm: the patient had suffered a compound fracture of the foot, and tetanus had supervened.

A. The upper portion of the vein, near the axilla.

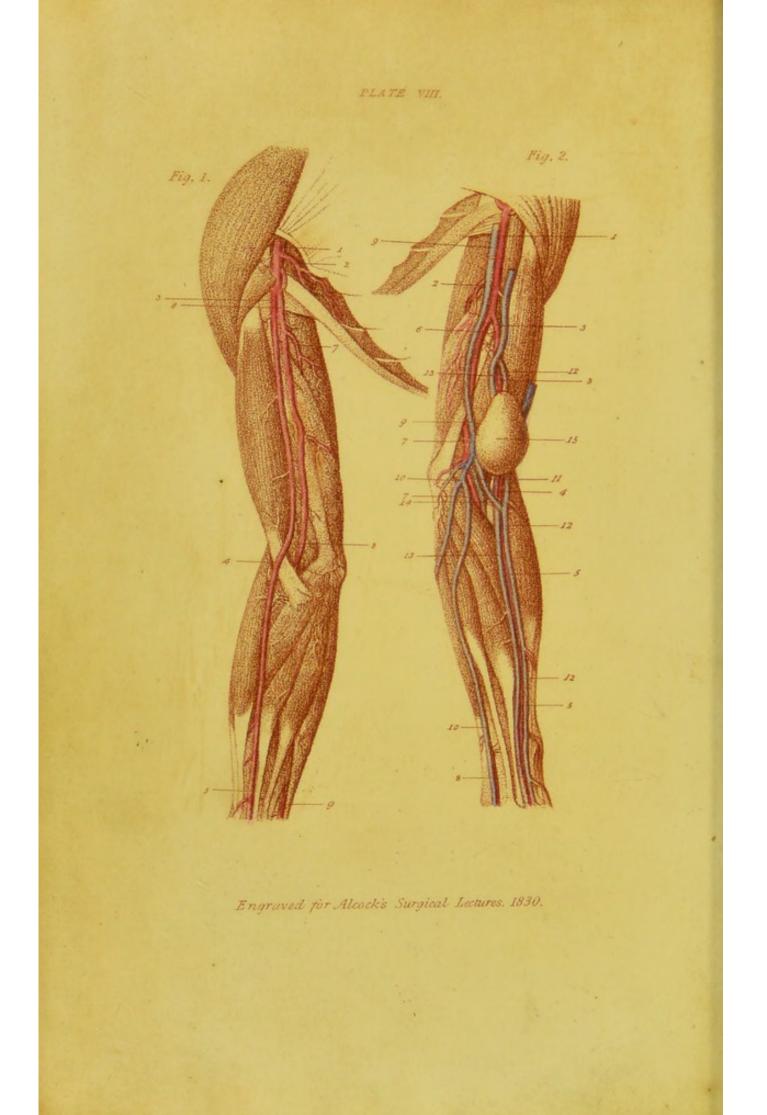
B. Preternatural membrane, very vascular, and adhering to the inner surface of the vein.

\* The first figure in this Plate, and also Plates VIII, IX, and XII, are from the splendid work of Tiedemann on the Arteries: all the other plates are from original drawings, studies from nature, by the author of these Lectures.









### EXPLANATION OF THE PLATES. XXXVII

- C. Coagulated lympth adhering to the inner surface.
- D. The lower part of the vein from the point of the incision in front of the elbow.

The whole of the vein, as far as the axilla, was filled with fluid pus.

### PLATE VIII.

FIG. 1 represents the right arm of a man in which a high bifurcation of the axillary artery is seen. The radial artery in both arms arose from the axillary, and was continued between the skin and aponeurosis of the arm.

1. The axillary artery.

2. The subscapular.

- 3. 'The radial artery, given off from the axillary.
- 4. \_\_\_\_\_ passing over the tendinous expansion of the biceps muscle at the bend of the arm.
- 5. The continuation of the radial artery down the forearm.
- The humeral, or rather the ulnar artery, following the course of the humeral down the arm, and the usual distribution in the fore-arm.
- 7. The profunda humeri.
- 8. The humeral or ulnar artery at the bend of the arm.
- 9. The ulnar artery at the wrist.

FIG. 2 shews the left arm of a woman, in which the radial artery is derived from the humeral. (This variety is of frequent occurrence.) The radial artery was wounded, by a surgeon opening the cephalic vein, from which aneurism arose.

# XXXVIII EXPLANATION OF THE PLATES.

### ARTERIES.

1. The humeral artery.

2. The profunda humeri.

3, 3. The radial artery in the arm.

4. \_\_\_\_\_ at the bend of the arm.

5, 5. \_\_\_\_\_ in the fore-arm.

 The ulnar artery, given off from the humeral high up the arm.

7, 7. Continuation of the ulnar artery.

8. \_\_\_\_\_ at the wrist.

### VEINS.

9, 9. The humeral veins.

10, 10. The basilic vein.

11. The ulnar vein.

12, 12, 12. The cephalic vein.

13. The radial vein.

14. The median vein.

15. The aneurismal sac.

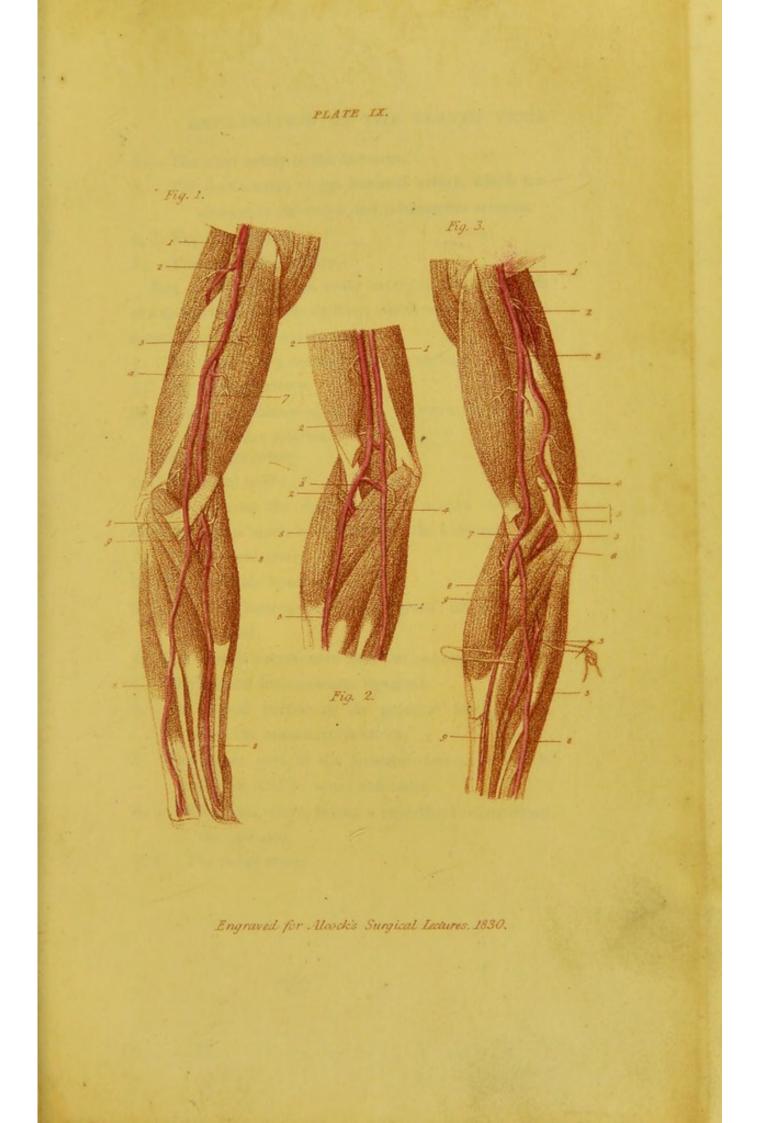
### PLATE IX.

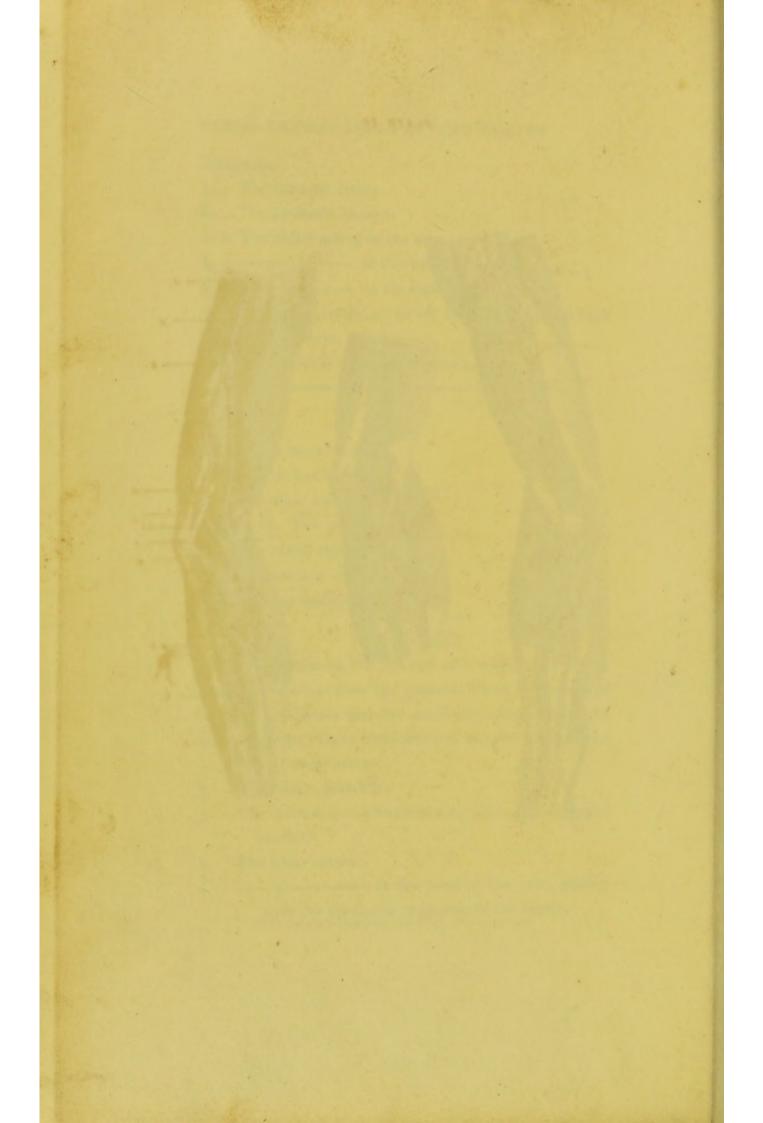
FIG. 1 represents the left arm of a man, in which the ulnar artery arises from the humeral about the middle of the arm, and passes over the tendinous expansion of the biceps muscle. (This variety is of less frequent occurrence.)

1. The humeral artery.

2. The arteria profunda.

- 3. The division of the humeral artery into the ulnar and radial.
- 4. The ulnar artery.
- 5. \_\_\_\_\_ at the bend of the arm, passing over the tendinous expansion of the biceps.





# EXPLANATION OF THE PLATES. XXXXX

6. The ulnar artery in the fore-arm.

7. The continuation of the humeral artery, which terminates in the radial and interosseous arteries.

8, 8. The radial artery.

9. The interosseous artery.

FIG. 2 represents the ulnar artery in the right arm of a man arising from the axillary, which with the humeral formed a pretty free anastomosis.

1. The ulnar artery derived from the axillary.

2. The humeral artery.

3. A large anastomosing branch, between the humeral and ulnar arteries.

4. Interosseous artery.

5. The radial artery.

FIG. 3 shews the right arm of a woman in which the interosseous artery is derived from the humeral.

1. The humeral artery.

2. The profunda humeri.

- 3, 3, 3. The interosseous artery, given off from the humeral.
- 4. An unusual excrescence from the os humeri.
- 5. The internal intermuscular ligament.
- 6. An unusual portion of the pronator teres, arising from the osseous excrescence.
- 7. The lower part of the humeral artery, where it divides into the ulnar and radial.
- 8, 8. The ulnar artery, taking a superficial course down the fore-arm.
- 9, 9. The radial artery.

### EXPLANATION OF THE PLATES.

### PLATE X.

Represents the surgical anatomy of the External Jugular Vein, as seen in a superficial dissection of the neck. The drawing was taken from a young subject.

This vein descends upon the lateral part of the neck, rom the angle of the jaw to the posterior edge of the lower part of the sterno-mastoid muscle. It passes immediately beneath the platysma myoides, and between that muscle and the sterno-mastoid. Its course is nearly vertical, crossing obliquely over the sterno-mastoid, from its upper and anterior edge to its lower part. The fibres of the platysma myoides (described by some authors as following the same direction as the vein) in the position most convenient for opening the vein, cross over that vessel obliquely from the lower and lateral part of the neck upwards and forwards, towards the chin and lower jaw. During the whole course of the vein, the deep parts, separated from it by the sterno-mastoid muscle, are of great importance; such as the carotid artery and internal jugular vein, the accompanying nerves, and at the lower part of the neck the subclavian vessels and adjoining nerves. These deep parts are out of the reach of injury from any attempt to open the external jugular vein, unless by a plunge, such as no one acquainted with the parts would be likely to make. I have generally preferred opening the vein about the middle of the neck where it passes over the thick fleshy belly of the sterno-mastoid muscle, and have made the incision in the direction of the fibres of the platysma myoides. By attending to the precautions pointed out in these Lectures, I have neither experienced

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PLATE X. Sketch of the External Jugular Vein. (Engraved for Alcock's Surgical Lectures 1830.)



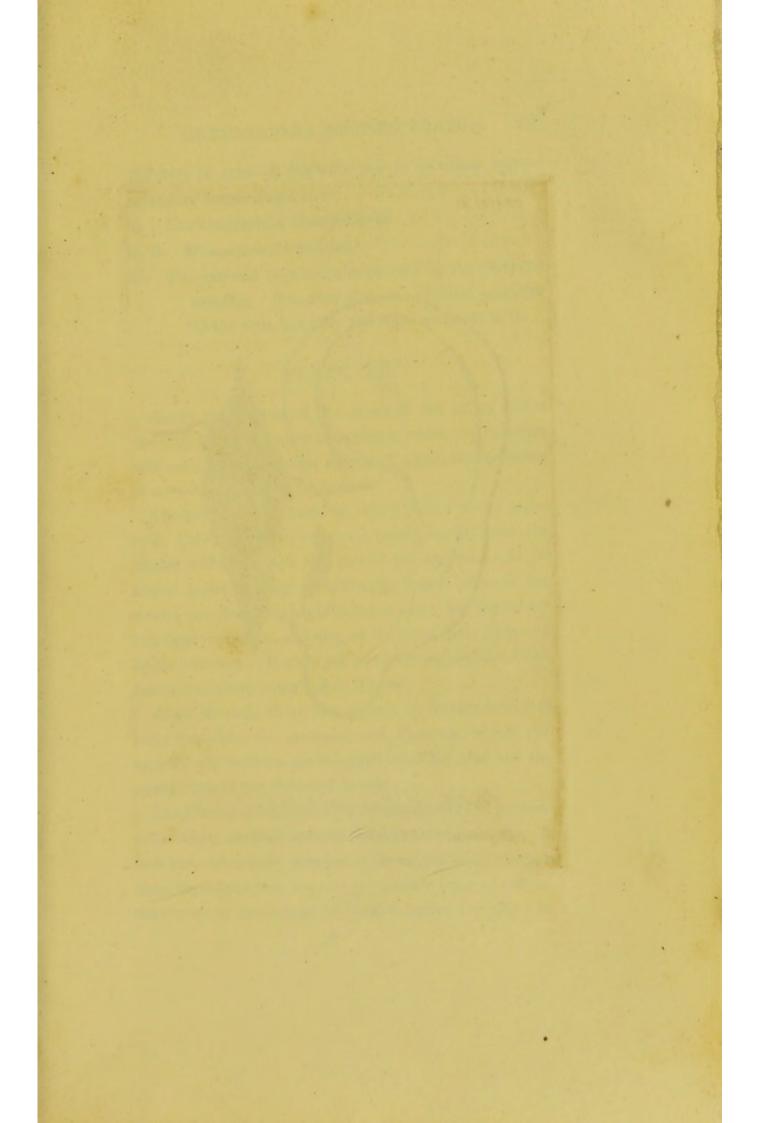


PLATE XI. Sketch of the Temporal Artery. (Engraved for Alcock's Surgical Lectures, 1830.)

# EXPLANATION OF THE PLATES. Xli

difficulty in opening the vein, nor in guarding against secondary hæmorrhage.

A. The integuments dissected back.

B, B. Sterno-mastoid muscles.

C. The external jugular vein, covered by the platysma myoides. Branches of nerves are seen posterior to the vein, but they are not contiguous to it.

### PLATE XI.

Shews the relation of the trunk of the artery before the ear, where, in cases of urgency, when the branches will not afford a sufficient supply of blood, the operation of arteriotomy may be performed.

The trunk of the temporal artery (called also *Tempo*ralis Externa, vel Superficialis) passes up between the meatus auditorius and the root of the zigoma. At its lowest point it may certainly be found between the meatus and the condyle of the lower jaw; but higher up it is more superficial, and may on the living body be traced by its pulsation. It gives off several branches, and forms one or two sharp turns before the ear.

About an inch above the zigoma it divides into two large branches, the *Anterior* and *Posterior*, which run superficially between the integuments of the head and the aponeurosis of the temporal muscle.

In exposing the trunk of the temporal artery to perform arteriotomy, the first incision divides the integuments. A firm layer of cellular membrane covers the vein, which is more superficial than the artery; another layer of cellular membrane or fascia must be divided before the artery be

# xlii EXPLANATION OF THE PLATES.

fairly exposed. Should the incision be made so free as at once to penetrate to the artery and not to shew the vein, it must be recollected that the coats of the artery are so thin that it may, without reference to the pulsation or to comparison with the still thinner texture of the vein, be mistaken for it.

There is great diversity in the relative situation of the artery to the vein, not only in different subjects and at various ages, but even in the same subject the vein has passed before the artery on one side, and nearer to the ear on the other; in some instances it is nearly straight, in others extremely tortuous; but in relation to the depth of of the two vessels, the vein is found to be more superficial than the artery.

For the particulars and precautions relating to the operation of arteriotomy, see pages 230 to 250.

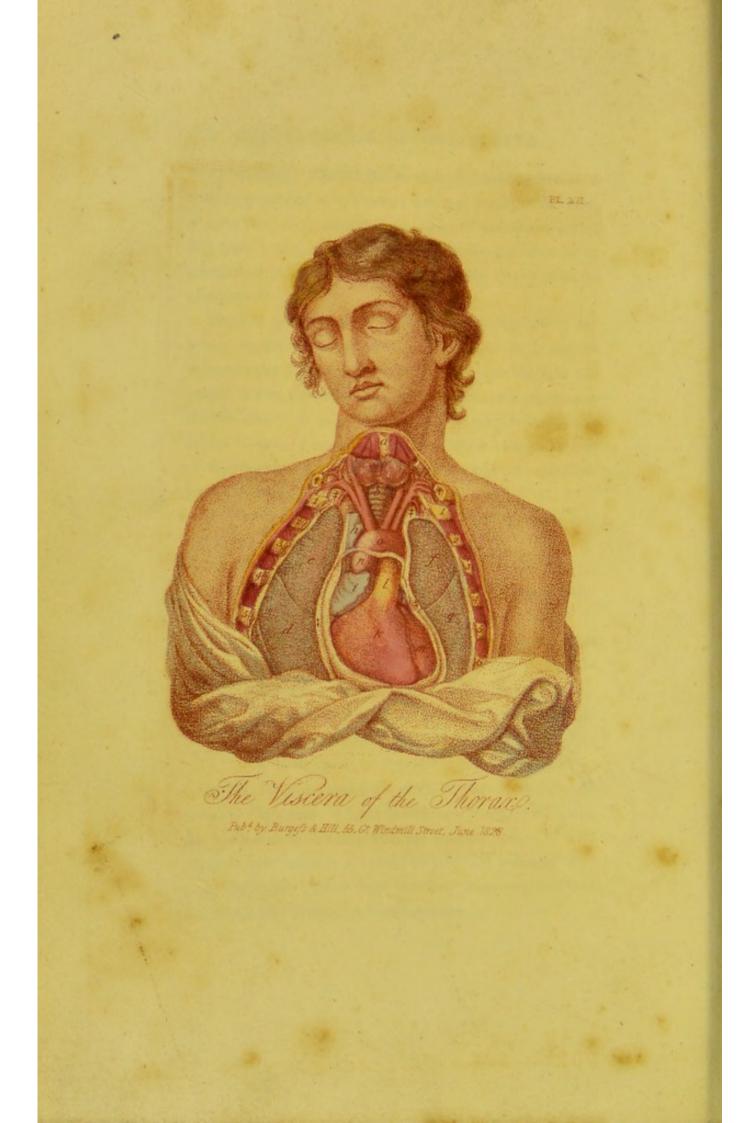
A, A. The vein crossing over the artery.

B. The temporal artery, a little before the meatus auditorius, nearly covered by the vein.

C. The artery where it passes over the zigoma, and may be securely compressed, should that mode of guarding against hæmorrhage after the operation of arteriotomy be preferred. The divided integuments and cellular membrane are held aside by hooks so as to expose the blood-vessels.

In Mr. Harrison's valuable work on the arteries various weighty objections to arteriotomy, and dangers to which the patient may be exposed, are pointed out. If such dangers have actually occurred in practice, I should suppose they must rather have resulted from unskilfulness than from any unavoidable circumstances.





# TABLE XII.

This plate represents a front view of the Viscera of the the Thorax, the sternum and the anterior parts of the ribs and clavicles having been removed. Although the anatomy of the thorax is most important to the surgeon in relation to wounds and surgical operations, yet in the investigation of disease a clear recollection of the relative position of the viscera and of the principal blood-vessels will greatly assist the practitioner in arriving at accuracy of diagnosis in any given instance in which these parts may be the subject of disease. (Vide pages 52 to 143.)

The chief points of demonstration are the following : -

The sections of the ribs, which are marked numerically, the figure 1 being placed on the uppermost rib.

+ marks the portions of the clavicles.

RELATING TO THE LUNGS AND AIR PASSAGES.

a Is placed upon the thyroid cartilage.

b. The trachea, at the upper part of which, and immediately below the larynx, is seen the thyroid gland.

c, d, e. The lobes of the right lung.

‡ The edges of the pleura may be seen surrounding the lungs and covering the upper portion of them.

f, g. The lobes of the left lung.

THE HEART is seen surrounded at its circumference by the edge of the divided pericardium, which at the upper part is seen crossing over the great vessels.

The principal points relating to the HEART and GREAT VESSELS are,

h. The vena cava descendens.

*i*. The right auricle.

# xliv EXPLANATION OF THE PLATES.

- k. The right ventricle,
- 1. The pulmonary artery.
- + The left auricle, a small portion only of which is seen between the root of the pulmonary artery, the pericardium, and the top of the left ventricle.
- m. The left ventricle.
- n. The ascending aorta, within the pericardium.
- o The arch of the aorta, after it has emerged from the pericardium, crossing over and resting upon the trachea.

Arising from the arch of the aorta are seen the three great trunks which supply the head, neck, and upper extremities: on the right, the arteria innominata, dividing into the right subclavian and the right carotid;—on the left, the left carotid and the left subclavian, arising separately from the aorta.

The contiguity of these great vessels to the air passages, renders a knowledge of their situation and relations of aBeat importance to the pathologist.

# INTRODUCTORY LECTURE,

DELIVERED AT THE SCHOOL OF ANATOMY, SURGERY, AND MEDICINE, LITTLE DEAN STREET, SOHO, LONDON, OCTOBER 6, 1828.

Introductory Observations.—On Surgical Education.—On Professional Conduct.

#### GENTLEMEN,

WHEN I consider the circumstances under which I appear before you in this School of Medical Instruction, before so many of my professional brethren of high rank and attainments, I am sensible how much I must trust to your kind indulgence. Those who have on former occasions attended the Lectures on the Principles and Practice of Physic, delivered in this Theatre, have listened to one whose scientific views were embellished by the graces of eloquence, to which, unused to public speaking, I am conscious I have no claims. But I may be

#### THE ZEAL EVINCED

permitted to add, unless I felt assured that my opportunities of observation, a considerable share of experience, and a devotion to the duties of my profession, which, during a period of nearly thirty years, has neither forsaken me, nor suffered diminution, were circumstances which ought to render me capable of affording professional information, likely to be serviceable in the cause of humanity, I should not have presumed to present myself before you this day as a teacher. In truth, gentlemen, I am far less desirous to shine here as an orator, than conscientiously to acquit myself of the deep responsibility which I have voluntarily incurred.

It is gratifying to observe, that the zeal which animates so large a portion of the members of the profession, was never so obvious as at present : the multiplication of schools of medical instruction—the opening of the London University the approaching formation of a similarly extensive Institution—the establishment of Lectures at the Royal Naval Hospitals at Haslar and Plymouth the probability of the removal of the legal impediments which have so long obstructed anatomical pursuits in this country—the establishment of schools of anatomy, in the principal provincial cities and towns, must prove beneficial both to the profession and to the public; yet they all evince, that he who now embarks as a public

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# IN PROFESSIONAL EDUCATION.

teacher, in any branch of medical science, must expect powerful and able competition. Far from regretting such competition, so long as it is fair and honourable, I wish to every teacher, to every institution, the full meed of approbation and reward due to their respective merits, and to the usefulness of the knowledge communicated to those whom they instruct, in behalf of suffering humanity. Let the sincere desire to enable every student to perform the arduous, nay anxious duties of the medical profession, appear, not merely in words, but through every practicable means: let this honourable desire animate the breast of every teacher, and the diminution of human misery will be effected to an extent which cannot be anticipated by those who have not deeply reflected upon this subject.

Instead of attempting to trace the history of surgery, which to the uninitiated student is a matter of little interest, and of less utility, I propose to glance at the state of medical education in England, to notice some of its defects, and to offer suggestions for rendering it more efficient, and consequently, more useful.

You are all aware of the existing arbitrary divisions of the medical profession. The physician, the surgeon, the general practitioner, the apothecary, &c. have all their separate, though not well defined departments.

B 2

#### DIVISIONS OF THE

An able author has well described the sphere of practice allotted to each of these classes.

"The wants of society require a competent supply of general practitioners.

"The interests of the science, and the accommodation of the higher ranks of society, require that there should be also a suitable supply of practitioners in the separate departments of physic and surgery.

"In each instance the supply will, with considerable certainty, accommodate itself to the demand, if not prevented by injudicious influences and restrictions.

"The wants of society require physicians, surgeons, and general practitioners; the first practising physic exclusively, or physic and midwifery conjoined; the second, surgery and physic, and sometimes midwifery; the third superadding pharmacy to the several other departments.

"In this view, the profession presents us with a series, in which each department is seen embracing a wider field of practice than the one immediately above it. It may be typified by a cone, of which the department of physic is the apex, that of general practice the base.

"These several practitioners may be regarded as in some measure forming the gradations of rank in the profession, by which it accommodates itself to the corresponding gradations in general

4

### MEDICAL PROFESSION.

society; the physicians being suited more particularly to the higher orders; the surgeons holding an intermediate place between the physicians and general practitioners; and these latter embracing the whole community, from its highest to its lowest degrees, their utility rendering them necessary to the former, while their humility and habits of active industry fit them for extending their services to the lowest extreme.

"These several views may perhaps be deemed rather fanciful than real, or useful. If I mistake not, however, some such illustrations are absolutely required, to convey to the public at large, notions even tolerably distinct and accurate, respecting the real nature of the several departments, and the relation which they bear to each other and to the community.

"To each of these classes a more particular consideration must now be given; and, for reasons sufficiently obvious, I shall reverse the preceding order, beginning with the general practitioner.

"From all the foregoing statements and considerations, it must be manifest, that this practitioner more perfectly represents the medical character than any other; that, in fact, he alone can be identified with the profession, of which they who compose the other departments are but partial members, formed into separate associations by casual influences, having no claim of abstract right

#### PHYSICIANS, SURGEONS,

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to that superior, and almost exclusive countenance and protection which they have hitherto engaged, and dependent on contingencies only for maintaining a separate existence.

"With respect to the qualifications of the general practitioners, it is requisite that they be fully competent to the practice of physic, surgery, midwifery, and pharmacy,—in fact, to every thing that medical science and practice can be supposed to extend to.

"These several departments, regarded separately, would seem to require peculiar and distinct modes of education. When it is necessary, however, to combine them in the individual, the courses of instruction must, while they provide for the first service of the public, be so modified, as to suit his personal convenience.

"The candidate for general practice, then, should be acquainted with the elements of medical science, and with the nature and treatment of diseases. This knowledge is to be arrived at by means of lectures, study, and clinical observation. He must also be familiar with the practice of surgery, which, being an art requiring considerable dexterity, is generally, and perhaps most effectually, attained by apprenticeship; although on this point opinions are by no means agreed. Midwifery, in its practical part, is learned at the public institutions for the relief of lying-in women,

# AND GENERAL PRACTITIONERS.

or in the private practice of teachers and professors; and pharmacy, like surgery, has for the most part been taught by apprenticeship also.

" In this course, two apprenticeships are included, between which, as incompatible with each other, it is necessary to choose. Now, as the surgeon can readily, and actually does, combine pharmacy with his higher department, so as to teach both arts to his apprentice, while the apothecary can be supposed to teach only the inferior and subordinate one, there can be no hesitation in deciding, that the surgeon is the member of the profession best qualified for duly instructing and preparing the future candidate for general practice. "And on reference to facts, it will appear, that

the natural tendency of human affairs to glide into those courses which are most congenial and beneficial, has actually so prevailed, as that a considerable part of the supply of general practitioners throughout England emanates from this source."

It is only in large cities and in populous or opulent districts, that the division of labour in the medical profession can be adopted with advantage, where the highest attainments in each separate department may be brought to bear upon any case of unusual difficulty or danger: in thinly peopled districts, where the means of the inhabitants are very limited, the occasions for the

# 8 ADVANTAGES AND DISADVANTAGES

calling in of the physician, or of the pure surgeon, would be so rare, that either of them must depend upon his private fortune and not upon the fees arising from his profession; whilst in such situations the general practitioner, combining the offices performed by both the others, might find sufficient and profitable employment.

On the other hand, the extent of labour which the general practitioner must undergo in his subordinate occupations, from which, by the division of labour, the physician and the surgeon not practising pharmacy are exempt, is so great, that if employed sufficiently to provide comfortably for the wants of a family, he has little leisure for study or reflection upon the cases which come under his care; still less for frequent, accurate and comprehensive pathological investigations, without which, excellence, in the discrimination of the various lesions to which the human body is subject, cannot be attained, or if once attained, be preserved unimpaired; so that unless he be either more indifferent to the pecuniary advantages arising from extensive practice, or more devoted to scientific pursuits than is generally the case, there is little probability of his becoming an improver of his profession.

In remote situations in the country, where the society is not only limited, but the ideas are seldom elevated above the standard of mere daily

### IN EACH DEPARTMENT.

toil, there exists very little stimulus to intellectual exertion on the part of the resident medical practitioner. I have known many instances of zealous students thus placed, who have deeply regretted that their hopes of cultivating their profession as a science had faded away, and that the wants of a family required their constant exertions as mere plodding, money-making men of business; without either the leisure or the means (not having access to any public library, or society for the discussion of medical topics) of acquiring a knowledge of, or of keeping pace with, the passing improvements in medical science.

The routine of professional education of the mere surgeon is usually attended with some favourable and many unfavourable circumstances. Some extent of private fortune, or of assistance from friends, is indispensable, not only during education, but during the period of expectation, before a practice can be formed, sufficient to meet the wants of the individual, unless he prefer passing a few years in the public service. This dependence upon extraneous assistance not unfrequently paralyses the exertions of the student ;--too often, amply supplied with money, the temptations of gaiety and dissipation, in a place like London, are perhaps too powerful to be resisted; and I need not tell you, that dissipation and science seldom go hand in hand.

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# 10 EDUCATION OF THE SURGEON.

The more humble student has the strong stimulus to exertion of knowing that all must depend upon himself, and upon his fitness to fulfil the duties of his profession, and that by his merit he may rise to fortune and esteem, or by the want of it he must sink into neglect and ruin.

It is true, the ample means of the opulent student can command or give him access to any or all the sources of professional knowledge, which this great metropolis affords, and they are many and valuable; but owing to the circumstances before alluded to, his opportunities too frequently produce a less ample store of useful knowledge than the scanty means and persevering exertion of the more humble student enable him to attain.

The candidate for *pure* surgical fame commences by being *articled* to some gentleman of high repute, perhaps a hospital surgeon, whose time may be so much engaged in practice, that the instruction of the person so articled is very little if at all thought of. He begins by attending lectures, walks the wards of the hospital, probably becomes a tolerable anatomist, and aims at being a great operator, and perhaps finishes by paying for and holding the situation of house-surgeon to a hospital, where no doubt much *must* be seen and *may* be learnt; but to see and to observe are not the same; neither does that practice, to which the patients of a hospital have no other choice than to

# DEFECTS IN THE COMMON PLAN. 11

submit or to go out, imply that steady, nay, anxious reflection, on the cases observed, which is essential to the performance of surgical duties.

If thus qualified, he aspire to become a great operator, he perhaps forgets the most obvious and necessary of all distinctions, namely, the difference between the dead subject and the living body; and that many errors may be committed with impunity on the former, which on the latter endanger the life or destroy the comfort of the individual, during the remainder of his existence. I have on this subject many painful recollections, some of them of instances where lives have been thus sacrificed; but I forbear entering into particulars: it will suffice here to guard you against the indulgence of so dangerous a propensity.

The pure surgeon too frequently despises the knowledge of medicine, without which, a surgeon cannot be safely trusted, and many are the unfortunate instances in which the mere performance of a dangerous operation has been skilfully effected, yet the patient has died in consequence of the want of medical skill in the after-treatment.

Let it not from these occasional defects or perversions of education be supposed, that the surgeon who has acquired a competent knowledge of his profession, and performs his arduous duties with fidelity and humanity, is either less useful or less honored than any of his brethren, in whatever

### CLAIMS OF THE SURGEON,

department of practice they may be found. To all the useful attainments of the physician, he must superadd a much more accurate and precise knowledge of the structure of the human body, a high degree of manual dexterity, and a firmness and decision of mind in many trying emergencies, which the physician is rarely called upon to exercise.

Passing from the *pure* surgeon to the *mere* apothecary, the similarity of limited usefulness, both being the offspring of large cities, must immediately be apparent. The advantages arising from a more extended professional education have become so obvious, that the race of the latter, I believe, is nearly extinct.

The routine of education of the general practitioner is often as defective as any of the preceding. An apprenticeship, too often idly spent, or in manipulations not much connected with mental improvement, fills up some of the best years of existence, when the ardour of youth, if properly directed, might secure to the professional student a rich harvest of useful and valuable knowledge. After apprenticeship, the attendance on lectures, the performance of dissections, and the observation of hospital practice follow; but, unfortunately, the time is generally too limited, and the student left without a guide to conduct him in the best path to useful attainment. The

## THE APOTHECARY, &C.

time that should be given up to arduous study is too often squandered in preparing for examinations which, it is to be regretted, are merely verbal and not practical, and are therefore very inadequate tests of really efficient and practical attainments.

These slight sketches represent the general routine of professional education, which every one who has examined for himself must be aware is extremely defective. That there are honourable exceptions, and that individuals have risen to eminence in each department, is also well known; but the proportion of those entering on practice, who are faithfully qualified for the arduous duties of the profession, is, I fear, but a small part of the whole.

It has been stated, that the mode by which the majority of young men enter into the medical profession, is by apprenticeships.

The subject of Apprenticeship is one of considerable difficulty, on which great diversity of opinion prevails, whilst very little allowance is made for those differences of sentiment which must always prevail upon any subject, when the matter at issue may be either good or bad, according to the use that is made of it.

In an Essay on the Education and Duties of the General Practitioner in Medicine and Surgery, which I published some years ago, I endeavoured

### 14 MEDICAL APPRENTICESHIP.

to shew how, in my opinion, this time might be usefully and even advantageously employed. I soon found, that the fate of the *Miller*, *his Son*, *and their Ass*, in the fable, awaited my opinions on this subject.

Some of my young friends who were apprentices, and not a few of others in practice, who had tasted of the inconveniencies arising from ill assorted engagements of this kind, wondered that I did not explode apprenticeships altogether.

The greater part of masters (for the term preceptors did not suit them,) accosted me, "A pretty piece of work you have cut out for us! Who do you think can submit to the drudgery of giving daily instruction to his apprentice? the idea is absurd!"

Another class, and they were for the most part parents themselves, who had experienced the anxieties, the arduous responsibility of duties for which no one can be too well prepared, greeted my efforts with their cordial approbation, and added, that they felt assured, had such a system of instruction been pursued in their own education, it would have saved them much valuable time, and have obviated many of the anxieties which they had suffered.

To the first class I replied, that I had expressed no opinion of my own, as to the preference which ought or ought not to be given to apprenticeships

### DIFFICULTY OF THE SUBJECT. 15

in comparison with other modes of professional education; that did not remain a point for my consideration; for as the law required that an apprenticeship of five years must be served before any person should be allowed to practice as an apothecary, I took it up where I found it, and endeavoured to shew that it need not necessarily be time mispent.

To the second, I answered, "Do not fear so simple a task as a bugbear! If you have bound yourself, as is the case in general with articled pupils or apprentices, faithfully to teach and instruct him to the best of your ability, I can see no objection to your devoting a portion of each day to his instruction:—adding, that if the arrangement were judiciously made and steadily persevered in, it would be a matter of surprise with how small a daily sacrifice of time a well-disposed youth might be directed and encouraged both in his studies and in his humbler duties as an apprentice, so as to induce him to put forth his utmost exertions."

To the third, I acknowledged the gratification which their judgment, as to the useful tendency of my efforts, afforded; candidly stating, that whatever might be the fate of my Essay, what I had attempted I had performed with good faith whether with or without ability was not for me to determine; and should the means of instruction

#### EXAMINATION OF ITS

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which I had pointed out lead to the saving of a single life, by the prevention of dangerous errors, my reward would be complete.

I might here quote from high authorities pictures of medical apprenticeships, sadly perverted, both on the parts of preceptor and pupil; throwing an air of ridicule over the whole, but little suited to a subject which involves the health and comfort of thousands.

The late Mr. Parkinson (author of the Hospital Pupil) whose benevolence as a man was as honourable to him as were his attainments as a member of the medical profession, observes, "Now, on full conviction, I assert, that of all the modes which could be devised for a medical and chirurgical education, this is the most absurd: and it is the one which would most certainly exclude a young man from the chance of acquiring that knowledge, which the important situation he is about to fill demands."

With that deference due to the pure motives of the author, I dissent from his conclusion. I am too well aware of the painful truth that in many, very many instances, the duties both of master and apprentice are, unfortunately, neglected or perverted!

But is the abuse of any thing a sufficient reason why we should discard the proper use of it? Common sense would answer, No! otherwise we

# ADVANTAGES AND DISADVANTAGES. 17

might soon bid adieu to this world, for the very necessaries of life may be so improperly used as to become sources of evil.

Suppose even one half of a pupil's time be occupied in professional business for the benefit of his preceptor;—if the remainder be properly spent in well arranged studies, the pupil at the end of his apprenticeship will be better informed, possess a greater degree of tact in the actual performance of the minor and every day duties, and be better fitted for the successful prosecution of his higher studies, than another who, without a faithful guide, (or perhaps any guide at all) has had his whole time at his own disposal, and has lounged away his years without profit, in the mere attendance of lectures and walking the hospitals.

But you will say, this example is also a perversion? granted—but, unfortunately, it is one of too frequent occurrence, and for which I know of no other sufficient remedy than that the inexperience of youth should be directed, its ardour encouraged, and the noble ambition instilled, that the highest scientific attainment will avail but little, unless supported by upright and honourable conduct as a MAN!

May I be allowed to read parts of two letters received lately from an apprentice in the country, an excellent young man and a meritorious student,

## 18 PRINCIPLE OF INSTRUCTION.

but who has received as little assistance from those who bound themselves to instruct him, as any unfortunate apprentice need desire?

### July 16th, 1828.

### "SIR,

It is now more than twelve months since my father called upon you, and speaking of the difficulties attending the study of anatomy, you intimated to him the possibility of procuring subjects even in the country, and as I have really found it "practicable," I flatter myself you will feel pleasure in hearing of my success.

At the time my father called, I had learned the bones, and made a set of original drawings from them; and when he assured me that you thought it practicable to learn anatomy in the country, I determined to try, and did succeed in procuring three small subjects that winter. Having the advantage too of a friend who had studied at \_\_\_\_\_\_, by his assistance and the aid of a well-lighted room, a dissector's manual, and good set of scalpels, contrived to dissect some of the parts.

"The following spring and summer I worked at Botany, and with the accurate writings of Smith, his "Grammar," "Introduction," and "English Flora," succeeded in making out about two hundred plants, most of which I have preserved

# EXAMPLE OF PERSEVERANCE.

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specimens of, and have arranged, after his "Flora," in classes, orders, genera and species.

"I also turned my dissecting room into a laboratory, and got some way through Henry's Chemistry, and made another set of drawings from the bones, giving two views of each, the natural size. Towards the latter end of September my friend and myself again set to at anatomy, and dissected two small subjects before November. We then procured an adult, and before March had dissected two male and two female subjects, the former being both more than six feet high, and will, I hope, now they are macerated, make good skeletons. We gave up in March, in consequence of having excited some little suspicion. And yet I think, sir, I may conscientiously say that I had made myself master of the anatomy of the neck, upper and lower extremity, abdomen and chest, besides the ligaments and bones. Indeed I was complimented on my dissecting by a physician of some eminence in this town, though to speak of it myself is, I fear, incurring the charge of egotism, though in fact I only wished to convince you I am not unmindful of the instructions you so kindly gave me when with poor Mr. H----.

"In March I commenced the study of the French language, as I wished to read Magendie's Physiology in the original, and having a good

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## 20 PROGRESS OF AN APPRENTICE

instructor, began to translate tolerably in three months, but was obliged to give it up in consequence of other studies which demanded my immediate attention; for being obliged to attend the pauper patients of an extensive parish, I found it necessary to know something of the practice of physic and surgery, for which purpose I procured Gregory's Practice of Physic and Cooper's First Lines, and having to attend midwifery cases, read a work on that subject by Burns, and have now got the "Conspectus Medicinæ Theoreticæ," auctore Jacobo Gregory, M.D. by way of keeping up my Latin. The parishes afford me plenty of practice, and some collieries we attend occasionally supply us with good surgical cases."

### August 10th, 1828.

# "SIR,

Your kind letter of the 3rd instant is indeed a reward as pleasing as it was unexpected, for when last I wrote it was not with even a hope that you could sacrifice your valuable time to reply, though the condescension and kindness I had formerly experienced convinced me I should not displease.

Indeed, sir, often last winter, when fatigued and tired with my nocturnal dissections, often have I consoled myself with the hope, that I might one day earn the approbation of the good and great; and I now thank God that I have obtained it." \*\*\*\*\*

I abstain from reading the subsequent observations, as too complimentary to myself to meet the ears of others:—they are the expressions of delight and gratitude of an ardent mind, for the unexpected opportunity afforded of greatly extending the writer's means of pursuing his studies.

It would be absurd to argue that an arrangement for a term of years, during which one half, or a greater portion, or even the whole (if the master should be so unreasonable as to demand it,) of the pupil's time may be abstracted from his studies for the advantage of another, should be equally advantageous to the pupil as an arrangement by which his whole time should be available to his improvement, with the further benefit of ample opportunities, the proper direction and the superintendance both of his studies and of his general conduct, with the same fidelity that a parent would watch over the welfare of his son! But such advantages are rarely to be met with under any circumstances. Supposing such an Instructor to be found, the sacrifice of money to make it worth the while of any one capable of affording such benefits, whose time must necessarily be valuable to himself, must place such

## 22 DEFECTS OF THE PRESENT SYSTEM

advantages far beyond the reach of the generality of those who enter into the medical profession.

I believe that in ordinary apprenticeships, there is less of injustice than is generally supposed, whenever the duties of master and apprentice are reciprocally performed: what motive can a person engaged in practice usually have to take an apprentice, to provide him with board, lodging, &c. with an apprentice fee not unfrequently less than equivalent to the expences actually incurred, to say nothing of the instruction, or of the opportunities afforded? The answer is plain—the time, the services of the apprentice make the equivalent, and if the true bearings of the case be clearly understood by each party, before the arrangement be concluded, I can see no more injustice in the matter, than in the purchase or exchange of an estate, of which the terms are distinctly stated.

Moreover I am far from being of opinion that the period of apprenticeship is unprofitable to the pupil, providing he have the opportunity of witnessing disease and its treatment, and that his studies be properly directed and superintended; and some there are who make it a conscientious duty thus to fulfil their compact with their apprentices. A pupil thus initiated possesses a decided advantage in the use of his hands, and in that higher attainment, quickness of discern-

#### MAY BE OBVIATED.

ment, so essential in the investigation and treatment of disease. The student, on the contrary, who has thought it sufficient to attend lectures and to walk a hospital, may shine in hypothetical discussion, but will rarely possess that tact in the treatment of disease which is readily discovered by the patient and his friends, and which is necessary to deserve and to obtain their confidence.

I appeal to the judgment of those experienced professional brethren who this day honour me by their presence-I appeal to those parents acquainted with the subject in all its bearings, who intend to bring up their sons as their successors in the profession, to say-if such advantages may be derived from an apprenticeship in which so great a proportion of the time of the apprentice must necessarily be given up to the business of his employer, how much those advantages may be increased, when by a liberal arrangement, such as ought to be expected with those destined to fulfil the higher departments of the profession, the entire time and energy of the student are rendered available to his instruction, whilst the judicious direction and superintendance of his studies secure the daily accession of useful knowledge?

No doubt, if the instruction be perseveringly afforded, and diligent application on the part of the pupil be enforced, it would be the same,

# 24 ADVANTAGES ATTAINABLE.

whether under articles of apprenticeship or otherwise; but the occasional fickleness of youth, when the experiment of frequent change can be indulged in, I have known to lead to the ruin of several young men of previously promising dispositions and attainments.

Preparatory education is requisite to render medical education of value to the pupil, for unless the mind be prepared—unless the pupil can command his attention—unless the language, the terms relating to the subject be understood—the most able discourse or demonstration will be of no greater use, than a display of colours to the blind, or of music to the deaf.

To what extent this preparatory education is essential, medical men and teachers are not agreed -to what extent it is desirable, there is no great difference of opinion : all concur, that the liberal education of a gentleman is that which ought to be cultivated, provided the means and time of the individual can afford such attainments.

Another contested point is the relative value of classical, of mathematical, or of physical knowledge, (namely, the knowledge of nature or nature's works,) as subservient to the attainment of the higher branches of medical knowledge. It is not for me to decide. For those whose professional education is yet to be commenced, my individual opinion is expressed in the Essay to which

#### PREPARATORY EDUCATION.

I before alluded : but when young men arrive in London for the purpose of attending Lectures, their time can seldom be afforded to supply the deficiencies of early education; and the only choice that can be made, is to adapt the course to be pursued to the particular wants of the individual, so as to afford as much as practicable, of the little time that can be spared, to those subjects most likely to promote the efficiency of the future practitioner, leaving those which are optional or ornamental, to a subsequent period, which period, very generally never arrives;—at least, for that purpose.

Should any individual of those who honour me by entering to these courses of Lectures, wish for any assistance which I can give him, my best advice shall be at his service, and I will appoint a convenient time for the private examination of his attainments, that I may be enabled to afford the peculiar circumstances of his case (if I may so express myself) due consideration.

The absolute necessity for a solid foundation in Anatomy and Physiology, as a preliminary to the successful study of surgery, must never be lost sight of.

It was my intention to discuss the course of studies which I consider essential to medical education—the modifications adapted to the separate branches of the profession; but I fear our time

# 26 VALUE OF SURGICAL KNOWLEDGE

will only permit a hasty and imperfect glance, the limits of this lecture precluding me from entering into the consideration of the defects in medical education generally, and of the causes to which these defects may be traced.

To the PHYSICIAN, who still possesses the honourable zeal to dare to be, and to continue a student, I would beg leave to submit, that without an intimate knowledge of the principles of surgery and some acquaintance with its details, he cannot be expected successfully to compete, in intricate and dangerous instances of disease of a mixed nature, (*i. e.* partly medical and partly surgical,) with the well informed surgeon, who has faithfully investigated disease in all its bearings.

To the SURGEON, and particularly to that class to which I now belong, practising surgery only, I would still more strongly recommend the faithful study of the phenomena, the treatment, the result of internal, or what are termed *medical* diseases; otherwise he cannot be so unwise as to expect that he can successfully compete with the enlightened physician who has sedulously paid a fair share of attention to the principles and practice of surgery.

To the GENERAL PRACTITIONER, to which class I am proud to acknowledge I belonged during a very considerable and that the most active period of my life, I would urge, as he unites

#### TO THE PHYSICIAN, &c.

the office of both physician and surgeon, in those cases which are under his exclusive care, that whatever is useful to the physician, and to the separate surgeon, cannot be without value to him. The lives of those intrusted to his skill, are as valuable to their possessors, and to their humble families, as those of the more opulent who can command all the advantages which consultation can afford.

To the ACCOUCHEUR, both medical and surgical knowledge are essential: without the former, he loses his patients by the diseases peculiar to the puerperal condition; without surgical ability, he may destroy his patients in those distressing instances requiring instrumental aid, or inflict irreparable injury, of which I have known several melancholy examples.

The OCULIST may operate successfully, as far as the operation itself is concerned, and yet not succeed in restoring sight to his patient, owing to error in constitutional management in the aftertreatment; but were I to enter into details, where the materials are so abundant, I should I fear only exhaust your indulgence. Moreover, my colleagues, whose introductory lectures have preceded mine, have ably illustrated some of the points on which I should otherwise have dwelt. Of the abilities, the attainments, the professional reputation of my colleagues, it would imply a want of

#### VALUE OF LECTURES.

delicacy for me to speak, in their presence, neither is it necessary; for the kind, the generous reception with which they were so recently greeted in this room, convinces me that you are neither insensible to their merits nor to their zealous desire to promote your welfare. I ought not, however, to omit to notice, with due acknowledgment, the liberal conduct of Dr. Copland, towards the pupils of this School, in permitting them to attend his practice as physician to the Royal Infirmary for the Diseases of Children, free of expense, whether they be his own pupils or those of his colleagues.

Although lectures form an essential portion of surgical education, they form but a part, and that part not the most important of the whole. Perhaps too much is expected from them. In the other branches of medical science the same remark will be found to hold good. The surgical student should be fully aware that no course of lectures, of ordinary duration and frequency, can be so complete as to embrace every subject which may fairly be presented for the consideration of the surgeon. He must supply such unavoidable deficiencies by reading, by inquiries, and by observation. Some subjects, which do not require the aid of demonstrations, are as well elucidated in books, as they can be in any lecture, and to such subjects and works, reference will be made; whilst the great value of lectures over books

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#### PLAN OF THESE LECTURES.

will be found to consist in demonstration, in impressions addressed to the sight, which mere de scriptions, however laboured and accurate, cannot supply.

The plan of these lectures, ON THE PRINCI-PLES AND PRACTICE OF SURGERY, has been submitted to you in the prospectus.

The ordinary duties of the surgeon in the treatment of accidents and diseases of frequent occurrence will be particularly pointed out: the importance and application of medical surgery in the treatment of surgical diseases will be attentively considered: the adaptation of bandages, dressings, &c. in the treatment of wounds and ulcers, and in the management of fractures, &c. will be practically taught: the various operations will be demonstrated, with such references to the surgical anatomy of the parts as may be necessary to elucidate each operation.

Gentlemen established in practice, desirous of renewing their practical attainments, may be assisted and superintended in *private courses* of OPERATIVE SURGERY, adapted to their particular pursuits.

If any student be here present, who can delude himself with the idea that he can become qualified for the duties of his profession, by the mere passive attendance upon lectures and demonstrations, unaided by his own study and reflection

## 30 DUTY OF THE STUDENT, &c.

upon what he sees and hears, either let him divest himself of the dangerous error, or renounce a profession, in which the deficiency of his attainments can only entail misery upon those who may have the misfortune to become his patients.

I would also take leave to remark, that a medical man who does not possess a benevolent heart, in addition to scientific attainments, can never become an ornament to a profession "whose humble glory is to do good."

I approach with some hesitation any allusion to my own intentions. The futility of mere promises must be obvious. I therefore abstain from making any, leaving my future conduct to be judged of by my pupils. I dare scarcely trust myself to detail my intentions, well knowing that circumstances, over which the individual can have little or no control, sometimes frustrate the best intentions. Whoever has passed weeks of suffering upon a bed of sickness must be sensible of this truth :--- whoever in our profession has been called to give his assistance in the moment of danger, in which the life of a fellow creature has been at stake, whether from an attempt to commit suicide, from the accidental or intentional administration of poison, the bursting out of hæmorrhage after a surgical operation, or the infliction of wounds or other dangerous injury, must be aware that he is liable to want of

## INTENTIONS OF THE LECTURER. 31

punctuality in those engagements, where both his inclination and his duty would protect him from the possibility of any intentional neglect. Day after day since my lecturing in this place has been determined upon, interruptions have interfered with my arrangements so as to delay the completion of some of my intentions to the last hour. But to return to my subject :--By my deeds and not by mere intentions, must I hope to obtain that confidence and goodwill which ought to endear pupils and preceptors to each other.

The intentions proposed to be realised in these lectures are-to endeavour to prepare the surgical student for the actual duties of his profession :--to shew the importance of ordinary duties as contrasted with extraordinary operations and cures: -to shew the value and application of *medical* surgery, or of the collateral aid which surgery ought to derive from the science of medicine :-to shew that the mind must be informed before, in the intricacies of surgery, the hand can be depended upon.-The necessity for manual dexterity and precision, in addition to that cultivation of the mind which leads to quickness of observation and soundness of judgment, would appear to be almost self evident: but many of the misfortunes in surgery, which it is deeply to be regretted are very numerous, may be traced to a want of these qualifications.

#### 32 FREQUENT ERROR OF STUDENTS.

I have before alluded to the necessary connexion of surgery with medicine and the accessory sciences, and also to the requisite foundation in anatomical and physiological knowledge, without which surgery is dangerous and destructive, rather than beneficial.

One of the most frequent errors which I have witnessed, is that of neglecting what are termed common cases, or those of frequent occurrence; whilst others little likely to fall to the lot of the young practitioner, are sought after with avidity. I am fully convinced that the welfare of the patient and the reputation of the surgeon, more frequently depend on the manner in which the ordinary duties of the surgeon are fulfilled than upon extraordinary operations. I should therefore strongly advise, that the observation of the student be directed to the common accidents and diseases which fall to the province of surgery; that the manipulations required in the dressing of wounds and ulcers, be studied and practised until accuracy, dispatch, and precision be attained; that the minor operations be similarly studied, and, subsequently, the manner of adjusting fractures, &c.; in short, that all the mechanical adaptations should be so ready, that no awkwardness should appear, nor difficulty be experienced. The various operations of more rare occurrence may be successively studied and practised upon

the dead subject, until all the steps of each operation can be perfectly performed.

Without a certain degree of preparedness to meet the exigency, sudden danger unnerves the mind :—hence, can a greater folly, a more culpable dereliction of duty be supposed than that of assuming, that in the hour of danger, he, who has never assured himself by previous exercises (on the dead body, or upon the living model) that he is capable of performing, with accuracy and precision, all the details required in the actual treatment of accident or disease—should be enabled to perform them unexceptionably for the first time, when the welfare, perhaps even the life of a fellow being is at stake, and dependent upon his qualifications and self possession !

Necessary, however, as the neat and ready performance of the manipulations of surgery may be, the judgment required to determine when they are called for, is of higher value and of more difficult attainment. Medical surgery is unfortunately too little cultivated, and less valued than its importance demands. The surgeon who does not understand the constitutional treatment of diseases, must be often humiliated by failure. Many a limb has been amputated, which, by the aid of judicious constitutional treatment combined with local remedies, might have been saved.

It has been already observed that the surgeon

#### JUDGMENT-KNOWLEDGE.

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requires, and should attain all the medical knowledge proper for the physician, and a much more accurate knowledge of the structure of the body, as well as mechanical dexterity in the performance of surgical operations.

Knowledge is essential to render any individual capable of being useful to others, let his intentions be ever so good; for the errors arising from ignorance are sometimes as dangerous and destructive as the designs of malevolence. Æsop illustrates this truth in his fable of "The Gardener and the Bear," in which he makes the Bear, filled with ambition to protect his friend the Gardener from the annoyance of a fly, which had alighted upon his face when he was asleep, aim a blow at the intruder, which not only demolished the insect, but also the face of the friend he meant to serve.

It still remains for me to explain my motives in the arrangement of the present course of lectures: —in the importance which I attach to the unostentatious and ordinary duties of the surgeon: on the absolute necessity of accuracy and completeness in every particular: lest the life of a human being should be sacrificed by the want of it! I know that many in the profession hold cheap any such ideas of precision, and treat the attempt to teach them, with ridicule! I am deeply aware of the wide difference between the solid acquirements which shall enable a man faithfull.

### A CONTRAST.

to fulfil the arduous duties of our profession, and the arts, sometimes perhaps the most unworthy, which may delude the ignorant and lead to lucrative employment; the difference between the worthy exercise of a scientific and honourable profession, and the unworthy arts by which that bonourable profession is occasionally perverted and degraded: the savoir and the savoir-faire are indeed very different attainments, as different as science and cunning. To those who have not considered the subject, it might seem surprising with how small a share of intellect and science the mere trade of physic or surgery can be lucratively carried on. It is not, however, my intention to enter upon so humiliating a discussion, verbum sat.

Let us consider if the value of accuracy and completeness be put as a matter of common sense, to what conclusion a man of business would come, were you to tell him that such extreme perspicuity and precision in his ledgers and books, in keeping the figures so exactly under each other, and in writing them so distinctly that one could not be mistaken for another, was absurd or Utopian. Suppose, as the characters representing 5 and 3 and 8 are somewhat similar, you were to tell him that it did not matter whether it was one or the other; or that a cypher, which, separately taken, is of no value, would be of no consequence

#### THE VALUE OF PRECISION

if added to the right hand side of another sum:—or that in a computation of decimals, that it was ridiculous to be so particular in placing the dot which separates the integers from the decimals—it is merely a dot! I will not offer such an insult to your understanding, as to supply the answers. I will merely ask, are computations of pounds, shillings, and pence, of greater value than life and health, to entitle them to an exercise of common sense, of which the latter are unworthy!

Suppose you were to tell the maker of a chronometer, that it was ridiculous for him to be at so much pains to make every part of that triumph of mechanism so perfect in itself, so perfectly consistent in all its bearings to the whole:--what difference, where there are so many wheels and teeth, whether in one or two of the wheels there be a tooth or two more or less! He might, in charity to the ignorance of such a commentator, condescend to explain, that it might make all the difference between a ship, bearing upon the ocean valuable treasures and still more valuable lives, making a distant point of the globe with decided certainty, after having been weeks or months out of sight of land; and such a deviation from its proper course, however slight that deviation might be considered, as might endanger the entire loss both of vessel and crew! He might con-

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descend to explain these, some of the uses of such extreme accuracy, but can you suppose it possible that such ignorant contempt of a degree of excellence, which the objector was incapable of comprehending, of a perfect adaptation of numerous parts, all essential to the perfect performance of the chronometer when completed, should induce the mechanist to neglect one iota of that accuracy, derived from a thorough scientific knowledge of the subject, which had enabled him to bring his work to a degree of precision and usefulness nearly bordering upon perfection?

Let us return to the point from which we set out, and examine what is the value of the objections to precision in surgery, and suppose a case. Blood-letting is a very simple operation, so simple considered, that I have known youths, during the first weeks of their apprenticeships, suffered to perform the operation upon the living body, without any idea, however slight, of the relative situation or importance of the parts which might be injured, and without instruction or any other initiation than that derived from seeing an awkward fellow-pupil perform the operation. Many such operations have been performed without Wherefore, then, should you enter accident. into minute details and a long string of precautions on so simple a subject! Need I answer, that the accidental opening of the artery of the

#### FATAL RESULTS OF

arm, when that of the vein was alone intended, has been known, not in a solitary case but in many instances, to be attended with fatal consequences; that what by ignorance or want of skill has happened, may again happen, unless guarded against? that the artery and vein are in many instances so contiguous, that a difference of one-twentieth part of an inch in the depth and direction of the incision, may make the difference between safety and the loss of life! and that in endeavouring to establish precautions, by which dangers which have occurred may in future be avoided, I do no more than he who erects a light or a beacon to warn the mariner of his approach to shoals or rocks, which, without such friendly warning, might prove destructive.

Gentlemen, my opinions have not been formed without deep reflection, founded upon extensive observation; the result is my conscientious conviction, that in surgery, whatever is worth doing at all, is worthy of being well and perfectly performed; and that errors, apparently so trivial as to escape at the moment the attention or notice of those who have unconsciously committed them, have proved fatal to innocent and unfortunate sufferers, for whose relief, and not destruction, the honest and well meant offices of the surgeon were intended.

At an early period of my studies, I witnessed

#### ERRORS IN SURGERY.

an unfortunate case, which has left an indelible impression in my mind. A fine athletic young man, a brewer's drayman, pinched (by the edge of a cask coming in contact with a post,) the skin which connected the little and the ring fingers to each other. He applied to a public institution, where he was attended to by a pupil who did not even direct him to rest the limb; swelling and pain of the hand succeeded: from pupil he was transferred to house-surgeon,-he still went on badly; from house-surgeon he was transferred to assistant surgeon, and from the assistant surgeon at length to the principal surgeon, under whose care he had been nominally admitted from the first. Abscesses formed first in the hand, afterwards to a great extent in the forearm. In opening one of these abscesses, the ulnar artery was wounded-the hæmorrhage was great-the mouth of the divided artery could not be found-the recurrence of hæmorrhage became so alarming that it was deemed necessary to tie the humeral artery. The operation was performed in the night, and it was supposed that the artery had been secured; nevertheless the bleeding from the forearm again returned, and the unfortunate patient expired! The limb was privately removed, injected and dissected, when the afflicting truth was discovered, that the ligature had not

## 40 INSTANCES OF MUTILATION.

surrounded the artery which it was intended it should secure, but had included the radial nerve, (the *Median* of Monro) which was in contact with the artery!

The fatal results of error or want of skill in the ordinary duties of the surgeon, are unfortunately very numerous.

The drawings now shewn, mark the progress of a case of bleeding from the arm, in which the artery was unintentionally wounded. Repeated and alarming hemorrhagies succeeded, and several successive, though unsuccessful operations were performed to guard against the recurrence of hemorrhage: at length, amputation of the arm took place; but the unfortunate sufferer did not long survive

Another instance, which, from the holding of an inquest after the death of the patient, came under the notice of the public, must be fresh in the recollection of many now present: it also occurred at a public institution, and the verdict of the coroner's jury was, " *Died from the accidentally opening an artery in the arm, and from the want of proper attention.*"

The strangulated hernia, from which this drawing was made, proved fatal by having been mistaken during the lifetime of the patient, for *hernia humoralis*, which, I need not tell you, is seldom attended with danger, and the treatment of which is in no degree adapted to that of a protruded intestine.

The several instances of mutilation represented in these drawings, some of which, many individuals would rather suffer death than be the subject of, arose from slight disease in the beginning; whilst here you observe the contrast of other instances in which the disease in the beginning had been dangerous and formidable; but, by assiduous and appropriate surgical treatment, mutilation was prevented.

I hope these instances, which are a very few from the many which might be adduced, will suffice to convince the surgical student that the duties of his profession are sufficiently arduous, to demand his utmost exertions to qualify himself for the due performance of them. Let him respect those who have deserved and attained eminence; let him be slow to censure; and never let it be permitted, unless the proofs of error be too convincing to leave a doubt. Let him aim at high excellence, by deserving esteem; but let him bear in mind, that unless sustained by intellectual labour, rank and station, however elevated, do not preclude the possibility, nay, the probability, of error.

Above all, let the student be deeply impressed with the truth, that mere scientific attainments,

## 42 CONDUCT OF THE SURGEON.

however exalted, will avail but little, unless supported by upright and worthy conduct as a MAN: he must also be aware, that no exertion on the part of his teachers, can supply the want of diligent application on his own part, to avail himself of every opportunity of instruction. On many important practical subjects, there exists great diversity of opinion and practice among the best informed of the profession, and the really zealous student will do well not to adopt passively the opinions of any teacher, but to examine and to reflect for himself; to read upon each subject discussed in the lessons of his teachers, and upon the diseases presented to his observation in public practice, and to endeavour to understand the principles of treatment, in contra-distinction to the mere routine of practice. By these means, aided by pathological anatomy, and the discussion of the more difficult points, which he may not be able to explain for himself, with his teachers and others, he may attain that high degree of usefulness to his fellow-creatures, which shall ensure him competency, and the esteem of all good men.

Gibbon has traced the foundation of all his future excellence to the first eighteen or twenty months of useful studies, after his arrival at Lausanne. He adds—" But every man who rises above the common level has received two educations: the first from his teachers; the second, more personal and important, from himself."

The conduct of the surgeon should be characterised by habits of accurate and patient attention, of persevering exertion and of active beneficence. The mean jealousies of professional rivalship, and the mercenary arts of a gainful trade, are unworthy of the medical character; the real dignity of which consists, not in empty titles and distinctions, but, in soothing the distresses and alleviating the sufferings of mankind.

Well qualified by that competent knowledge of your duties, which confers the *power* of rendering valuable assistance to those who may require your aid, success in life depends more immediately upon conduct, than the unthinking are willing to believe or to admit : for although an ephemeral reputation and the accumulation of wealth may sometimes take place, by means but little creditable to the profession; although the honourable exercise of your abilities, may, from the want of opportunity to shew their worth, for a period of years afford little more than a bare competency, yet you will find the only solid basis of success, of the esteem of the worthy, of that highest of all gratifications, the conscientious approbation of your own mind, to consist in Integrity, united with Zeal to promote the welfare of others, and with Diligence to effect it: in short, to follow to the

#### THE BASIS OF SUCCESS.

utmost of your power, the simple but comprehensive precept, "to do unto others as you would they should do unto you."

It is by your Conduct in the faithful performance of the arduous but honourable duties of your profession, that you may emulate those illustrious ornaments of the ages in which they have lived, whose names and examples have descended to their posterity, as benefactors to the human race.

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## LECTURE II.

Further Observations on Surgical Education.— On the Investigation of Disease; — its Importance; — Tables and Instructions for the Methodical Investigation and Registration of the Diseases of Adults.

#### GENTLEMEN,

AT our last meeting I made some observations on the more common defects in medical education: the chief subject of the present Lecture is the *Investigation of Disease*.

In the progress of these discourses, it is my wish to consider myself as the Companion of your Studies, rather than as assuming any authority which should preclude even the youngest of you from stating, at convenient times, whatever difficulty may occur to your minds, relating to the subjects treated of.

In addressing you thus as friends and fellow students, I shew you the confidence I place in your zeal for professional knowledge, by my

## 46 RELATIONS BETWEEN STUDENTS, &c.

consciousness of how much I must rely on your indulgence in whatever relates to the manner of communicating that information which I hope to render useful to you .- Actively engaged from early life in the duties of the profession to which I am devoted, my leisure moments have been chiefly directed to obviate the recurrence of those anxieties to which all are liable, which every surgeon must occasionally have experienced,by the careful observation of disease and its consequences; by some reading, and not a little Thus circumstanced, the occasions reflection. for delivering my sentiments in public have been few, and my inclination to make use of them still less frequent.

Were it not that I depend upon your good sense, I might be apprehensive that the frequent allusion which I may feel myself called upon to make, to the great importance, to the extreme difficulties of your future duties in the exercise of your profession, should discourage you: but I well know that the ardour of youth, if properly directed, if that ardour be united with perseverance, is capable of surmounting every difficulty : moreover, I would rather that such of my younger friends as have neither experienced responsibility nor its concomitant anxieties, should think my discourses tedious, from an attempt to induce habits of accuracy and precision, which they, for a

#### IMPORTANCE OF SURGICAL DUTIES. 47

time, may choose to consider *Utopian*, than that their peace of mind should hereafter suffer from the recurrence of fatal errors, such as have too often happened; errors which may yet be avoided as certainly as the rocks and shoals in a dangerous channel, of which every point of danger, as well as the safe course, is accurately and distinctly pointed out upon the mariner's chart.

A living author, whose perseverance and successful exertion to extend the science, and to improve the practice of surgery, entitle him to the gratitude of the community, has observed :

"If we go into a court of law, we see the bench occupied by the learned judges; before them are counsel skilled in the law, and a jury of twelve honest men, to hold the balance betwixt the severity of the law, and the weakness of human nature. What are they met to decide? Perhaps a matter of money or of succession. Even if it should be a criminal court, what a contrast have we with the situation of the surgeon, on whose single decision the life of a fellow-creature depends, one, perhaps, bearing all the relationships of society; having all the ties which bind a man to existence, and the virtues which make his life dear. The surgeon cannot lean upon the judgment of others, nor say, for this the wisdom of the legislature has provided. He has to examine an evidence often strangely perverted; he must judge, unaided by

#### 48 DEXTERITY—JUDGMENT—

friendly counsel; and, to determine upon what is right to be done, when the life of a friend hangs on the issue, and where the execution depends on his own dexterity, is a thing of the greatest difficulty."

Arduous as the performance of operations may be, the judgment required to decide on their propriety is still more important; since, however skilful an operator may be, if an operation be performed without necessity, it is a dreadful infliction :—if neglected when necessary, the patient's life may pay the forfeit. That the medical profession, except in those slighter deviations from health, in which the unaided powers of nature would suffice, will prove a blessing or a curse, according to the endowments or ignorance of those who undertake its duties, must be sufficiently obvious to every well-informed and reflecting mind.

In pointing out some of the prominent defects of medical and surgical education, my object is not to discourage you, nor to diminish your zeal; he who has not had occasion to regret time and application mispent, must indeed be a fortunate student; but since the past cannot be recalled, let the future occupy your care, and stimulate you to persevering exertions, which, if properly directed, must be crowned with success.

Medical and surgical knowledge forms a part,

# TO ENSURE THE GREATEST PROGRESS. 49

and but a part, of intellectual education. Perhaps the degree of preparedness of the pupil has not been sufficiently attended to in the attempt to convey instruction : hence, many valuable observations are lost to the student, from his inability to follow the ideas of the teacher, who may happen to employ terms, with the strict signification of which the student is unacquainted.

To ensure the greatest progress in the least time, the instruction of each student should be adapted to his previous acquirements; hence, the usual arrangement of lectures, delivered alike to the advanced student, and to the uninitiated, is equally disadvantageous to both. What interest can the advanced student take in the definition of such elementary terms as organs, functions, and the like, with which he either is, or ought to be, perfectly familiar? and what idea can the uninitiated student affix to such terms as " derangement of the cerebral functions," "disorder of the digestive organs," " disorder of the chylo-poietic viscera," and many others, unless they be explained to him ? Unfortunately, not only anatomists and physiologists, but physicians and surgeons have indulged in a strange propensity to mysteriousness !- one might really suppose, instead of the simplification and diffusion of useful knowledge, that the object was how to render its attainment as intricate and difficult as possible.

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## 50 THE VALUE OF LECTURES,

On the subject of lectures, I believe the value of them is greatly over-rated; for unless they be demonstrative, the information may be much more extensively diffused by the press; and I need not tell you that a discourse, the delivery of which, should occupy an hour, might be much more closely studied, if printed, and deliberately perused and meditated upon in the closet. Demonstrative lectures cannot be superseded by reading, and are therefore essential to surgical education; -But to attempt to learn by lectures only, is idle and unprofitable: take them as guides to direct your observation, your reading, your meditation; but to suppose that the mere listening to lectures should confer excellence, would not be less futile than for a traveller to bestride a guide-post, and vainly expect that it should, without effort on his part, convey him to the destination to which it points. But, gentlemen, do not let me be misunderstood, nor lead you to suppose that lectures are incapable of affording highly useful instruction ;- if a teacher have successfully laboured to cultivate any department of art or science, and faithfully communicate the results of his experience, much valuable knowledge may be gained, -many of the causes of failure and discomfiture be averted.

It has been observed, "There exists a vast treasure of facts, which the observation and

#### HOW TO BE ESTIMATED.

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experience of mankind have accumulated; it is the business of education to communicate a knowledge of these facts; and it is in the power of an able teacher to communicate in an hour what it required the labour of years to acquire; to show at once, results which were not obtained without the most complicated and skilful processes, and to exhibit those results free from the obscurity, imperfection and error, in which they were at first involved, and for the removal of which the calm and persevering attention of the most powerful minds was necessary. Education feeds the infancy of succeeding minds with the fruits produced by the strength of the maturity of those that preceded; whence the former not only acquire an earlier and greater vigour, but start forward in their career from the point at which their predecessors stopped, with the acuteness of the youthful sense, and the ardor inspired by the feeling of the freshness and energy of their powers."

Previously to entering upon the method of investigating disease, I must beg leave to point out to you the value of recording facts and observations relating to your profession.

No man ever became a great improver of the healing art who trusted to mere recollection, without recording the more important facts and observations which occurred to him in the course of his profession.

E 2

# 52 IMPROVERS OF THE HEALING ART.

The uses of drawings as auxiliary to, or illustrative of such records, should not be passed over in silence. Many appearances relating to disease cannot be completely conveyed to the mind by description only; whilst in the study of *Surgical Anatomy*, the sketches or plans, which the student may make from his own dissections, will impress the forms, and relations of the parts to each other, so strongly in his mind, that the impression will not be easily effaced.

It may not be irrelevant to mention that the Society of Arts has liberally offered and conferred rewards for anatomical models and drawings made by medical and surgical students.

But to return to the subject—the value of recording facts and observations: trace the history of our profession and you will find, that from Hippocrates to Harvey,—from Harvey to Hunter, and down to the living ornaments of the present age, no one has ever obtained more than an ephemeral reputation, unless by contributions to the accumulated records of useful knowledge. Many illustrious names might be cited of those who by their example and precept have contributed to the advancement of science and the good of mankind.

The investigation of disease is no simple process;—nay, to the uninitiated it is impracticable. It requires a foundation in accurate elementary knowledge, drawn from various sources, but more especially from the structures and functions of the human body.

The period, which, under ordinary circumstances, I have considered the best adapted for the methodical study of disease, and of the various means by which it may be investigated, is after the studies which usually occupy the first and second winter of attendance upon lectures, &c. or, in other words, at the commencement of the third season. In the Essay before alluded to I have shewn that the period of study is usually too short to admit of solid and comprehensive attainments in elementary knowledge, relating to medical science.

Before the student determine upon his employment for the season, let him institute a rigid self-examination into his acquirements and deficiencies. He will probably find that his anatomical knowledge is the only part which he can review with satisfaction; that his physiological knowledge, as well as that of the accessory sciences, is in many points imperfect; and that although he has diligently attended the instructions of his medical and surgical teachers, has learned the technical nosological arrangements in common use, and has attended the medical and surgical practice of a metropolitan hospital for a year; yet that at the bedside of the patient he is, not unfrequently, utterly at a loss to make his nosological

## 54 IMPORTANCE OF THE SUBJECT.

definitions and the symptoms agree-some are wanting-others are superadded-so that he is bewildered; and with all his instruction, he has never been taught to investigate disease so as to represent clearly to his own mind, what are the parts or organs of the body which actually deviate from the state of health; what is the nature of the derangement which they suffer; nor to deduce, from these simple facts, principles of treatment rationally adapted to the restoration of health! He has indeed witnessed many cases of recovery to take place without any rigid investigation of the nature of the disease, for the salutary efforts of nature are, in many instances, sufficient to effect recovery without assistance from art; but it is also probable that he may have witnessed, with sorrow, in examinations made after the death of the patient, that the disease had not been understood during the *life* of the patient; that the disease was in its nature remediable; and that probably a greater degree of diligence in investigation, aided by the resources of general and medical science, might have led to the discovery of the nature and extent of the malady, in time to preserve the life of a fellow-creature. What must be the anguish of a man of feeling mind to reflect that he was the person on whom the patient relied for safety; --- and that his want of skill had been the passive cause of an untimely

death, which might have been averted! Would to God such instances were less frequent! The intricacies and complications of disease are so numerous, and the sources of error so many, that such a case may occur to him who, deeply impressed with the trust reposed in him, is most anxious to fulfil his duty. Were examinations after death universally instituted, many useful lessons might be deduced, many improvements in the healing art be effected; but many there are who would rather that the grave should conceal the errors of their practice, than that those errors should be brought to light, either for the improvement of themselves or of others. But of those who anxiously seek, in pathological investigations, every opportunity of confirming or of correcting their practice, he who has most extensively investigated is the most likely to be taught humility; for even fifty confirmations of every essential particular, as to the nature and extent of those diseases which have proceeded to a fatal termination, aided by the cordial approbation of conscientious friends, will not compensate the anguish he must feel on discovering that one single case had been misunderstood in any essential circumstance; he must, indeed, either be profoundly ignorant, or endowed far beyond the common lot of mortals, who can suppose that he alone is incapable of error. Infallibility belongs not to mortals. In

#### HOW TO AVOID REPROACH.

medicine no one is entitled to wear the triple crown.

The student anxiously inquires, What shall he do to avoid these errors and reproaches? The faithful student may be comforted. If he have already exerted his most diligent efforts to learn his profession, he may, through the want of an intelligent guide to direct his labours, have wasted much valuable time, and have acquired but slender information. Even if it be so, he should not despond; unwearied diligence is of paramount efficacy; and he may be aware, that whoever goes on uniformly improving, even at the slowest rate, must in time excel those who remain stationary, let their positive acquirements be what they may: but by judicious and methodical arrangement his labours may be not only shortened, but associated with the delight of conscious progress in useful knowledge.

From what has been already observed it will be apparent, that a competent knowledge of the structure and functions of the human body in its healthy state is indispensably necessary to the knowledge of diseases. Simple and self-evident as this axiom may appear, the neglect of it may be traced in almost all the numerous errors in the practice of medicine and surgery which, unfortunately, may be so often witnessed. A man who should attempt to correct a complicated arithme-

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### DIFFICULTIES IN INVESTIGATION. 57

tical computation, without previous acquaintance with the value and relation of figures, would be scouted for his folly and presumption; whilst it is to be feared, "the mystery of physic" frequently conceals folly and presumption which would be equally glaring, if divested of vague technicalities and submitted to the tests of science and of reason.

But, however qualified the student may be in elementary and scientific attainments, the investigation of disease is often rendered extremely difficult by the imperfect and sometimes false accounts which patients give of the symptoms and progress of their illness. The simulation of fits, for the purpose of extorting charity, or of obtaining discharge from public service, is no uncommon artifice; whilst in cases of syphilis, pregnancy, &c. there is often the most steady denial of facts. But the wilful deception thus glanced at is not all the difficulty; for it happens continually, that others, who have no actual intention to deceive the medical men to whom they refer, are yet so far misled by their prejudices, their wishes, or their fears, that they give a false colouring to their statements, calculated to mislead any one who does not strictly examine in what degree such statements accord with the actual circumstances which present themselves.

Although the accurate observation of facts will be found a most essential part of the investigation

#### DIFFICULTIES IN THE

of disease, yet much more is necessary to arrive at just conclusions. It is far more difficult to trace effects to their causes, than to observe the facts presented to our senses.

The effects are frequently obvious, whilst the causes can only be learned by a series of inductions which cannot be made, unless the mind of the observer be previously stored with the requisite scientific and general knowledge; to which should be added that of mankind. In the diseases of the poor the causes shall be often found in the nature of their employment, which mere medicine can do next to nothing to abate; although the noxious cause may admit of easy correction, by a moderate share of science adapted to the existing circumstances.

It will be sufficient to mention the pernicious effects of lead in white-lead manufactories;—of the fumes of mercury, in what is called watergilding;—and of particles of steel in dry-grinding.

In an extensive lead-factory in the vicinity of the metropolis, in which the colic peculiar to such places was formerly very prevalent, that disease has become so rare, that medical assistance has not, for some years past, been required. Many have supposed that the fumes of the lead induced the disease; but the remedy was found by tracing the cause to a more direct source. Workmen are seldom very strict in regard to

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### INVESTIGATION OF DISEASE.

cleanliness. The probability of particles of the mineral being conveyed from the hands amongst the food was suggested, and an order enforced, that before any of the workmen should leave the factory to go to meals, their hands should be thoroughly washed, and that nail-brushes should be used to prevent any of the lead remaining where it was most likely to adhere. The success of this plan, under strict superintendance, has been complete.

The dreadful effects of water-gilding have been averted, in France, by judicious ventilation.

The efficacy of magnetism in guarding against the evils of dry-grinding (one of the most common of which is consumption), by the invention of Mr. Abraham of Sheffield was so fully established, that the Society for the Encouragement of Arts, Manufactures and Commerce, rewarded Mr. Abraham with their large gold medal.-(See Vol. XL. of their Transactions, 1822.)

More recently, the valuable discoveries of M. Labarraque, and others, have shewn the mode of counteracting the ill effects arising from putrescent and noxious effluvia.

Such improvements may serve to show the study of the various manipulations in the arts previously recommended, as a part of general knowledge, not to be without its use.

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## 60 INVESTIGATION, HOW FACILITATED.

In the higher classes of society, the mind frequently exerts almost as decided an influence over disease, as the particular employments, situations, &c. exert upon the poor.

The investigation of disease will be much facilitated by the adoption of a certain order and method which shall prevent the omission of any essential circumstance in that sort of analysis of all the principal organs of the living body, and of the functions which they perform, which may (as far as the present extent of science will permit) enable the student or practitioner to ascertain any existing deviation from health.

It may be observed, that to the student who has yet to acquire precise knowledge of disease, a much more minute and extended analysis of each case will be necessary, than may be required for the experienced physician or surgeon to determine the nature of the disease, and the appropriate treatment. But though I am aware that it must be impracticable to investigate thus completely and methodically the numerous cases which are prescribed for, in actual and extensive practice, yet I have experienced so much satisfaction from the sedulous examination of intricate instances of disease, regardless of the time which such examination might require, that I cannot too strongly inculcate so beneficial a procedure; as it has often

## OCCASIONAL MODIFICATIONS. 61

conduced to a degree of certainty respecting the nature and extent of the disease, which I should never have been able to attain by hasty, commonplace inquiry; and further, the advantage to the patient has been so considerable, as amply to outweigh any sacrifice of time which might have been more lucratively employed.\*

In some instances, however, it will be obvious to the experienced physician or surgeon, that it is essential to the welfare of the patient, to abridge the inquiries directly addressed to the sufferer, as much as may be; confining them to the most important or essential points, which cannot be answered by friends or attendants. In cases of cerebral excitement, in acute inflammations of the

\* I may observe that in the Surgical Practice of the Institution for the gratuitous treatment of persons in humble circumstances, labouring under disease, to which the Teachers of this School are medical officers, and the practice of which is open to the observation of the students, (the SOHO DISPEN-SARY,) I have resumed a plan which I formerly adopted in public practice. I have considered it highly useful to make written notes of almost every case which has come under my treatment. I have done so on two grounds: 1st. that I believe it beneficial to the patients, in enabling the surgeon to review the history and treatment at any period of the disease, which can only be done very imperfectly when the patients are numerous and all is trusted to memory ; and 2ndly, to add example to precept, in encouraging you to exert your utmost diligence for the welfare of those unfortunates, however humble their station in life, who may become the objects of your professional care.

#### 62 PLAN ADOPTED BY THE LECTURER

thoracic and abdominal viscera, in instances of extreme exhaustion from hæmorrhage or other cause, &c. the patient must be spared the fatigue and injury from exertion in speaking. Such caution, however, on the part of the practitioner, by no means precludes the full investigation of the disease. The inability of the patient to describe his sensations and to state the progress of his malady certainly increases the difficulty of the investigation; but, as will be shewn in regard to the diseases of children, the want of words by no means precludes the well informed observer from arriving at just conclusions, both as to the nature of the disease and the rational indications of treatment.

Even when the disease is of such a nature as not to be removed by any remedial means at present known, it will prove consolatory to be aware that the fatal termination may often be long averted by judicious palliative treatment; whilst a just prognosis is the only safeguard to the reputation of the physician or surgeon who is called upon to treat irremediable disease.

The plan which I have adopted has been first, to learn, as far as the patient or friends could inform me, the history of the disease, from its commencement to the time of observation.

Secondly, to examine carefully the present state of the patient; and if any doubt remained

## IN THE INVESTIGATION OF DISEASE. 63

in my mind respecting the disease, to retrace the examination of each organ that appeared to have had any share in the malady, to the period of the first deviation from health.

The peculiar habits and mode of life form important considerations, and may be more pointedly investigated after the symptoms have been ascertained than before; as particular symptoms frequently lead to the detection of errors in general management which might otherwise escape notice.

Having satisfied myself, as far as may be prac ticable, of the symptoms, the question occurs, What organ, or organs, are affected? What is the nature of the disease? If more than one organ be affected, what part was originally deranged; and what secondarily, or dependent upon the first? With what other diseases is it likely to be confounded? Hence the *diagnosis*.

These necessarily lead to the further inquiry, Is the disease in its nature remediable or not? What is likely to be the future progress? Hence the *prognosis*. By what means can the disease be arrested or removed? In this consideration the general circumstances should be first determined, comprising diet, exercise or rest, clothing, temperature, &c.; and these are at least as important, if not more so, than the treatment by medicine only. These being arranged, the strictly medical or surgical treatment follows.

### 64 USEFULNESS OF TABULAR FORMS.

The student should not content himself, if he happen to have the charge of a patient, with ordering a farrago of stuff from a *vade mecum*, or other compilation; but should reflect upon the indications of treatment, and how these can be best carried into effect. Above all, do not let him deserve the sarcasm, attributed to the late Dr. Gregory, too often merited, that "It is easier to prescribe than to think."

I have found printed forms, containing blanks to be filled up with the data above alluded to, a great convenience; as they confine the attention to the particular point under inquiry.—(See Table I. *Diseases of Adults.*\*)

\* It may be mentioned that the size of the page which this table occupies is much too small for practical use Those which I have employed have been of the quarto size, large paper. The left column only was printed, leaving the remainder of the page for the particulars to be stated in manuscript. This I found sufficient for my own reference. The observations relating to the sexes were only occasionally required, and were easily added when necessary.

The Reasoning and Inductions will seldom be committed to writing by those who are much engaged in practice; and for private use it may rarely be necessary; for the facts and the conclusions being comprehensively stated by the individual who has deduced the inferences from the premises, he will readily recur to the same process; although another person might perhaps come to other conclusions from the consideration of the same facts. Still, however, I should advise the student to reduce his reasonings to written language, and I have therefore inserted the questions in the table, that no material circumstance may escape his notice.

### TABLE I.—Diseases of Adults.

18

NAME (2) Date Residence (5) HISTORY (6)

Age (3)

Assigned cause (7)

GENERAL OBSERVATIONS (8) Person (9) Mode of living (10) Previous diseases (11)

PRESENT STATE (12) Position (13) Countenance (14) Eyes (15) Skin (16) Tongue (17) Appetite (18) Bowels (19) Biliary secretion (20) Urine (21)

**RESPIRATION** (22) Full inspiration (23) Voice (24) Cough (25) Expectoration (26) Examination by the Stethoscope

CIRCULATION (27) The Heart's Action (28) Pulse (29) Local determinations (30)

Senses (31) State of mind (32) Sleep (33) Idiosyncrasies (34) Examination of the regions of the body, &c. aided by the Stethoscope when necessary (35) Other symptoms (36) GENERAL DIRECTIONS (39) Diet &c. TREATMENT (40)

Prognosis

**OBSERVATIONS RELATING TO** THE SEXES (37)

In the Male, Symptoms or peculiarities.

In the Female, Uterine functions, &c. Menstruation. Period at which menstruation first took place. Period of cessation, if arrived or past. If married, the Nº. of pregnancies. Nº. of births at full period. Nº. of abortions. Whether children suckled by mother. State of the mammæ. Other symptoms.

REASONINGS AND INDUCTIONS, (38)

What is the affected organ? Are more organs than one implicated?

If more than one, what are the essential, and what the accidental circumstances?

Can the cause of the disease, be certainly traced?

What functions are deranged ? What is the nature of the disease?

Is there any derangement of structure ?

To what other diseases does the present bear analogy, so as to endanger error?

What are the grounds of diagnosis?

\_\_\_\_ of prognosis?

Is the disease remediable?

What are the indications of treatment?

By what means can these indications be most effectually fulfilled?

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At our next meeting, I shall offer some further observations appertaining to the various points of inquiry enumerated in the Table.

### LECTURE III.

Of the various Circumstances to be observed in the Investigation of Disease.

IT may not be superfluous to enter upon some detail of the circumstances to be observed in the Investigation of Disease, glancing more or less fully at the heads of the form for the first investigation of clinical cases enumerated in the table.

- (1, 2, 3.) The Date, Name, and Age, and also the Sex, if that be not sufficiently indicated by the name, require no comment: they are however, obviously necessary to fix the identity of the record.
- (4.) The Occupation, as has already been remarked, is often intimately connected with the malady: it may be healthy, as in agricultural pursuits, field sports, &c. or unhealthy, as in manufactures,—such as needle-grinding, lead-works, and many other employments detrimental to health: the degree of labour may be moderate or excessive, &c.

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(5.) The Residence is also a subject for examination. The influence of marsh miasmata;-of confined situation; of noxious manufactures, &c. must be obvious. The situation may be dry or damp, bleak or sheltered ; open and airy, or confined; not only may its salubrity be affected by the neighbourhood of marshes, manufactories, &c. but the occasional vicinity of collections of putrid materials, such as heaps of manure, the refuse of slaughter-houses, &c. have been known to produce diseases: the temperature may be equable or liable to sudden or extensive vicissitudes. Even in the separate wards of a public establishment differently constructed, the one being built with lath and plaster, the other of thick masonry, these circumstances might be traced as influencing in a great degree the results of remedial treatment.

(6.) The History forms the first groundwork for the full examination, and gives the proper direction to the particular inquiries. It forms a sort of preparatory examination, leading the way to more full investigation of the several organs, and more particularly of those whose deviation from the healthy condition, in the case under examination, is the most important.

The history should comprise a clear detail of the course of the patient's illness from its commencement, up to the period at which the

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examination takes place:—the distance of time from the beginning of the illness;—the manner in which the deviations from health first took place;—the order in which the various changes or symptoms succeeded each other; the progress of the principal circumstances, should all be carefully traced.

A skilful physician or surgeon carries the confidence of the patient along with him by the facility with which he traces cause and effect; and the direct reference which his questions bear to the malady, assures the patient that his case is understood. Not unfrequently the forcible though uncouth description in the patient's own words, conveys a more vivid impression than more refined language. The patient having stated all that he wishes to relate, deficiencies may be supplied by directing his attention to the points of omission.

Some are apt to suppose that the full investigation of any given case is a waste of time. I believe that the practitioner who is anxious to discharge his duty faithfully, will find the fullest investigation the greatest economy of time; for when the disease is once clearly ascertained and understood, the subsequent inquiries may be confined to the progress from one examination to another; whilst, with imperfect conceptions and confused notions, there

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is an endless repetition of the same unmeaning inquiries.

- (7.) The assigned Cause. The causes which patients assign are frequently vague and erroneous; but though the patient's opinion of the cause of his illness should not be adopted, it is useful to be aware of it, and to give it a candid examination. Called to a patient in a state of insensibility, who would omit to inquire of those around, what had occasioned the illness? -Injury of the head from external violencesuffocation from an extraneous body (such as a portion of food) having entered the larynxapoplexy-extreme intoxication-certain narcotic poisons-noxious vapours-extreme cold -syncope from mental emotion-all these various conditions (and many others might be adduced) are attended by insensibility; yet how liable to be mistaken, unless the investigation comprise the previous history, and the assigned cause :- how essential the just discrimination, to afford the rational indications of treatment, adapted to each particular condition !
  - (8.) GENERAL OBSERVATIONS. These relate to the form, the constitutional peculiarities, the mode of living, &c.
- (9.) Relating to the Person. The stature; the fulness or emaciation; complexion; and many other individual circumstances may be directly

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or indirectly connected with the disease. The peculiarities (vaguely designated the temperament) should be noticed: the frequency of gout, rheumatism, apoplexy, &c. in those of short stature and of full habit, is much greater than in others;—whilst the clear skin, florid complexion, and slender form, are frequently found in those who are liable to diseases of the chest, from slight causes.

- (10.) The Mode of Living has much to do with the production and continuance of disease; want, temperance, or habitual excess;—inaction, or violent exercise;—temperature, rest, and many other circumstances, may be worthy of investigation in cases of difficulty or danger, or in which the natureof the disease may remain doubtful after ordinary inquiry.
- (11.) The *previous Diseases* under which a patient has laboured very often leave permanent effects, rendering particular organs liable to a recurrence of disease, from causes too slight to affect the health of the generality of individuals.
- (12.) THE PRESENT STATE of the patient necessarily comprises every circumstance that may be submitted to the examination of the senses. Many *indications of disease* may be drawn from the *position* (13) and *countenance* (14.) These are familiar to the experienced eye, though seldom recorded or even reduced into words.

Nothing is more common than to jump as it were from premises to conclusions, without attemping to trace the operations of mind which lead to the conclusion. Hence the use of tables, aphorisms, &c. The school-boy or the merchant, who repeats "twelve times twelve are one hundred and forty-four," never thinks of going through the detail of demonstration, although for the purpose of instruction the teacher must explain step by step. But to return from this digression: It has been observed by an author whose writings are designed to afford greater precision to the healing art, that "in the study of the external character of diseases, no circumstance which can become the subject of observation, can be considered as unimportant; but, on the contrary, every source of judgment should be carefully sought and investigated. \*"

How dissimilar are the *countenance* (14) eyes 15) and *skin* (16) in phrenitis, in certain states

\* Consult Dr. Marshall Hall "On Diagnosis." The first and second parts of this able work were published in 1817, with a notice that the third part would be ready in the course of three or four months. It must be a subject of deep regret, should any want of encouragement have deterred the author from completing so laudable an undertaking. I have not been able to learn that either the third or fourth part has yet been published.

of fever, in jaundice, inflammation of the bowels, bronchial inflammation, and many other diseases which might be enumerated!

The nutritive Organs and their functions are so important as to require strict attention in almost every instance of disease. How closely they are implicated in diseases or injuries considered purely local, has been ably illustrated by Mr. Abernethy, in his lectures and writings.

The Tongue (17) fauces, &c. may be regarded as an index to the internal viscera, lined by a continuation of the same membrane, which cannot be submitted to ocular examination in the living body.

The Appetite (18) connected with the state of the tongue, &c. may indicate the degree in which digestion shall be perfect or imperfect.

The Bowels. (19) The digestion of the food may be further investigated by the manner in which the bowels perform their office. The number and frequency of the evacuations, their appearance, &c. are not unworthy of attention.

In all cases of obstruction of the bowels, let the practitioner be on his guard not to overlook hernia, if it exist.—Many patients have been doomed to untimely graves, from the cause of obstruction being hernia, whilst drastic purges have been administered to overcome what was considered mere constipation or colic, without ever dreaming

that the constipation, vomiting, and other distressing symptoms depended upon hernia, in a state of strangulation.

I have known a female patient, labouring under obstruction of the bowels, with evident symptoms of inflammation, on being questioned whether there was any swelling about the groin, or whether she had ever been subject to rupture, deny the fact; yet the surgeon, confident that the urgent symptoms under which she laboured, could not take place, without adequate cause, urged the necessity for examination, and, on its being reluctantly submitted to, immediately discovered a small strangulated femoral hernia.

When on the subject of hernia, I shall enter into the detail of queries, to be proposed when any doubt exists relating to hernia, and the circumstances which by careful examination may enable the surgeon to distinguish it from hydrocele, diseases of the testis, and various other enlargements, with which it is liable to be confounded.

The biliary secretions (20) may be inferred, in a great measure, from the appearances of the urinary and alvine excretions.

The urine (21). The various properties of the urine have been shown to be of considerable weight, considered as indications of health or the contrary. The able works of the late Dr. Marcet,

of Dr. Prout, and others, show the benefits which result from the application of the modern science of chemistry to the investigation of disease.

The use of paper tinged with litmus, or with turmeric, forms a convenient test of the presence of acid or alkali; the student at all versed in chemistry is aware, that the blue tinge of the former is reddened by acid; and the yellow of the latter is converted into brown by the contact of alkali.

Respiration (22). The importance of a function without which life cannot be supported, even for a few minutes, might almost seem to be too obvious to require elucidation. The diseases affecting the organs subservient to this function, are as frequent and dangerous as any that form the subject of medical investigation, and require accurate observation and careful induction. The variety of symptoms, according to the seat or intensity of the malady, must have struck every observer, whose opportunities have been considerable. How different are the indications of disease in the lungs from those affecting the larynx; and yet, difficult as it may at first appear, how near an approximation to the true state of these organs may be attained, even in the living body, when the mind of the observer is adequately prepared for observation! I may mention, as materials for thinking, the symptoms and state of the parts in

inflammations of the larynx;-of the trachea;of the lining or mucous membrane of the lungs;of the substance of the lungs; --- and of the investing membrane or pleura. Each of these has its peculiar signs; frequently, however, the various parts are simultaneously or successively implicated. What is more common than for inflammation to occur, first affecting the lining of the nostrils and producing sneezing and watery secretion; then the throat becoming affected; then the larynx and trachea, cough supervening to the irritation of these parts; and subsequently the inflammation extending to the lining membrane of the lungs throughout its whole extent, attended by copious secretion of mucous or of puriform fluid, which is usually expectorated? In mild cases, when under favourable circumstances of temperature, diet, &c. the expectoration diminishes, and the patient recovers. How often, on \* the contrary, under the unfavourable influence of disordered general health, after exposure to cold or other hurtful causes, do aggravations ensue; the secretion increasing, so as to fill up the air-cells and passages, and thereby preventing that change of the blood which is essential to the support of life! Thus the patient sinks livid, cold, and suffocated; dissection affording demonstrative proof of the condition above described. This state does not, although the air-passages, &c. be filled with

pus, necessarily imply ulceration; for it often takes place when no ulceration can be discovered on the most careful examination. Again, how different are the symptoms which characterize ulceration about the larvnx (for very nearly similar effects are produced by ulcers in the immediate vicinity as when the larynx itself is the seat) and that destroying the substance of the lungs, as in consumption! How speedily fatal the former, unless relieved by art; how gradual and lingering the latter! The same difference in progress may be observed between the acute inflammations of the larvnx or trachea, which sometimes terminate life in a few hours after their accession; and the chronic inflammations existing for years, and commonly called asthma\*. But the limits of a lecture will not admit of entering into further detail than may be necessary to direct the attention of the student.

The frequency of respiration; the manner in which it is effected, whether without effort or with difficulty; and the relation which it bears to the frequency of circulation, as indicated by the pulse, should in all cases be observed.

Full inspiration (23) may be effected with or without pain; or it may be impracticable; or may

<sup>\*</sup> Many of the cases called asthma are dependent upon enlargement of the great blood-vessels, which press mechanically upon some part of the organs of respiration.

induce coughing. A patient feigning illness may be sometimes detected, by observing how far the required attempt to make a full inspiration corresponds with the spontaneous distention of the chest, which may take place or be induced without the consciousness of the patient.

It is worthy of remark in many cases, nay generally, when there exists inflammation of the mucous membrane of the bronchia, without the substance of the lungs or the pleura being implicated, that the patient can without pain distend the chest by the fullest inspiration; and yet, in severe instances, the function of respiration may be so imperfectly performed, that the patient shall beg for fresh air, and labour under sensations approaching to those of suffocation; whilst the cold, clammy and livid skin, combined with the mucous rattle in the air-passages, evinces the extreme danger of the case, unless it be timely averted.

The Voice (24), as well as the mode of respiration, affords a great variety of indications relating to disease, particularly when the larynx is affected; as by the voice, and by the manner in which deglutition is performed, we are led to inferences not likely to be arrived at without such observation.\*

When Cough exists (25) it affords, in conjunction with other symptoms, considerable assistance

• An unhealthy child had measles, and the inflammatory symptoms relating to the larynx were strongly marked. By

in the discrimination of disease of the organs of respiration. It may suffice to notice the almost whispering cough in some inflammations of the larynx; the hoarse, trumpet-like sound in croup; the shrill inspirations in hooping-cough; and the deep hollow tones frequently observable in consumption.

The Expectoration (25) when present is well deserving of attention. It may be simply mucous,

great care these were so far subdued, that, had the child been in tolerable health before the attack, recovery might have been confidently expected. A new train of symptoms arose, the voice became peculiar and subdued, and the cough which had during the previous state been very frequent, scarcely occurred except in violent paroxysms at uncertain intervals. On desiring that some mild drink might be given, to ascertain how deglutition was performed, the paroxysm of coughing was renewed with a degree of violence threatening suffocation. On calling the mother's attention to this circumstance, she recollected that the fits of coughing had occurred when food had been offered. It was further observed, that food in a state of pulp excited less irritation than liquids, however mild the latter. The paroxysms became more and more frequent, and the child sunk under the disease,-What could be the cause of these symptoms? The physiological pathologist will readily trace the connexion between cause and effect, and will infer that ulceration must have succeeded inflammation, as often happens in unhealthy subjects :- the office of the valve not being performed, so as to protect the glottis from the contact of food or drink, he may conclude that the epiglottis was the seat of the mischief. The progress of this case was observed by my friend the late Mr. Charles Haden, and others, who concurred in the opinion thus formed, which was fully verified on dissection, great part of the epiglottis having been eroded by ulceration.

or it may be purulent; or may be mixed. It may in consistence be fluid or tenacious; frothy or solid; in colour, clear or bloody; or of various shades from light yellow to green or dark grey; sometimes mixed with extraneous matter, as soot, inhaled with the air. It may be fetid or inodorous; -specifically lighter or heavier than water. The quantity expectorated in a given time admits of great diversity. Some may, perhaps, consider such minute distinctions unimportant; but to such I would suggest, that if the welfare of those whose health may be intrusted to their care be not a sufficient motive to induce them to avail themselves of every source of information, there may be another; it may happen that an erroneous prognosis may destroy an unmerited reputation; and thus show that the ascertaining whether a disease be certainly remediable, or beyond the present remedial powers of the healing art, is not quite a trifle: moreover, it is only on correct views of the nature and extent of disease that rational treatment can be founded.

The mode of investigation of diseases of the chest adopted by M. Laennec\*, when pursued

<sup>&</sup>quot; • De l'Auscultation médiate, ou Traité du Diagnostic des Maladies des Poumons et du Cœur, fondé principalement sur ce nouveau Moyen d'Exploration. Par R. T. H. LAENNEC, D. M. P. Medecin de l'Hôpital Necker, &c. &c. A Paris, 1819.—Second Edition, with very great additions, 1826."

with competent attention to the history and symptoms of each case, affords in many instances a certainty of diagnosis which the mere casual observer may suppose to be quite Utopian. If the inference to be drawn from feeling a pulse require the elementary foundation alluded to in a former page, it cannot be supposed that an examination of a human thorax by means of an acoustic instrument to ascertain disease, should be so simple as to be at once acquired by those who have never taken the pains to learn what are the indications of health, when thus examined. Hence it has been known, that physicians and surgeons have condemned the instrument, without ever having put it fairly to the test; whilst others have been both delighted and instructed by the use of it; and consider M. Laennec to have conferred an essential improvement in the investigation of disease.

The instrument, the STETHOSCOPE, has been so often described, that I need only refer the student to M. Laennec's excellent work; or, if he prefer it, to the very able English translation by Dr. Forbes.\* By this instrument may be

<sup>\* &</sup>quot;A Treatise on Diseases of the Chest, and on Mediate Auscultation, by R. T. H. LAENNEC, M. D. &c. Second Edition, greatly enlarged, translated from the French, with Notes and a sketch of the Author's Life, by JOHN FORBES, M. D. &c. 1827."

ascertained, whether the whole or any considerable part of the lungs be pervious to air or obstructed; —the existence of ulcerated cavities in the substance of the lungs;—effusions into the cavities of the chest, &c. The action of the heart, and the relative state of the great blood-vessels, may also be more accurately investigated by the help of this instrument than by any other means with which I am acquainted.\* But he who trusts to

\* In several instances in which the symptoms were such as to leave no doubt in my mind that enlargement of some of the great blood-vessels existed within the thorax, I have been enabled to trace the extent of derangement more accurately by means of this instrument; and it has been a source of confidence both to myself and the patient to be able to ascertain from time to time that diminution of preternatural pulsation (under the use of such remedial means as tended to diminish the force of the circulation) which marked the progress towards returning health. It is a dangerous error to consider such cases as hopeless; if they be carefully investigated, it will generally be found that they originated under circumstances which excited the heart's action to an extent more than equal to the powers of resistance in the artery. Let timely attention abate the cause, and the effect will gradually subside. Even in cases in which the enlargement was too obvious to be doubted, and the humble stations in life of the individuals have precluded that absolute rest which forms one of the best remedial means; yet by watching and early treatment under any increase of symptoms, years have passed away in the enjoyment of a very tolerable state of comfort.

Dr. Elliotson in his "Lectures on the recent improvements in the Diagnosis of the Diseases of the Heart and Lungs," (delivered lately at the Royal College of Physicians, and elucidated by numerous morbid specimens, collected within a very limited period) shewed not only the great frequency of

any single symptom, or to any exclusive mode of inquiry, without duly considering all the circumstances of each case, will experience frequent cause of regret.\*

In examining to ascertain if there be effused fluid in the chest, the observations must be made both in the horizontal and erect positions, otherways error may result; for if examined only in the horizontal position, (the lung floating upon

diseases of the Heart, but that the pathological condition had in the greater number of instances been clearly ascertained during the life of the patient. These lectures were from their limited number confined to the mode of investigation, and to the pathology of the disease: it is to be hoped that the able lecturer will be induced to publish them in a more extended form, with those practical inductions on which the treatment should be founded, a boon which cannot fail to be duly valued by his professional brethren.

- \* Thus I have known aneurism of the aorta, by its pressure upon the trachea, produce a train of symptoms which were considered by a very intelligent physician to be those of laryngitis, although the larynx, on dissection, was found perfectly free from disease. Now, although insulated symptoms might afford presumptive evidence of affection of the larynx, I cannot avoid believing that sufficient ground of distinction might have been found, by diligently studying and reasoning upon the entire circumstances of this case. The history, both in duration and in the manner in which the urgent symptoms supervened, was essentially different from that of laryngitis. But far be it from me to hold up the errors of others to censure ; my only object in alluding to this case being to inculcate the advantage, nay, the absolute, necessity, of strict and patient attention to every circumstance which may conduce to the forming of a correct judgment.

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the effused fluid, and in contact with the anterior parieties of the chest) the respiration may be distinctly heard, although the quantity of effused fluid be so great, as to occupy a large proportion of the cavity of that side of the chest.

In the healthy state, the pulsations of the heart may be audibly distinguished; and when the heart is diseased, certain indications useful to a correct diagnosis (and consequently, to appropriate treatment) may be observed, which cannot be deduced from an examination of the pulse at the wrist.

Neither is the use of the stethoscope confined to the examination of diseases of the chest. It may be employed in determining whether doubtful enlargement of the abdomen be pregnancy, in an advanced stage, or the result of disease; as both the pulsations of the heart of the foctus in utero, and also the situation of the placenta, may be distinguished in the latter months of pregnancy.\*

Another, and perhaps more general application of this instrument, has been pointed out. It has been shewn to be capable of affording accuracy of diagnosis in fractures of the bones. For this improvement in surgical practice, the profession is indebted to M. Lisfranc. A translation, in a small and convenient form, of M. L's memoir on this subject, has been published, with original sugges-

\* See M. Kergardec's Observations.

tions for acquiring the use of the instrument in surgical diseases.

In cases in which obstruction of the air passages may seem to render it necessary to perform the operation of laryngotomy or tracheotomy, it is of the utmost importance, even to the life of the patient, not to mention the reputation of the surgeon, to determine whether the difficulty exist in mechanical obstruction of the larynx or upper part of the trachea, or whether the obstruction depend upon the filling up of the bronchia, by fluid or viscid secretion, so as to render the operation fruitless.

The Circulation (27) should be as strictly observed as the respiration. The Pulse (28) is by some too exclusively relied on, and by others too little observed. Its force, frequency, and peculiarities should not be overlooked.

-Local Determinations (30) exist in a greater or less degree in all inflammatory diseases, and when ascertained afford obvious indications for the treatment. Dr. Parry's Elements of general Pathology contain many valuable observations connected with this subject.

In the lamentable instances of suicide at no very distant date, of more than one or two distinguished individuals, the previous indications of great determination to the head, were rendered sufficiently obvious, even by blood starting from

the nostrils, to have led to measures which in all human probability might have averted the melancholy catastrophe.

The manner in which the senses (31) are acted upon by external agents should be observed. The various indications from this source will be appreciated by any one who has carefully watched the changes which take place in injuries of the head; in the different stages of hydrocephalus; in phrenitis; in apoplexy, &c.

The state of mind, as has been intimated, exerts a powerful influence upon disease.\*

The Sleep (33) may be insufficient or excessive, tranquil or disturbed, &c. and the observance of it may frequently assist in forming a just prognosis.

The Idiosyncrasies (34) of a patient, of whatever kind they may be, whether hereditary or originating with the individual, whether affecting the system generally or confined to any particular organ or class of organs, should be known to the medical practitioner, and be duly considered before he directs the treatment.

\* I have known a case of compound fracture, in a public hospital, in most favourable progress towards recovery, and the patient confident with hope, suddenly assume an opposite character, the patient having become desponding in consequence of the unguarded exclamation of an ignorant pupil, that the limb could never be cured! The unfortunate patient died.

But the examinations of separate organs and functions above alluded to, although of great importance, is not all that is necessary in the investigation of disease. The various regions of the body (35) as the head, neck, chest, abdomen, and the extremities, should be more or less fully examined, according to the nature of the case under consideration.\*

\* In surgical diseases this examination is generally indispensable. It will be more or less efficient according to the previous attainments of the student or practitioner. How many errors might be thus prevented! It has occurred that a patient has laboured for years under the despondency of a supposed incurable disease, by a swelling observed in the left side having been pronounced to be a disease of the ovarium; whilst by a more efficient examination it was ascertained that the supposed tumour was contained in the colon, chiefly at its sigmoid flexure, although the whole course of that intestine was preternaturally distended. By appropriate treatment, numerous alvine concretions were evacuated, the tumour disappeared, and the patient regained her health and spirits.

In severe accidents and injuries, such as fracture of the cranium, compound fracture of a limb, &c. it is by no means sufficient for the surgeon merely to ascertain the extent of local injury—No! he must be able not only to take a comprehensive view of the state of the general health of the patient at first—of the condition of every important organ, but also to trace the first deviation from the healthy standard—to watch and check the first rising of inflammation, whether it affect the sensorium, the viscera of the chest, or of the abdomen—derangements, which very often supervene in the progress of severe injuries, and which have been too often overlooked, till examination after death has revealed the truth.

A patient (in one of the hospitals of the metropolis) labour-

Any anomalous or other symptoms (36) omitted in the previous examinations, may be stated.

Although the superficial trader in physic or surgery, may deem so full an examination absurd or ridiculous; yet the physician or surgeon, whose higher attainments enable him to trace effects to their causes, by the careful observation and analysis of the complicated phenomena of disease, must be well aware, that so far from such an examination being redundant, it will not be found sufficiently comprehensive to elicit the whole truth relating to some peculiar diseased conditions.

ing under compound fracture of the leg, became delirious—the apothecary was called in the night, and ordered a *castor bolus* —which the surgeon continued—the patient died—but neither of these gentlemen seem to have even dreamed that the delirium might depend upon inflammation of the brain!

The attention of the profession has lately been excited by the publication of numerous cases in hospital practice, where secondary affections, supervening local injuries have proved fatal. But the fact is not new, M. Dupnytren has pointed out several years ago, in the Hôtel Dieu of Paris, that the most frequent causes of death among the patients of the surgical wards of that establishment, have been Inflammations of the Pleura, Lungs, Peritoneum, &c. He states that the bodies of all those who had died in the surgical wards during the preceding six years, had been examined without a single exception; these examinations affording ample conviction of what Dessault had often asserted, without being able to furnish the proof, that the greater part of those who die, during the treatment of surgical diseases, sink under internal inflammations, which most frequently are not confined to one part only, but affect two, three, or four parts in the same subject.

Look at the insidious progress of some of the less obvious inflammatory diseases of the brain, to which men of studious habits are more peculiarly liable, which often either escape unnoticed, or are passed over with the unmeaning designation of mere nervous affections, in that stage when remedies, when appropriate general management, may be used with every rational expectation to avert further ill consequences, and to restore health ! Look at the structural derangement often traced in the brain after death, under such circumstances, when the actual nature of the disease had never been ascertained, not even suspected to exist, during that stage in which it might have been remediable; the oversight depending in a great measure upon the circumstance that because the perceptive and intellectual faculties were yet carried on, the practitioner had been regardless of the unusual sensations, and impaired functions, which might have afforded sufficient notice of the approach of danger!

Look again at those slighter deviations from the healthy condition of the *sensorium*, which so frequently terminate in mental alienation—which have led to the act of suicide, in individuals of previously great mental endowments, and possessing all the advantages which wealth and fortune could bestow !

Even the condition of the blood, of the fluids

circulating within the body, has more to do in the exciting, and in the keeping up of disease, than may by the unreflecting be imagined. Examine the influence of poisonous substances carried into the circulation of the lower animals, by way of experiment—and you will find changes induced too speedily to admit of structural derangement changes which may terminate in recovery or death according to the quantity or intensity of the poisonous ingredient.

But it is not merely by the injection of noxious ingredients into the circulating fluids, that poisons may be carried into the system. It is well known, that certain morbid poisons may be carried into the system, either from the surface, or through the medium of inhaled effluvia—of which, small-pox may be cited as a familiar example.

The effects of unwholesome aliments in producing a putrescent tendency of the whole system, in which no doubt the fluids participate, may be observed in sea-scurvy; a disease, now fortunately, owing to improvements in the means of promoting health during long voyages, of rare occurrence.

The pestilential state of the atmosphere, and the distressing results of the slightest wounds, &c. in crowded wards or apartments, when hospitalgangrene prevails, may be mentioned as a subject to which the pointed attention of the student should be directed.

In diseases relating to the sexes (37) further observations may be necessary; but as I have noticed the heads of examination in the right hand column of the table (page 65) it is not needful to enter into further detail.

The inquiry respecting the facts and circumstances of any given case having been thus far conducted, the student will do well to trace the REASONINGS AND INDUCTIONS (38) indicated in the table, as he would follow the steps of a mathematical demonstration; he may then proceed to the treatment.

The TREATMENT admits of a simple division into general directions, and medical or surgical means. The GENERAL DIRECTIONS (32) relate to diet, clothing, air, exercise, or rest, and the various means which it is presumed the patient or his attendants may carry into effect.

Not only should the means to be used be distinctly and intelligibly stated; but also those which are to be *avoided*; for the knowledge of what ought to be avoided is frequently as important as the knowledge of that which ought to be done.

The communication to the patient (or friends) of such particulars of the state of his health as may be necessary to induce a ready compliance with the means to be employed for his recovery, is of no inconsiderable moment, not only as influencing the confidence of the patient, but more particularly

as conducing to the favourable termination of the disease.

The *prognosis* also ought generally to be stated, but it may be sometimes necessary that it be communicated to the friends or near relations, when the direct communication to the patient might diminish his chance of recovery.

The medical or surgical treatment (40) should be fully stated; for success often depends upon the detail as much as upon the general plan. It will be obvious to the reflecting mind, that the treatment seldom presents much of difficulty to the well-informed practitioner, if the nature and circumstances of the case be thoroughly understood. The more competent any one may be to conduct the treatment successfully, the more simple and direct will the means be found which he adopts to fulfil the rational indications of cure. On the contrary, the muddled, not to say addle-headed prescriber, in whatever department of the profession he may happen to move, has an inexhaustible store of unmeaning and absurd complexities, resembling nothing so much as his own confused notions. Several years ago Mr. now Sir Astley Cooper, in congratulating one of his pupils on being appointed to the medical care of a public establishment, observed, that in such a situation a man must either do much good or harm, according to his knowledge or ignorance of his profession; and that the treatment was almost

always easy to one who knew what he was about; adding, "for, if you ascertain the disease, any tyro can tell you the treatment."

But the treatment of the tyro, although he may name all the remedies of a class, will yet fall very far short of the perfect adaptation of the means to the end, which characterizes the treatment when directed by the careful, intelligent, and experienced practitioner.

When the first investigation of any given case has been thus fully made, an abstract or abridgment of the essential circumstances will form an useful exercise for the student, and a valuable record.

To those much engaged in actual practice, the labour of making a transcribed abstract or abridgement, may be avoided, by means of marginal notes, and by underlining the essential circumstances in the detailed notes.

The subsequent history of the progress of each case may be for the most part limited to the changes which take place, and the registration of essential symptoms. Still however, it will be useful to repeat the full investigation at such intervals of time as may be deemed necessary.

The abstract should be carefully examined, and be completed as soon as convenient, after the termination of each case; and such remarks be added as may elucidate the action of remedies, or explain any important circumstance.

#### LECTURE IV.

Of the Investigation of Disease in Children.— The importance of comprehensive Observation and Analysis.—How far the treatment of various Diseases may be rendered more successful by more precise and accurate analysis and induction.—Importance of Pathological Anatomy.

THE DISEASES OF CHILDREN are of paramount importance, as the future comfort, health, and even existence of the individual frequently depend upon the skill exerted in the management of disease in infancy. The investigation of these diseases demands, if possible, a more strict observance of all the circumstances of each individual case than is required in those of adults. The inability of infants to describe in words their feelings or sufferings must be compensated by the more careful inquiry into every particular capable of throwing light upon the nature and extent of their maladies. 182

Date

Age

NAME

Residence

Nursed by Food

PREVIOUS DISEASES.

Clothing

RESPIRATION. Full inspiration Voice Cough Examination by the Stethoscope

CIRCULATION. Pulse Local determinations

HISTORY OF PRESENT COM-PLAINTS.

GENERAL OBSERVATIONS. Complexion Eyes Hair Head Chest Belly Limbs Ossification Muscles

PRESENT STATE. Skin Texture Colour Temperature Moisture or dryness Eruptions

COUNTENANCE, &c.

Eyes Vascularity Pupils Position Gestures Senses Sleep Temper, &c. NUTRITION, &c. Appetite Saliva Tongue, &c. Dentition Bowels Excretions No. Colour Consistence Smell Urine

Intellect Dentition began Began to walk Idiosyncrasies Other symptoms Examination of the regions

Assigned cause of present illness

GENERAL DIRECTIONS. Diet

Clothing Temperature Exercise

TREATMENT, medical or surgical

Prognosis

#### INVESTIGATION OF THE

The limits of a Lecture will not admit of entering into many details relating to this subject; and after having so fully indicated the mode which I have found useful in examining the diseases of adults, such detail becomes less necessary; as the intelligent student will readily adapt his inquiries to the existing circumstances of any individual case.

The arrangement of the plan, with blank spaces to be filled up, which I have adopted in reference to the diseases of children (see page 95) is on the same principles as that already given for the investigation of adults; but necessarily comprising details, designed to supply by observation the inability of the sufferer to express his complaints in words.

A knowledge of the state of health and the habits of adults, will not be sufficient to qualify the student to trace the various and frequently obscure causes of the diseases which take place in infancy and childhood, nor to direct the proper general management, in addition to the mere medical or surgical means, by which health may be restored; for besides the general anatomical and physiological knowledge which has been already pointed out as the only solid foundation for the investigation of disease; he will do well to acquire the knowledge of the peculiarities relating to the physical management of infants in a few instances at least, by daily or more frequent

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#### DISEASES OF CHILDREN.

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observations, made upon those who are free from any derangement of health. The opportunity for such observations may be readily found in Institutions for Lying-in Women, and the student, when obtaining practical instructions in midwifery, should not omit the occasion of acquiring information respecting health and disease in infants.

There is a work on this subject, the chief part of which was written by a philanthropic member of the profession, who, had he lived to complete the good which he proposed, would have effected great ameliorations both in medical education and in substituting more rational management for the empirical routine of treatment too often adopted.\* At the time of the author's death the work was unfinished, but then comprised the considerations relating to the entire period of suckling, beginning with the birth and earliest attentions which relate to the infant. These Essays, by Mr. Haden, have been considered by many to contain more valuable observations than those of any preceding author upon the same subject. But in speaking of Mr. Haden's merits, I beg to disclaim any expression of opinion on that part of the work from my own pen.+

+ The completion of the work was necessary to render it

<sup>\*</sup> Practical Observations on the Management and Diseases of Children, by the late CHARLES THOMAS HADEN, Esq. with additional Observations, and a Biographical Notice of the Author; by THOMAS ALCOCK, Surgeon. London, 1827.

#### INVESTIGATION OF THE

If, after the careful perusal of these works, the student begins the practical investigation of any of the diseases of infancy, he will be well aware that the *residence*, influencing the air that is breathed; that the *nursing*, contrasting that of an affectionate and intelligent mother, with the too frequent negligence of hired nurses; that the *food*, whether that which nature has provided, or the less wholesome substitutes prepared by art; that the *clothing*, the *exercise*, and many other circumstances, should be known before the probable causes of many diseases can be traced.

The *history* and progress of the present illness should be carefully enquired into.

The general observations, relating to the growth

available to Mr. Haden's widow and children, and in adding the few brief chapters which contain the observations relating to the period of Weaning, and from that time to the earliest part of school education, a period relating to health sufficiently important to have occupied an entire volume, I preferred being useful to the family of a deceased friend, to any considerations which might have been advantageously adopted, had a separate work on this subject been undertaken without limitation as to extent.

On the Management and Diseases of Children, the student will find much valuable information in the Treatise of the late Dr. UNDERWOOD, the last edition, with copious additions by Dr. MERRIMAN; also in Mr. NEWNHAM'S recent work, in 3 vols. Svo., on Physical, Moral, and Intellectual Education. He will also refer to Mr. NORTH'S work on Convulsions, which ably points out some of the difficulties attending the investigation of disease in children.

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#### DISEASES OF CHILDREN.

and condition of the body, must be much more fully made than is usually necessary in the diseases of adults. The forms and relative proportions of the head, trunk, and limbs, whether natural or disproportionate from disease; the fairly advanced or the retarded state of the ossification; the more or less perfect development of the muscular system; the extent to which dentition has advanced; all these circumstances should be noticed.

The PRESENT STATE of the patient should be so fully and carefully observed, as to ascertain whether any deviations from the healthy condition of the principal organs exist, and these may be generally traced by the less perfect manner in which the functions are performed, than in a state of health.

When the whole of the facts have been ascertained, the same reasonings and inductions as recommended in reference to the diseases of adults, should be gone through by the student. Then, and not till then, always supposing the foundation in elementary knowledge to be sufficient, is he likely to be qualified to direct the treatment rationally.

It would be incompatible with the limits to which these observations must be confined, to enter upon all the conditions which you may be called upon to investigate, in reference to the

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### 100 CAUSES OF FAILURE TRACED.

diseases of children. But as I sincerely believe that many of the diseases which terminate fatally under ordinary circumstances, whether they be those of children or of adults, admit of being successfully treated, I will endeavour to elucidate a few miscellaneous instances, subsequently to examine a single class of diseases, and then attempt briefly to trace how important the considerations are which may lead to an early and correct diagnosis, to an appropriate and rational adaptation of the remedial means which we possess, to the subduing of disease in its incipient and remedial stages, in some of those diseases which, when allowed for a time to run their course, too frequently defy the utmost powers of the healing art.

It has been, unfortunately for the progress of medical science, too much the custom to consider diseases as if they were specific entities, and having assigned to each a name, to prescribe as it were for the name of the disease, according to the dogmas or hypotheses of systematic writers, rather than to investigate, with any attempt to attain philosophical precision, what are the parts of the animal machine which actually suffer, and in what manner or degree they suffer;—what are the causes which tend to keep up the actual derangement of the suffering parts;—what are the rational indications of treatment, and by what

# DIFFICULTIES IN SEVERAL DISEASES. 101

means such indications may be most effectually fulfilled! The adaptation of those means from time to time to the varied changes which actually occur in the progress of disease, is as essential to the welfare of the patient as was the first appropriate use of them.

Suppose I enumerate Croup, Small-Pox, Measles, Hooping Cough, Scarlet Fever, Malignant Sore Throat, Fracture of the Ribs,-you stop me to inquire, what these dissimilar diseases have to do with each other, what there can be in common among so heterogeneous an assemblage of diseases? Have we not the skin covered with pustules in small-pox, and is not *spasm* the leading feature in hooping-cough? Allow me to ask in return, what is the train of morbid phenomena by which each of these diseases so frequently terminates in death? Which of the vital functions is the most deranged? Is the fault in the sensorium, which affords nervous energy to the rest of the system, —in the organs of circulation, which convey the vital fluid through every part of the body,—or in the organs of respiration, by means of which the life of the blood (if I may so express myself) is renewed?

I fear you may search in vain the speculative systems of medicine for a clear and satisfactory answer to so simple a question. But, suppose you find it possible so far to forget systems which

#### 102 ADVANTAGES TO BE DERIVED FROM

it may have cost you much labour to learn, and which from their ingenuity have been highly prized, suppose you can so far forget these trammels, and all preconceived notions, as to turn to the Book of Nature in the ardent yet humble and persevering search of truth :--even thus prepared the difficulties are great. To trace in the examination of the dead body those lesions, often complicated, which have led to the extinction of life, is not less difficult than to investigate the phenomena of disease in the living! How many examinations are made, the cause of death remaining unascertained? It is not a common place smattering in anatomy, however ready the volubility may be in respect to the mere names of the parts, which can enable the inquirer to trace the lesions which may yet have been sufficient to induce death. Perhaps he overlooks entirely the only part, which, if the examination were conducted by one whose attainments qualify him for the task, would be found to throw light upon the subject, or to solve the enigma. Perhaps the inquirer (and the example need not be supposititious) is so imperfectly acquainted with the accidental appearances which sometimes are observed in parts not actually diseased, as not only to overlook the essential deviation which might explain the manner in which death took place, but to fancy that this accidental and to him unusual appear-

#### PATHOLOGICAL INVESTIGATIONS. 103

ance, is all that is to be observed; consequently, if from such erroneous premises he attempt to reason, what must be the value of his conclusions ! I have thus known a fracture of the base of the skull produced by the awkward and violent tearing off of the calvarium, or upper portion, the saw not having penetrated deep enough to divide the skull where it was intended, to be mistaken by the inexperienced operator for fracture of the skull producing death. In an ordinary examination this would not have been an important, though certainly a gross error; but in the case in which it occurred, the examination was for the purpose of stating the cause of death before a coroner's inquest, and had not the error been detected by an observer, the life of another individual might have been placed in jeopardy. The operator was not convinced of his error till the other who observed the manner in which it was produced, shewed him upon another subject, that the same result might be certainly produced by imperfect sawing, and by the awkward use of the lever.

But to return from this apparent digression : suppose that a well marked lesion of an organ subservient to a vital function, which should render the due performance of that function impracticable, is ascertained;—short as that step may be towards the complete elucidation of the disease, it is yet one step, and that a firm one, towards the

#### FATAL ERROR.

goal. Would not the sincere inquirer after truth, be disposed to ask himself, what were the symptoms during the life of the patient which denoted this lesion? It has been known that a principal pathological fact having been ascertained, has so far led to more pointed observation and enquiry, that symptoms which had appeared to be anomalous, have been thus retraced and rationally explained.

A surgeon examined the head of a child a few months old who had been considered to labour under hydrocephalus: the disease had terminated fatally. There was no watery effusion, but coagulated lymph abundantly poured out to a considerable though circumscribed extent, over the upper surface of the brain, evidently the result of acute inflammation. The surgeon observed that this circumscribed extent of mischief was so essentially different from any general disease of the brain, that it must have had a local cause: before the examination was proceeded with, inquiry was made whether the child had fallen or received any injury upon the head shortly before its illness-"no, none." This statement did not alter the belief of the surgeon-the calvarium was carefully examined and a small perforation found, with a rough edge internally-this point corresponded with the central part of the diseased surface of the brain. The inquiry was renewed with care and

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#### REFLECTIONS.

firmness, when it was discovered that previous to the illness, when the child had been nursed by his sister, a pair of pointed snuffers had fallen from a mantle shelf, and that the point had stuck into the child's head-it was removed by the sister, the place scarcely bleeding at all, and the child after crying for some time had fallen asleep-the parent was absent and the elder child did not dare to communicate what had happened! Had that careful examination of the head been instituted, which should never be omitted whenever the proper functions of the brain appear to be disturbed, it is probable that this poor child's life might have been saved. With such a case serving as a beacon, would it not be reasonable to suppose that an attentive and intelligent practitioner should endeavour to trace the symptoms from the latest period back to the very first appearance of indisposition, and attempt to associate those symptoms with the structural derangement which had been going on, and which though too late, had been ultimately ascertained?

Suppose the recurrence of a similar case, would he not be likely to mark the earliest distinctive symptoms of inflammation of the brain, and not prescribe for a vague term *Hydrocephalus*, but endeavour to trace whether any direct or local cause, which might admit of easy removal should enable him at once to subdue the disease ! or

### 106 FATAL ERROR ANALYSED.

supposing that no local cause could on careful examination be discovered, the evidence of inflammation of the brain or its membranes being conclusive, would he be likely to give Calomel in doses, fitter for destroying than for curing a child, under the vague notion of combating hydrocephalus; or would he use those more direct and energetic means, which the experienced surgeon well knows to be sufficient to subdue the inflammation of a vital organ, if judiciously and early employed? Common sense should decide.

Let us examine an unfortunate case of fracture of the ribs.—\*

\* An elderly man laboured under fracture of two of his ribs. A bandage had been applied not only to the chest, but also surrounding the abdomen; and this bandage had been kept wet for some days, by lotions. Bronchial inflammation, as might be expected under such circumstances, supervened, and the patient died. Inspection after death was permitted, to which a surgeon who had seen the patient once during his illness, was invited. He arrived just as the examination was said to be finished, but without any satisfactory result; there being none of the common marks of inflammation of the chest (pleura), and the abdominal viscera being tolerably healthy. He inquired what was the state of the air-passages? They had not been looked at. He requested leave to examine them, and found the bronchia and their ramifications filled with fluid of a puriform appearance, sufficient in quantity to render respiration impracticable. The lungs were loaded with similar fluid, which copiously exuded, mixed with a portion of air, on pressing any part of which a section had been made. The bronchial lining was much inflamed, but there was no ulceration. Thus the unexplained cause of death became apparent !

Let us trace the reflections, which might be supposed to arise from witnessing such a case. The stripling will be apt to cry out shame upon the ignorance of the practitioner! The more experienced surgeon, who knows how little the ordinary duties are valued, either by teacher or student, till failure forces them upon the attention of the practitioner,-who knows how superficial and parrotlike are the qualifications which sometimes enable young men to become authorised practitioners, however deeply he may deplore the evils of such a system, can make allowance for the ignorance of those who have enjoyed few opportunities,-who have never experienced the proper direction of their energies in the intricacies of medical and surgical pursuits-who have never been taught how much their future peace of mind will depend upon the faithfulness of their studies previously to entering upon practice.

But to return to the case.—A poor fellow obviously labours under fracture of the ribs : a long continued application of cold and moisture to a great portion of the surface of the body, is erroneously adopted as remedial treatment :—the fracture of a man's ribs does not shield him from the danger of long exposure to too low a degree of temperature, and such an exposure might be sufficient to bring on internal inflammation, even in a person previously in perfect health : that inflam-

### INSTANCES OF ERRORS

mation attacks the mucous membrane which lines the air-passages and lungs: the inflammation of this membrane has already been shewn to produce increased secretion from its surface: this morbid secretion goes on increasing, the real cause, as well as the actual condition not even suspected, and the unfortunate sufferer expires suffocated!

The preceding is but one of many instances in which fatal errors have arisen, owing to the imperfect groundwork and defective observation of those to whom the patients have looked up for succour.

The student should be upon his guard, not to allow any single symptom or disease, however clearly that may have been ascertained, so far to engross his attention as to render him incapable of observing any derangement which may supervene in the progress of an ascertained disease; which superadded symptom or disease may be of as much moment, or even of greater, than the original malady.

A medical man was called to a young married lady, who was in *articulo mortis*. She had long laboured under a chronic affection of the heart, which rendered her incapable of severe or continued exertion; even the ascending of a flight of stairs distressed her; but when at rest she was cheerful and generally happy: she had also at

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## TRACED TO THEIR SOURCES. 109

times suffered from cough and the usual symptoms of inflammation of the organs of respiration, from which she had recovered, without any considerable remedial treatment. When visited on this melancholy occasion she was incapable of utterance;—the mode of breathing suggested that the organs of respiration were principally implicated in the disease; but it was obviously too late to hope that any relief could be afforded.

The gentleman who had had the previous care of the patient, was advanced in years, and kindly disposed, and if the mere extent of routine practice could afford experience, he might be considered an experienced practitioner:-but even assuming the attainments of a practitioner to be more than common-place, the slight consideration afforded to each case in the usual routine of extensive practice, unaided by scientific research and reflection, is too often wholly inefficient for the alleviation of the more urgent and complicated forms of disease, in those instances in which unaided nature is quite unequal to the task of restoration: neither is it more surprising that such should be the case, than that the circumgyrations of a horse in a mill, amounting to a hundred miles, should be inefficient in attaining a point situated at the distance of one hundred miles due north or south. The labour would be the same, but how different the result!

## INSTANCES OF ERRORS,

Examination after death was permitted, when it was found that the heart was partially enlarged and diseased, the pericardium universally adherent to the surrounding parts; numerous old adhesions of the pleuræ, and others of recent formation; yet every circumstance examined led to the inference that the affections of the heart and pericardium were of long standing, and might have long continued passive (any considerable exertion on the part of the patient being carefully avoided) without compromising either her life, or even her comfort; whilst the direct and immediate cause of death was traced in an extremely gorged and inflamed condition of the lungs, which rendered them incapable of performing their proper office ; a circumstance which, if it had not entirely escaped the notice of the practitioner, had not led to the use of active means beyond the application of a blister to the chest, which (as is well known to the really experienced observer) may be superadded to those more powerful means of relief, which would be sufficient without such application, but trusted to as a principal remedial agent is wholly inadequate to the subduing of inflammatory disease, when it attacks a vital organ.

Thus I have known inflammation of the lungs to supervene and terminate fatally in cases of cute rheumatism;—whilst a much more frequent

### WITH REFLECTIONS.

occurrence in such diseases, is the supervention of inflammation of the heart, or pericardium, not sufficiently intense to terminate the life of the patient, but abundantly sufficient to lay the foundation for permanent disease of the heart, to remedy which requires, under the most favourable circumstances, months of total quiescence, aided by careful and judicious remedial treatment; whilst in the early stage of that disease the condition on which it depended might have been as easily subdued by appropriate means, as an incipient fire in a dwelling house may be extinguished by a single well directed use of a pailful of water, to the very point where it is needed;-a case in which a little hesitation, delay, or confusion would allow the conflagration to extend so that the most powerful engines, brought to bear at an advanced period, could not prevent the destruction of the building and its contents.

In many instances the calling of Consultations, when the condition of the patient is thus rendered hopeless, may be compared to the arrival of the fire-engines when a house is already gutted by the flames—neither the one nor the other can restore that which is already destroyed, although the extension of the calamity may generally be prevented.

Another caution I would urge, is, not to suppose a superadded condition (another disease being

# 112 IMPORTANT CLASS OF DISEASES

unequivocally present) which does not actually exist. I have known an error of this kind prevented, by a timely reference, when the practitioner (a worthy man, and one anxious to do his duty) misled by the *suppression* of urine consequent upon inflammation of the bowels, and having failed in attempts to introduce the catheter, was about to perform the operation of puncturing the bladder. On examination after death, the bladder was found to be collapsed and perfectly empty.

In May and June, 1820, having then had for several years the medical care of the patients of an extensive parochial Infirmary, I communicated to the profession the results of a series of investigations on the Inflammations of the Mucous Membranes of the Organs of Respiration, which I believed and still believe to be of great practical value. The observations were published in one of the medical periodical works\* of that period; but as that work has become scarce, I deem it proper tore-state the principal facts and inferences, which I believe are not generally known to the profession, whilst the importance of the subject is sufficient to reward the fullest investigation.<sup>†</sup>

<sup>\*</sup> The Medical Intelligencer, Vol. I. p. 151 and p. 157.

<sup>+</sup> Having had no occasion to change the opinions expressed, I have retained the Observations as originally published, with a few verbal corrections, and some abridgements.

#### **REQUIRING FURTHER INVESTIGATION. 113**

Observations on the Inflammations of the Mucous Membranes of the Organs of Respiration.

I AM induced to lay this notice on the inflammation of some of the mucous membranes before the public, from the persuasion that the more the subject is investigated, the greater will be the advantages to the profession and to the public; but, especially from the belief that the strict relation which exists between those internal inflammations, and some other diseases, particularly Measles, Scarlet Fever, Small pox, and Hoopingcough has not been sufficiently considered. It is hoped, also, that whilst these observations may contain useful pathological and practical facts, that the time and attention which I have devoted to these investigations may be of still further use in directing the attention of others to the examination and elucidation of this interesting subject.

It is the duty of every one whose public situation may afford more than ordinary opportunities of observation, to communicate such results as he may conceive are calculated to promote scientific investigation, and ultimately to benefit others. I am aware that the imperfection of the present remarks may stand in need of the indulgence of the reader, but however imperfect they may be, should they lead to useful investigation, the end for which they were written will be answered.

It may also be remarked, that although much excellent information on individual diseases of the mucous membranes may be found in the works of practical men, yet I am not aware that any general view has been taken of this class of inflammatory diseases as a whole. It is not my intention to attempt to supply this deficiency, in all its parts, but after pointing out what may be considered to be the generalization of the subject, to confine my observations to the consideration of the inflammatory affections of that part of the mucous membrane which lines the organs of respiration.

Respiration is so essentially important to the support of life, that the diseases of the organs subservient to that office, are

### 114 IMPROVEMENTS IN MEDICINE

entitled to the most attentive investigation. The number of deaths in this kingdom, from consumption alone, exceeds that produced by any other single disease, to say nothing of the deaths arising from direct inflammations of the various parts of the respiratory organs, diseases which frequently terminate fatally.

It may be said that we know of no remedy which will cure consumption : granted,-when the disease is fully established ; but, if from a knowledge of the morbid changes which take place in consumption, we are enabled to trace the causes, and thereby to obviate, or prevent the formation of the disease, we may be less applauded, but we may not be less usefully employed than if we actually cured the disease when established. Many of the improvements in medicine and surgery have been considered as impracticable before they were demonstrated, and as remote from probability as the preventive treatment of consumption. The aneurisms of the large arterial trunks within the body, which do not admit of surgical operation, are well known to be incurable when fully established. Apoplexy will admit of the same remark ; but whoever doubts the possibility of preventing the formation of these diseases, who has faithfully studied their pathology? Who would have believed a century ago, (or even at a much later period) that the dreadful ravages of the small-pox would be averted by a most simple preventive operation ? Who does not know that the formation of calculus in the bladder may be arrested or prevented, by means for which we are indebted to modern science? Or what prouder triumph to science than the restoring to life the apparently dead ! With these and numerous other examples, chiefly achieved by careful investigation and by philosophical induction, may we not reasonably hope that the time will arrive, when we may attain equally satisfactory results in the treatment of that important class of diseases to which the organs of respiration are liable ?

To effect this I am persuaded that careful and extended observation of the facts preceding and attendant on these complaints, is essentially necessary; and, if every practitioner will make the most of his opportunities, and will sedulously observe

# AND SURGERY, HOW EFFECTED. 115

and record the results of his experience, the object may be attained at no very distant period.

To this desirable end a more minute detail of circumstances will be necessary than, it is to be feared, usually obtains in the general course of practice. Each case should be considered with relation to the previous atmospheric phenomena, the constitution and previous habits of life of the patient; and, most particularly, with relation to those circumstances which appear to have had any share in producing the disease under which the patient may labour. The necessity of a careful investigation of the present state of the patient, so as to ascertain as correctly as possible, what are the derangements which exist; whether they be organic, or merely functional; general or local; whether slight and transitory in their nature, or dangerous to the life of the individual, either immediately, or at a more remote period; these, and many other et ceteras, unnecessary to enumerate, will occur to the intelligent practitioner, and lead him to rational indications of treatment, which will generally secure the welfare of the sufferer.

From such observations, added to the mode of treatment, tabular results might be formed, which would enable practitioners to generalize the facts, to compare the success of the various modes of treatment, and to establish that mode which should prove the most entitled to confidence. All this cannot be effected without some sacrifice, both of time and labour; but the satisfaction arising from the performance of it will amply compensate for the sacrifice, when it is considered that the subject is too extensive to be investigated in all its bearings by any single individual, however extensive his experience may be.

Of all the diseases of the organs of respiration, none appear more in need of investigation than those which affect the mucous surfaces by which these organs are lined and defended from extraneous contact; not only because these diseases appear hitherto to have escaped that complete investigation, which has elucidated many departments of medical science, but because they frequently terminate fatally, sometimes even in the short space of a few hours.

Although the structure and extent of the mucous membranes

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# 116 INFLAMMATION OF MUCOUS MEMBRANES

must be well known to many of my professional brethren, there may perhaps be some to whom a brief outline of that part of the mucous system relating to the subject of this paper may not be wholly unacceptable; as I am not aware that there is any English work which contains the particular and methodical description of these membranes.\* Bichat has so well elucidated the anatomical relations of this part of general anatomy, as to leave little to be desired beyond what he has effected. The anatomical descriptions, therefore, are translated and abridged from his lucid and valuable publications.

I omit in this place the anatomical descriptions, although the student will not find himself in a condition to trace comprehensively the phenomena of the diseases of any set of organs, without that knowledge of their general properties and relations to each other, and to the rest of the system, comprehended under the designation of GENERAL ANATOMY.

The inflammatory diseases of the mucous membranes of the organs of respiration, may be divided into two kinds, 1st. those which arise from general or local causes acting upon the constitution; and 2ndly, those which depend on supposed specific causes, or appear to be symptomatic of other diseases. But this division is adopted more as a mechanical help to methodical arrangement and precision, than on account of any essential or specific difference in the diseases themselves when established. Nay indeed, although the forms of disease, which are arranged under the second class above mentioned, may be in fact, only symptomatic of other diseases, yet it is one great object of these observations to shew that in practice, they form the important and essential part of these diseases.

\* They who may be desirous of more extended views of the anatomy and physiology of the mucous membranes, may consult the works of Pinel, Bichat, Beclard, Broussais, Bordeu and others.

A more important arrangement appears to be, that derived from the situation of the part principally affected : as,

A. The nostrils, the fauces, and the mouth.

- B. The larynx; the top of the pharynx; as the latter is generally implicated in inflammation of the larynx,
- C. The trachea.
- D. The bronchia.

To the above division A. appertain some forms of Catarrh, Aptha. Cynanche tonsillaris.

#### ----- maligna.

To B. Cynanche laryngea, or laryngitis; Cynanche Pharyngea.

To C. Cynanche trachealis, or croup.

To D. Bronchitis.

To the second order B, (sometimes including the third and fourth, C and D,) chiefly appertain those accidental inflammations of these parts which occur in the Exanthemata, or rather, which, as far as relates to practical treatment, seem to constitute the essential part of the disease, the mere exanthema being for the most part of subordinate importance. In the milder cases little is to be apprehended : but when the inflammation of a part of the mucous membrane is severe, it is more apt to run a rapid course when attendant on the exanthemata, than under other circumstances. In these, as in the former class, each part may become the principal seat of the disease. In measles, small-pox, and scarlet fever, I have not met with any severe case, in which the mucous membranes were not implicated, and the proof, in many cases, has been rendered evident on dissection. Neither have I met with any case which terminated fatally, where, on careful examination, these membranes were found to be free from disease.

If HOOPING-COUCH may be considered as a specific disease, it may be classed with the above; for, whoever will investigate t by pathological anatomy, will find that it is essentially an inflammatory disease of the mucous membrane, affecting the larynx, trachea, and bronchia: although in advanced stages the patients often die from the affection of the brain which supervenes. The opinions respecting spasm in this disease have done much to mislead the profession, and when, like many others, I acted

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upon the received opinions of the supposed spasmodic nature of hooping cough, I had often to regret the insufficiency of such medical treatment. I therefore determined to divest myself as much as possible of pre-conceived opinions, and to investigate the nature of the disease through the medium of pathological anatomy.

I soon found that the usual mode of making the examination of morbid appearances, that is, examining only the head, the chest, and the abdomen, afforded no clue to the nature of the disease; and, though the lungs were generally more or less affected, there did not appear sufficient organic derangement to have produced death. I then determined to examine carefully the whole of the air passages, and there found sufficient to account for the death; for it became evident that it must have arisen from suffocation. The larynx, in every instance, afforded indications of increased vascularity, and the accumulation of mucus, or puriform fluid in the air passages, was sufficient to prevent respiration. These circumstances, collated with the symptoms during life, rendered it easy to conceive that the whole might be the result of inflammation; and the fortunate result of a mode of treatment founded on this principle, (as well as the repeated observation of the morbid appearances) have confirmed me in this opinion. Indeed, I may add, that it was the detection of this remarkable connection between these diseases and inflammations of particular parts of the mucous membranes which led me to more extended investigation.

The chief value of this separate consideration of these inflammatory diseases will appear in the precision which may be practically attained by its means; and it is not too much to expect, even in the diseases of children, that by patient investigation in any given case, the seat and nature of the disease shall be clearly ascertained, and its degree of intensity be determined, so that the treatment may be adapted to the circumstances;—that a disease may not be permitted to proceed, through inefficient measures, to a fatal termination;—nor a disease, not essentially dangerous to life, be treated by remedies which too powerfully depress the powers of the constitution.

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The actual seat of the disease,—the nature of the malady, and the degree of its intensity being clearly ascertained and understood, the treatment will be reduced almost to the certainty of philosophical induction.

In the subsequent observations I propose to consider the causes, symptoms, &c. of these diseases, and to shew the strict relation which these symptoms bear to the morbid appearances found on examination after death ; and, I trust, that the facts which may be adduced will be sufficient to fix the principles of treatment, more particularly as relating to Measles, Small-pox, Hooping-cough, &c.

Having considered the anatomical relations of the mucous membranes, and the general arrangement of the inflammatory diseases affecting these organs, I now proceed to the consideration of some circumstances which are important in practice, and which, so far as I know, have not hitherto been sufficiently elucidated; namely, the strict relation between the severe forms of measles, small-pox, scarlatina, and hoopingcough, and the inflammation of some part or parts of the mucous membranes of the organs of respiration.

It was my intention to discuss separately the inflammations of the various parts of the mucous surfaces of the respiratory organs, and to dwell more particularly on the circumstances which distinguish the affection of one part from that of another, and to trace the symptoms from the earliest accession either to convalescence, or to the morbid appearances found on examination, when the disease had proceeded to a fatal termination. But I am induced to deviate from this course, as well by the consideration that several of these forms of disease have been well illustrated by others, as by the persuasion that I ought not to occupy that space in extended discussion, which may be more usefully appropriated to the analysis and elucidation of practical facts.

It must be obvious to every one, who has at all minutely observed the phenomena of disease, that irritation or inflammation, either of the skin, or of the mucous membranes, produces an increased secretion or exudation from the affected part.— The former may be observed on the application of a blister, in

## 120 PHENOMENA IN SOME DISEASES.

scalds, erysipelas, &c.; the latter in cases of common catarrh, ophthalmia, gonorrhea, dysentery, &c.

We may observe in mild cases of the latter class, take catarrh for instance, that the first indication of local disease is uneasiness combined with some degree of swelling or distention of the affected parts, that this is followed by a thin liquid secretion from these parts; that the secretion becomes more tenacious, and, if the excitement have been sufficiently intense, is succeeded by a puriform discharge. As we observe that this progress takes place in a greater or less degree when the disease is left to its natural course, are we not justified in inferring, that the increased secretion is the means which nature employs for the removal of the disease, as dropsy appears to be one of the modes in which increased vascular fulness spontaneously terminates?

Although the increased secretion from the mucous membrane lining the organs of respiration, is one of the modes by which recovery is effected, yet its excess, similar to what we witness in many dropsical diseases, is attended with great danger. No sooner does 'the secretion into the air-passages exceed that which can be removed by exhalation and expectoration, than accumulation begins, and a part of the cells of the lungs, which should receive air, becomes filled with the secreted fluid ; this increasing, must necessarily prevent the due performance of the function of respiration--that function without which life cannot long exist,-the blood no longer is changed from the dark or venous, to the vermillion hue, and the colour of the body partakes of the leaden or livid shade ;---if the accumulation proceed, respiration becomes more and more obstructed, the phlegm may be heard rattling in the air-passages,-and the patient sinks exhausted and suffocated.

It would be a waste of time to enter into the circumstantial detail of the ordinary symptoms which are described in books that are in every body's hands,\* as the affections of the mucous

<sup>•</sup> I refer the reader to the able work of Dr. ARMSTRONG on measles and scarlet fever, a work which contains many pertinent observations.

#### MEASLES

membranes in the slighter cases require no particular consideration; although as before stated, in the severe form of measles, small-pox, hooping-cough, &c. the inflammation of the mucous surfaces is most important in a practical point of view, as it affords the chief indications of treatment.

MEASLES. In measles we trace the first appearances in the watery and suffused eyes,-the discharge from the nostrils,the sneezing and other catarrhal symptoms, which shew the inflammation of the mucous surfaces lining these parts : the inflammation extends inwards and the throat becomes affected, as is evident on inspection, and as might be inferred from the greater or less difficulty in swallowing. The sneezing is generally a mere precursory symptom, whilst the cough, which is at first generally slight, is often increased to a severe degree, shewing the transition of the diseased action from one part of the mucous surface to another. In some cases these symptoms are much relieved on the appearance of the eruption, but in most of the severe forms of this disease it is otherwise; and the vulgar opinion that the greatest danger is to be apprehended as late as the decline of the eruption, or as is usually expressed at the turn, seems not without foundation. If the disease has proceeded thus far without appropriate treatment -if there be much dyspnœa, and the cough be frequent and severe-if the breathing, besides being oppressed, be much increased in frequency beyond the natural standard, the result is indeed much to be feared.

It has often been observed, that the remote effects of measles are more to be feared than the measles themselves. How often do we see that the disorder of the organs of respiration continues long after the measles have disappeared, frequently terminating fatally by inflammatory disease—often protracted till consumption is established.

During the progress of measles, we may as certainly infer the state of the lining membrane of the organs of respiration, from a careful inspection of the fauces, and adjacent parts, asjwe may infer the state of the stomach from that of the tongue; but it is not a hasty or inconsiderate glance which will lead the practitioner to form correct inferences, nor will any partial

## MORBID APPEARANCES IN,

symptom, or single set of symptoms, whether relating to the blood vessels, nerves, or viscera, be sufficient. To arrive at a correct diagnosis, and rational indications of treatment, each case must be individually and sedulously examined, and the remedies be adapted to the particular circumstances of that particular case.

Examinations of morbid appearances, after death, in cases of measles, have shewn the lining membrane of the air passages in a highly vascular and inflamed state; the air passages themselves filled in so large a proportion with mucus, or puriform fluid as to prevent the oxydation of the blood, and consequently, to destroy life. In cases where the disease has been more protracted, the air passages have not been filled with mucus, but chiefly with pus, sometimes mixed with air and mucus, extending throughout the most minute ramifications of the bronchia, and rendering a great part of the lungs much more dense than in the natural state.

The lungs themselves have less frequently exhibited signs of inflammation; at least, those recent adhesions of the pleura, so commonly met with, have rarely appeared. So decidedly has this been the case, that I have known several instances where the examination of the head, the chest, and the abdomen, have afforded no satisfactory explanation of the cause of death, until the larynx, trachea, and bronchia were examined, when the cause of death became apparent. In some cases, sloughing of the tongue or fauces has intervened; and I have known more than one instance where ulceration of the larynx had taken place. In one case, a considerable part of the epiglottis was destroyed by ulceration, and as might be expected, every attempt to swallow, particularly liquids, produced great distress, and violent cough, almost bordering on suffocation.

During the period of the eruption of measles, it not unfrequently happens, that the larynx and pharynx are principally affected; but in the more advanced periods, the trachea, and still more frequently the bronchia, are the chief seat of the disease. The greater part of these affections generally assume the acute form, and require speedy and efficient treatment, whilst many of the inflammatory affections of the same parts

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unconnected with these eruptive complaints, frequently continue for a considerable time without danger, although acute inflammation may, and often does occur, independently of any such concurrence.

I have seldom found the mucous membrane of the alimentary canal affected in measles, except the pharynx, which I believe is, in almost every instance, implicated when inflammation attacks the larynx. The brain is less frequently affected than in hooping-cough, although I have known hydrocephalic symptoms supervene.

Treatment. From the preceding observations, it will appear, that the principal indications of treatment should be, firstly, to moderate the general febrile symptoms, and secondly to subdue the inflammation of that particular part of the mucous surfaces which may be the chief seat of morbid action.

The principle of treatment once established, the adaptation of the means becomes almost a matter of course with those who have faithfully studied the medical profession; and it is chiefly in the choice and more perfect adaptation of the means, as applicable to any individual case, that the superiority of the intelligent practitioner, over the common medical man or the mere empiric, is evinced. A great deal will depend upon the habits of observation and of investigation of the practitioner; as it is more consistent with truth to state, that in every important case much must be left to the discretion and judgment of the medical attendant, than to suppose that any particular direction should be applicable to every individual case. The object to be attempted in every /instance is, to remove the disease by the mildest means, consistent with the welfare and safety of the patient; hence the discrimination of those cases in which the life of the sufferer depends upon prompt and efficient treatment, from those which may be safely trusted to a natural cure, becomes doubly important; as the course which is absolutely necessary in the former case, could not fail to be highly injurious in the latter. This will be best accomplished by divesting the mind of any pre-conceived ideas of measles, as a specific disease, and thereby investigating each

case with particular reference to the diseased actions actually present.

SMALL-Pox.—It is sometimes of use to trace the steps by which any useful discovery has been made, or any practical fact has been ascertained, as it will generally be found, that whatever has been useful, has been the result of induction from the accurate observation of obvious, and frequently of wellknown facts.

Several years ago, and previous to my residence in London, my attention had been directed to the puriform discharge from the internal ear, from having observed a case or two which had terminated fatally, with well marked symptoms of affection of the brain. On tracing a number of cases, I found that they had generally originated in, or followed some acute disease, such as measles, small-pox, or scarlet fever. This circumstance led me to examine the internal ear, when inspecting morbid appearances after death, and I soon found, that in almost every fatal case of the above named diseases, there was more or less of effused fluid in the cavity of the tympanum, which varied from the appearance of a thin and bloody mucus, to that of well formed pus; the membrane of the tympanum remaining entire.

It scarcely appears necessary to notice, that in the year 1812, on presenting a paper, On the purulent discharge from the Ear, to the Westminster Medical Society, I illustrated this fact by a recent preparation of the temporal bone, removed from a patient who had died of confluent small-pox, shewing the cavity of the tympanum filled with pus. As might be expected, I invariably found this state had been preceded by considerable mischief in the throat, in many instances even to the throwing out of coagulable lymph on the surface. The similarity of this adventitious production to the membrane of croup, and the invariable affection of the larynx and pharynx, as exhibited by dissection, soon convinced me that the immediate cause of death was suffocation, and the further examination of the air passages, confirmed me in this conviction. This fact of similarity of diseased action in parts so essential to life, required no

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#### IN SMALL-POX.

great ingenuity to be reduced to practical use. Notwithstanding the prevailing opinion that confluent small-pox was a disease of debility, of putrescency, &c. yet if the inflammation of the internal organs produced death in croup, and the morbid appearances in confluent small-pox bore a strong resemblance to the former, I could not see why the treatment of small-pox, as a decided inflammation, should not be as efficacious as that of croup; in which, decisive antiphlogistic measures, if used sufficiently early, seldom fail to remove the disease. I determined to put it to the test, and the result exceeded my warmest expectation; and some of my professional friends have since used the same plan with equally happy success. Perhaps some may consider the fact as of little importance; I can only state my belief that in very many instances it has been the means of saving the lives of individuals who have been under my care, and who, I am persuaded, would not have recovered under the usual mode of treatment.

Dr. James Clarke, in his medical notes,\* gives the following short account of small-pox as it occurred in the "Maison des Enfans Malades," at Paris.

"In the spring of 1818, small-pox was very frequent in Paris, and very fatal; more than half of those admitted into this hospital sometimes dying.

"Strange to say, the heating and sudorific plan was the one adopted at this time in the treatment of these little patients! All those who died were examined, and the appearances observed were inflammation and ulceration of the internal coat of the intestines; pustular eruptions there, or on the surface of the peritoneum; and in three cases, a false membrane, similar to that of croup, was found lining the whole alimentary canal, from the œsophagus to the rectum; in these three cases, the eruption on the surface had never shewn itself distinctly. These morbid appearances called the attention of the medical officers to Dr. Broussais's opinions; the cooling, antiphlogistic

\* Medical Notes on Climate, Diseases, Hospitals, and Medical Schools in France, Italy and Switzerland, &c. By James Clarke, M.D. London, 1820.

#### MORTALITY IN SMALL-POX.

treatment, with the application of leeches over the abdomen, was adopted in consequence, and the speedy reduction of the mortality soon evinced the superiority of the practice."

No remark however appears in this notice, on the state of the mucous membrane of the respiratory organs, without which, no report of morbid appearances can be considered as conclusive and unequivocal; and probably in these very cases, the disease in the respiratory organs might have been equal to that of the intestinal canal. To render pathological investigations of practical use, it is essential that no important part of the vital organs should remain unnoticed, as it sometimes happens that the actual cause of death is overlooked, whilst other less important deviations from healthy structure, are circumstantially and ostentatiously reported. The passing of any important organ sub silentio, is no proof, not even negative evidence, of that organ having been free from disease, whilst the notice that any particular organ was wholly free from disease, shews that the part has been actually examined, and not overlooked through hurry or inadvertency.

It is much to be regretted, that the generality of hospital reports are so vague and indefinite in every particular of practical elucidation, that they seem more calculated to conceal, than to exhibit the real results of the treatment adopted, in a shape to benefit the profession. To Dr. Clarke's report a table of the number of cases is added for the years 1816, 1817, and 1818, in which, of 402 cases, 192 died, and 210 were cured, a proportion of deaths of nearly one in two; but as there is no statement made of what proportion were simple cases of distinct smallpox, and what of the confluent—nor what number was treated by the hot, and what by the more rational method which succeeded—little or no useful inference can be drawn from it.

It is to be regretted also, that the statement of the Hospital for small-pox at St. Pancras, published in the Medical Repository for March 1820, leaves much to be conjectured; as no distinction is made between the cases of distinct and of confluent small-pox.—The former it is well known is rarely fatal; it is in reality seldom dangerous to the individual who is the patient, the chief danger being that of communication to others, when, according to the constitution of the exposed person, and other circumstances, the confluent form of the disease may be the result of infection from a mild form of disease in another. It would be allowing largely to suppose, under moderate management from the beginning of the disease, that one case in three should prove confluent; although by injudicious treatment almost any case of small-pox may be rendered confluent.

"The number of patients afflicted with the casual small-pox, that have been admitted into the hospital from the 22nd of December, 1818, to the present time" is 159; of these 24 are still under treatment in the house; 81 have been discharged cured; and 54 have died,"—making the proportion of deaths to that of cures as two to three.

In the year 1819, it appears that the number of casual smallpox was 190; the deaths 60. It does not appear necessary to notice the inoculated and the vaccinated, as it is not to be supposed that either of these contributed towards the number of deaths.

No indication whatever of the treatment adopted appears in the statement.

Contrasted with such statements as the preceding, one cannot view the reports of the Dublin Hospitals otherwise than with delight, in some of which the chief circumstances of the diseases, as well as the treatment, are concentrated into a tabular form; to which are subjoined short notices of all the more important circumstances, both of symptoms and treatment which attended those cases that terminated fatally. The zeal which couducted the pathological investigations amidst such arduous duties, affords an eminent example which cannot be too generally adopted, nor too highly honoured.

There is a great advantage in hospital practice over that in private life; in the former, the treatment may be wholly under the controul of the medical attendants; whilst to the imperfect accommodations of private houses, particularly in humble life, is often added a degree of ignorance and obstinacy which sets

\* The statement is dated December, 1819.

at defiance every direction that does not accord with the erroneous notions of their inhabitants.

I have known three cases in the same family successively terminate fatally from small pox—when of ten cases under the same medical care, with the advantage of hospital discipline, only one terminated fatally. In this fatal case, the confluent form of the disease was extreme, and the aphthous ulcers (for I do not see how they can in this situation be called pustules) in the mouth, and particularly about the fauces and the pharynx, were numerous and accompanied with much swelling and inflammation, with cough and difficulty of breathing, but without pain in the chest even on full inspiration, the pain being referred only to the larynx. Depletion both general and local was used with immediate alleviation of symptoms, but not complete relief. It was proposed to repeat it, but this was negatived in consultation, on the ground that the previous measures had been sufficient ;—the patient lived till the ninth day.

On examination after death, the trachea and bronchia were found filled with greyish, puriform matter,—the larynx and pharynx were swollen and covered with numerous portions of coagulated lymph, as were the trachea and bronchia. The œsophagus was pale and free from diseased appearance; the lymph and inflammatory indications extending no farther down the alimentary canal than the pharynx. The stomach, and the small and large intestines shewed no trace of disease.

Some of the bronchial glands were hard and enlarged; but whether this was the result of the small-pox, or of previous disease, may admit of doubt. I have often met with this enlarged state of the bronchial glands, sometimes having the true character of scrophula in its various stages, but only in subjects who had been previously unhealthy.

The mucous membrane of the stomach and intestines is certainly sometimes affected; but much less frequently than that of the organs of respiration. I have found the stomach completely disorganized, in a case where death took place before the eruption was fully established.

The treatment of small-pox upon the principles above described, forms so good an illustration of the value of those

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principles when reduced to practice, that I cannot refrain from recapitulating, as a general fact, that the danger of small-pox has been in the ratio of the laryngeal, tracheal, and bronchial inflammation, and, that this inflammation has usually borne a strict relation to the aphthous eruptions, (or what would have been pustular eruptions if situated on the skin,) which are to be found in the throat. A reference therefore to the state of the throat in the earliest days of the eruption, has formed an almost unerring guide to the future practice, and in nearly all cases of confluent small-pox, when seen thus early, a decidedly depletory and antiphlogistic system of practice, has conquered the disease, and saved the person's life. So certainly has this treatment answered the intended purpose, that in many cases the disease has been cut short, the eruptions have run through their course more rapidly than under ordinary circumstances, the secondary fever, as it has been called, has not occurred, and the person's countenance has been left free from pits, or the marks have been comparatively slight.\*

I may add to this, that if called in during the progress of the fever which precedes the eruption, a similar mode of treatment, that is, treating the fever in the mode recommended by Dr. Armstrong for the cure of common fevers, will almost invariably prevent the disease from becoming confluent at all.

Thus then, the reader will understand how the small-pox, although my situation obliges me to see numerous cases of it,

<sup>\*</sup> In the year 1825, the author had the opportunity of witnessing the Practice of M. Damiron at the military Hospital Val de Grace, in Paris, in which the treatment of small-pox was conducted on principles similar to those laid down in these observations, and the success was, compared with the usual methods of treatment, as decisive as it was delightful; very few cases terminating fatally in which the proper means had been employed in the very early stage of the disease. In one case, the author pointed out to Mr. D. that the treatment could not have been thus employed at the outset. He admitted that the patient had been under other care, and that the real character of the disease had not been ascertained when the treatment ought to have been decisive.

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has ceased to be such a source of anxiety to my mind, as it must be to others who are accustomed to view the disease in the old light, and therefore, to treat it on different principles.

VARICELLA.—I have at a recent lecture heard Varicella enumerated as connected with inflammation of the mucous membrane of the stomach and intestines. I can only state that I have never been able to observe this connection, nor have I ever known an instance in which the disease terminated fatally; in fact, I consider the disease as wholly unattended with danger, and as important only from having been occasionally, by inattentive observers, confounded with small-pox,—although the distinctions would seem to be sufficiently apparent.

SCARLET FEVER.—I am disposed to believe, that the mortality of this disease has been considerably over-rated; for in the greater number of cases it requires but little medical treatment, when the general management is not defective. But in this opinion I am aware, that I differ from those whose judgment I highly respect.\* I would again beg leave to refer the reader to the able work of Dr. Armstrong, in which the discussion of this disease occupies more than one hundred pages.

SPASMODIC ASTHMA.—That form of disease which has been called *spasmodic asthma*, appears nearly allied to croup, and to hooping-cough. Miller, whose name is generally associated with the first of these complaints, and whose descriptions are generally perspicuous, seems much to undervalue the use of pathological anatomy,—a guide so important, that no fatal case

\* How much soever I may regret to differ in opinion from those whom I respect, I have drawn my conclusions from actual observation, and not from the experience of others. During more than twenty years my opportunities of observation have been extensive, and have been deduced from both hospital and private practice.

In the St. James's Infirmary scarlet fever has prevailed twice within the last five years (preceding 1820) as well as in many cases amongst the poor of that extensive parish, without, so far as has come under my observation, the occurrence of one fatal case. The treatment adopted was strictly antiphlogistic, with early depletion when the inflammatory symptoms were such as to require it. should be allowed to pass unexamined ;—nor without the comparison of the symptoms and progress of the disease, with the morbid appearances after death. Although in Dr. Miller's work a whole chapter is written "Of the Dissections," it contains the following sentence, "the only dissection I ever made in this disease, was of a child who died in the first period." In the report of this dissection, no statement is made of any examination of the larynx, trachea or bronchia having taken place. In another dissection which is reported, but was not seen by Dr. Miller, it is stated, "that the bronchial vessels were filled with a white, tough, gelatinous substance."—Well might the Doctor infer from such an *accumulation* of facts,—even two dissections,—the one seen, the other taken on report,—that examinations after death were of little use !

I should be glad to know what symptoms of spasmodic asthma in children are to be found that may not be caused by irritation of some part or parts of the lining surface of the organs of respiration? I cannot help thinking that a morsel of food, or even a few drops of liquid passing accidentally into the glottis instead of the pharynx, would immediately produce as good a fit of "spasmodic asthma," as any that we find described in books. The terms *nervous affection*, *spasm*, *convulsions*, &c. are convenient cloaks to our ignorance of the matter, and perhaps, they are often used without any consideration whether they are cause or effect. The endeavour to trace each deviation from healthy function or action, to the state of the organ on which that function depends, would be more likely to lead us to just conclusions, and to successful practice.

HOOPING COUGH.—The symptoms attending this severe and often fatal disease are known to almost every one, so that detailed description of them is unnecessary. The great severity of the paroxysms when the disease is fully formed, and the immediate relief which follows the expulsion of the tenacious matter which is! eectorated, or often swallowed by young children, are generally sufficient to distinguish this disease. The early symptoms are so perfectly similar to those of common catarrh, that I know of no diagnostic by which they may be discriminated. Catarrh is as obviously an inflammation of a

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mucous membrane as is gonorrhea ;-what then should induce us to consider hooping-cough as a spasmodic disease, because the muscles of respiration are occasionally called into violent action. As well might we designate the violent efforts which instantly occur on any extraneous body entering the glottis a spasmodic disease ; and with equal wisdom to the spasmodic treatment of hooping-cough, set about treating the spasm, regardless of the cause which produced it, and leave the morsel in the larynx till the patient was suffocated; and then console ourselves with the reflection that although the patient had died, the friends had the satisfaction of knowing that every thing had been done which could be done; and thus go on with the next and the next. I have repeatedly ascertained, by dissections of patients who have died of hooping cough, that the larynx invariably exhibited signs of inflammation often to so great an extent as by its swelling to close mechanically the glottis ;-often the exudation of coagulated lymph was found near the larynx; the mucous or lining membrane of the trachea and bronchia was much increased in vascularity, and the cavities of the latter were filled with fluid more or less mixed with air,-the appearance of the fluid varying from that of thin mucus to perfectly formed pus.

With these facts as a basis, is it unreasonable to suppose that the inflammation of the mucous membrane lining the various parts of the organs of respiration, should produce the tenacious mucus, which is from time to time expectorated? that the accumulation of this matter impedes respiration, and acts as an extraneous body upon the larynx; that the cough is a mere natural effort to expel the offending matter, and its violence is in direct ratio with the tenacity of the phlegm secreted;-as we often find that spontaneous vomiting frequently terminates the paroxysm, by bringing away the secretion adhering about the top of the larynx, and which the cough had not been sufficient to dislodge? This irritating cause being removed, there is soon a cessation of all the urgent symptoms until its accumulation, or other accidental cause, produce the recurrence of paroxysm. If the disease be not subdued, either by natural means or by appropriate remedial treatment, the excessive secretion continues, accumulation takes place in the bronchia

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and in the air cells of the lungs, and consequently the blood is prevented from that intimate contact with the air respired, which is so essential to life, that the continuance of this state terminates in suffocation.

The treatment must not be confined to the mere alleviation of symptoms, but must, to be successful, strike at the cause. When the inflammatory affection is such as to call for further measures than those of regimen, temperature, &c. depletion, active depletion, must be used ;—and frequently the combination of blood letting, both general and local, will afford more relief than either of them separately. These measures will be greatly assisted by such remedies as tend to restore the equilibrium of the circulation—the distribution of blood generally being in excess in the internal organs, and deficient in the skin and contiguous parts. The occasional exhibition of emetics is also of use, and still more particularly such medicaments as produce a copious mucous secretion from any large surface of the mucous membranes, as those of the stomach and intestines.

Though in the preceding pages I have dwelt so strongly on the inflammation of the mucous membrane of the respiratory organs, because I have found, from long observation and frequent dissections, that this inflammation is generally the immediate cause of death; yet I do not mean to deny that inflammations of other organs may arise, during the progress of the diseases discussed, and in such cases, they will, of course, require appropriate treatment.\*

\* Since the original publication of the preceding observations, the discovery of the powerful antiseptic properties of the Chlorurets (or Chlorides) of Soda and Lime, (the merit of which is due to M. LABAR-RAQUE, of Paris) has placed within our reach means of counteracting disease which had long been a desideratum in medical science. These agents afford advantages, both in the preventitive and remedial treatment, of contagious diseases generally, of small-pox, measles, scarlet fever, and more especially in that affection of the mucous membrane termed malignant sore-throat, which previously might have been considered chimerical. Judiciously used they are invaluable auxifiaries; but it must never be lost sight of, that neither these, nor any other remedy, can supersede the exercise of a sound judg-ment, founded upon an accurate and comprehensive knowledge of the general resources of the healing art.

## LECTURE V.

Further Observations on the Investigation of Disease—How far essential to the Surgeon— Pathological Anatomy—Registration of Observations—On some of the Ordinary Duties of the Surgeon—Blood-letting—Its value as a remedial agent—Instructions for the performance of Venesection.

BEFORE passing from the Investigation of Disease to the consideration of some of the unostentatious and ordinary Duties of the Surgeon, should you be disposed to ask whether so full an enquiry, as that recommended in the preceding Lectures, appertain to the surgical treatment of disease?—I have before stated my opinion, that to whatever department of medical science any individual may choose to limit his practice, he cannot do justice to his patient, unless he be competent to take a comprehensive view of the entire circumstances that may lead to a rational and judicious treatment.

It is not merely on the extent of local injury

## VALUE OF COMPREHENSIVE VIEWS. 135

that the judgment of the surgeon must be formed; in such accidents and injuries as compound fractures, &c. or in diseases involving the performance of surgical operations, a more comprehensive investigation becomes indispensable, and the inductions drawn from the state of the general health, in conjunction with that of the diseased or injured part, (not disregarding the external circumstances which may exert a favourable or unfavourable influence during the treatment) enable the surgeon to arrive at a just conclusion, whether the limb *may* be saved, or *must* be sacrificed to preserve the life of the sufferer.

Who could for a moment suppose that practitioner entitled to the confidence of his patients, who should not deem it necessary to ascertain, as perfectly as possible, the circumstances on which his treatment, if rational, must be founded? I have already adduced instances of fatal mistakes, which, in all human probability, might have been avoided by more comprehensive scientific attainments, and by a more effective investigation of the nature and extent of the diseases under which the unfortunate patients laboured ! Let me therefore exhort you diligently and strictly to examine every case which may fall under your care, that you may be enabled to avoid error, and to adopt the most efficacious means of relief which the present state of medical and surgical science affords.

Dr. Thomson (of Edinburgh) in his Lectures on Inflammation, expresses the following sentiment.

"Whatever branches, therefore, of elementary education, and whatever kinds of medical knowledge are requisite to the physician, the same must of necessity be equally so to the surgeon."

He also quotes from the celebrated Quesnai, of whom he states.

"The sentiments of this author are the more deserving of your attention, that M. Quesnai had practised with great reputation both branches of the healing art, having been in early life, a professor of surgery, and afterwards physician to the court of Louis XV. of France.

"A very slight attention," says this intelligent author, " to the objects of physic and surgery, must be sufficient to show that these two arts can have but one common theory; for the external diseases which form the object of surgery are essentially the same with the internal diseases which form the object of physic. They differ only in position, they have the same importance, they exhibit the same indications, and require the same means of cure." \* \* \*

"A person who is in possession of general theoretical knowledge, and nothing more, is neither a physician nor a surgeon. To form a physician requires, besides a scientific knowledge of the different branches of the healing art, practical skill in applying the rules of that art to internal diseases; and in the same manner, to form a surgeon, the habit, facility, and skill of applying those rules to external diseases, are no less necessary.

"Scientific or elementary knowledge does not give this skill in the application of the rules of the healing art. It simply dictates these rules, and nothing more. It is by practice alone that we learn to apply them properly, and by practice under masters learned and skilful in the respective arts which they profess. By study we acquire knowledge, but we can acquire the art or the habit of applying the practical rules of physic and surgery only by seeing and comparing together, again and again, all manner of external and internal diseases. This is a habit that must be acquired, but it is one which can be acquired only by practice."

# Dr. Thomson further adds,

"These arts (Physic and Surgery) have had the same origin, and they have the same end. The human body is the sphere of their exertions, and whatever can affect it, in matter, vitality, or mind, is the object of their researches."

"It will not, I hope, be conceived, from the earnestness with which I have recommended the study of physic and surgery in common, that I am disposed to deny the great and peculiar advantages which society derives from the subdivision of labour in the medical profession. The effects of this subdivision in improving individual skill in the medical as well as other professions, wherever the state of society is such as to admit of it, is too obvious to be made the subject of any dispute. But the sum of what I wish to contend for is, that those who are destined for the exercise of the medical profession, by whatever name denominated, whether physician, surgeon, or apothecary, should all receive the same elementary education; for it is this only that can ensure their mutual co-operation, and enable them to discharge, with full utility to the public, the duties of any particular branch of medical practice to which they may afterwards be induced to devote their exclusive attention."

Before quitting this subject, allow me to suggest, that whenever disease terminates fatally, no opportunity should be omitted of making a careful pathological examination, and of recording, either upon the spot or with the least practicable delay, the deviations from the natural structure which may have taken place.

Pathological anatomy cannot be too highly valued as leading to improvements in the healing

#### IMPORTANCE OF

art. But to derive the full benefit which it is capable of affording, demands a large sacrifice of time;—of time too at that period of life when it becomes most important; for it is not until the judgment be matured, that the mind is likely to dwell with sufficient intensity upon lessons, which even to the best disposed, must sometimes be those of disappointment and humiliation.

It is much to be regretted that the records of pathological investigations should be so incomplete, as to afford little or no certain information of the state of some parts essential to the due performance of one of the vital functions. Take, for example, the condition of the organs of respiration, and particularly that of the air-passages; where, in our own medical literature, are to be found the histories and dissections of cases, on any extensive scale, in which these parts have been fully and accurately examined?

Examine the recorded pathology of fever, a disease respecting which more volumes have been written than perhaps any other, and many of which display great learning and ability—much ingenuity in hypothesis; but whither can we turn and find, accurately and fully detailed, the state of the air-passages and of their lining membranes? What is their condition in that form designated "congestive fever?" what in cholera? in the plague, &c.? diseases extensively destructive of

## PATHOLOGICAL INVESTIGATIONS. 139

human life, and of the actual pathology of which there is as lamentable a deficiency of well-ascertained facts, as there is a redundance of vague conjecture and of visionary hypothesis.

It may be asked, but what has the state of the air-passages to do with fever? Probably more than has yet been ascertained, and particularly in that form called congestive. Can it be unworthy of the physiologist's attention to investigate, by the aid of pathological anatomy, the condition of organs which perform a function essential to life -a function equal in importance even to that of the circulation itself? In warm-blooded animals, circulation speedily becomes useless, without respiration; for the blood, no longer supplied with the vital properties which depend upon respiration, ceases to support the energy of the sensorium, without which, circulation itself soon ceases. Hence we see that the brain and nervous system, the organs of circulation, and those of respiration, are so intimately and inseparably united, that their functions cannot be separately performed. Suspend, for any considerable length of time, any one of these functions, and you destroy the whole. And if any one or more be only partially suspended, a series of phenomena takes place incompatible with health, and assuming various shades of disease. If, on the other hand, any one of these functions be unduly increased, the others are

# 140 DEPENDANCE OF THE VITAL

soon implicated in the disturbance. Hence, although disease shall have commenced in one of these classes of organs, yet in its progress the others speedily participate; and thus it becomes necessary to investigate the entire series of phenomena which constitute health, that we may be enabled to ascertain, and (as far as the extent of science will admit) to remedy any deviation from it.

But to return more particularly to the effects of respiration. Every one is aware that drowning, hanging, and suffocation, destroy life; and the same result follows, in whatever manner respiration may be rendered impracticable, or when the air respired does not contain a sufficient proportion of vital air (oxygen) to support that change in the properties of the blood, by whatever terms it may be designated, which is known to be produced by respiration.

Numerous illustrations might be adduced, drawn from experiments on living animals,—the records of history,—or the contemplation of disease. By the experiments on animals which are familiar to almost every tyro, it is known that the exhausted receiver of the air-pump, or the supplying of an animal with air deprived of oxygen (whether that air be produced artificially, or that its oxygen be exhausted by repeated respiration), affords a mere modification of the same kind of death.

The dreadful effects of the black hole of

### FUNCTIONS UPON EACH OTHER. 141

Calcutta; the confined hold of a slave-ship; the pestilential atmosphere of a crowded and ill-ventilated hospital, sweeping off its victims by hospital gangrene, are extreme cases: but examples of the unhealthiness of certain places, which do not admit of sufficient change of air, where the means of carrying off noxious animal or vegetable effluvia are insufficient, may be found in numerous medical works, as well as in daily observation.

The illustrations supplied by disease may be traced in cases of croup, laryngitis, &c. in which, by the swelling or otherwise closing of a portion of the air-passages, the air is prevented from entering the lungs. Or, the impracticably of efficient respiration may be equally induced, by the filling up or coating of the bronchial cells and tubes, resulting from diseased secretion, which is incapable of transmitting the vital properties of the air to the blood circulating in the lungs; cases of which are more abundant than may be supposed by those who have not been accustomed to examine the condition of the air-passages in pathological dissections. This examination of the airpassages ought, in my opinion, to constitute an essential part of every anatomical investigation of morbid appearances.

The student who is anxious fully to avail himself of his opportunities of improvement, will do well to construct a series of tables, so as to exhibit

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the general results of all the instances of disease which have fallen under his observation, and the essential particulars of which should be found in his clinical case book. The advantages which may be thus obtained will enable him to generalize the facts, to compare the results of the various modes of treatment, and thereby to adopt in his future practice that plan which has been proved to be the most entitled to confidence.

The medical topography, &c. of the district in which the diseases occurred, and the atmospheric phenomena, should be appended; for, as has been before noticed, many diseases orginate in local peculiarities, particular employments, and atmospheric vicissitudes.

Separate tables may be arranged to bring together results respecting any disease or class of diseases which may have been more fully investigated.

I would caution the student against contenting himself with superficial views and mere dictionary knowledge. Without wandering from one subject to another, whilst he has any disease under observation, let him study it profoundly; let his reading be directed to that particular point; let him examine and compare the descriptions of authors with the symptoms which he may observe at the bed-side, and let him determine how far their reasonings correspond with the facts adduced.

The investigation of disease forms so import-

ant a part of medical and surgical education, that it is impossible to do justice to the subject in the space of a lecture or two; indeed an entire course of lectures, with the illustrations drawn from clinical practice, which should be under the immediate observation of the students, might be usefully devoted to this subject.

### OF BLOOD-LETTING.

Blood-letting comprises the various modes of abstracting blood for remedial purposes: it is usually divided into general and local; the former being performed by opening some of the larger veins, as those of the arm, neck, &c.; the latter by arteriotomy, leeches, scarification, cupping, &c.

There is a *right* and a *wrong* in surgery, as well as in morals and mathematics, and the surgeon who despises the distinction, although in matters which the unthinking deem of little consequence, is liable to be overtaken by some of those mishaps commonly called accidents, which, by depriving a fellow-creature of life, may blast his reputation and embitter recollection during the remainder of his existence.

I am aware that venesection is considered so simple a part of surgery, that every one may perform it, and hence its details are generally omitted in the usual courses of surgical instruction; nevertheless, scarcely a year passes without

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#### BLOOD-LETTING.

some unfortunate instance of death, occasioned by the untoward consequences of this simple operation.

On the importance of blood-letting as a remedial agent, I need not descant, since you all know that it is the mean on which the greatest reliance may be placed for speedily arresting or subduing those inflammations of the vital organs which, when uncontrolled by art, generally terminate in death. You must also be aware that, like all other powerful remedies, blood-letting may be abused; that it may be employed when uncalled for by the state of the patient, and that, when needed, it may be either so excessive as to endanger the patient, or so imperfectly adapted to the exigencies of the case, as wholly to fail in affording the relief it was designed to effect. But they who would argue against the use of any remedy, because it may also admit of abuse, would do well to leave off eating and drinking, because gluttony and drunkenness are eating and drinking in excess. But let it not be supposed, although blood-letting form an essential part of the remedial treatment of many dangerous diseases, that it alone will suffice to place the patient in a condition of safety; such indeed is a very frequent and dangerous error, but not likely to be fallen into by those who have faithfully studied the healing art:-were any one remedy capable

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# REMEDIES DO NOT CONFER SKILL. 145

of this simple and universal application, then would the study of medical science be superfluous, and the quack be upon the level with the more enlightened practitioner; but as the best remedies require, for their perfect adaptation to the exigencies of any particular case, the aid of a discriminating observation, a knowledge of the resources of science, and a sound judgment to direct these resources, they cannot supersede the skill of the practitioner.-Mere remedies may be compared to the tools by which the workman or the artist performs his work;-but the skill or ignorance which governs the use of the tools influences in a much greater degree the excellence or the worthlessness of the performance; the mere possession of the tools does not constitute the workman.\* Dangerous error in the treatment of disease is of

\* Could any one acquainted with the fine arts, and aware of the great number who spend their lives in the study and practice of them—of the few who attain any high degree of excellence—could any one capable of appreciating the splendid productions of a CHANTREY, a LAWRENCE, or a MARTIN, think so absurdly as to suppose that the mere clay and simple tools with which Chantrey first embodies his ideas, by modelling, before they are fixed by being sculptured in marble, should enable a bungler to produce models or sculpture so perfect in form as to appear all but animated ?—Or that the mere canvas, colours and pencils usedby SIR THOMAS, or by MARTIN, should enable inferior minds to produce pictorial effects such as have emanated from these masters, and have afforded 'delight to thousands?

### 146 EVERY THING DONE THAT COULD

too frequent occurrence; but although the common assurance of every thing having been done by the practitioner that could be done (when perhaps the all that has been done may have been the very reverse of what *ought* to have been done) may be sufficient to satisfy the feelings of surviving friends; yet the premature loss of a single life which the more perfect acquaintance with the resources of art might have been the means of preserving, must give rise to reflections too painful to be contemplated by the conscientious mind. Hence, let the resolution faithfully to understand and practise the duties of your profession, excite you to that persevering labour and exertion-that steady deliberation and deep thought, which must overcome all difficulties, in so arduous a pursuit.

On the subject of inflammation, the works of Mr. J. Hunter, Mr. J. Burns, Mr. J. H. James, and of Drs. Parry, Thomson, Hastings, and Philip, and many others, will afford valuable information and materials for meditation. By those whose other occupations do not admit of extensive reading, an experimental Essay by Dr. Philip, entitled, "Some Observations relating to the Powers of Circulation, and the State of the Vessels in an Inflamed Part," published in the Medical and Chirurgical Transactions, may be consulted, as affording clear and concise views

#### BE DONE.-INFLAMMATION. 147

of the present state of physiological knowledge on this interesting subject. Similar views however will be found in Dr. Thomson's Lectures on Inflammation, which are of earlier date, and in which the difficulties, which may render such experiments inconclusive, are candidly pointed out.

Notwithstanding the labours of many eminent men, the phenomena of inflammation are still less perfectly understood than their importance demands, and the labours of those improvers of medical knowledge, whose works have illustrated this subject, leave an ample scope for further investigation. In the exact sciences much may be effected by accurate observation and induction, and every one duly prepared to observe, may hope to become a successful labourer, who, divesting himself of preconceived notions, sedulously endeavours to interpret nature in the spirit of truth.

With a view to encourage physiological and practical research in those who might have leisure for experimental inquiry, a premium of a gold medal was offered in 1823, by the Associated Apothecaries and Surgeon Apothecaries of England and Wales for the best experimental essay on inflammation, in which the principal desiderata were stated: "1st, To ascertain the actual changes which take place in the various tissues or textures of which the body is composed, when suffering

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### 148 THE EFFECTS OF LOSS OF BLOOD.

inflammation, particularly in the condition of the nerves and blood-vessels; 2d, The order in which the phenomena occur; 3d, The means by which the morbid changes have been induced; 4th, The remedial means which have been found the most efficacious in restoring the natural condition of the inflamed parts. The College of Surgeons has proposed for the subject of the Jacksonian prize for 1828, "The Causes, Consequences, and Treatment of Inflammation of the several distinctions of Membrane."

The effects of loss of blood are best elucidated by observing some of the accidents in which surgical assistance is required. Sometimes, also, in the practice of midwifery, hæmorrhage takes place to a dangerous and frightful extent. Frequently the loss of blood occurs without the consciousness of the patient; and whether it proceed from the wound of an internal artery, or, as in secondary hæmorrhage, from the stump of an amputated limb, the pale bloodless countenance, the sinking pulse, the relaxation of the muscles, the irregular gasping respiration, the clammy skin, and death-like appearance of the eye, rather than words, indicate the danger of the sufferer. Even in taking away blood remedially, it is needful to watch the slightest change indicating the effect upon the system, for it is not by ordering a determinate quantity to be abstracted, that the safety

#### EXCESSIVE DEPLETION.

of a patient labouring under the inflammation of a vital organ can be secured; no, the effect pro. duced must be the test by which the sufferer must be relieved, and a greater loss of blood than is actually necessary be prevented. Excessive bleeding frequently leaves the patient in a state from which it may be long ere he recover. Those accustomed to treat a robust and hardy population have generally but little idea how small an excess in depletion may prove injurious to the constitution of an enfeebled inhabitant of a large and luxurious city. A medical man, absent from home, had an attack of inflammation of the lungs: although small in stature, and far from being robust, he was bled repeatedly, as largely as if he had been a stout and hardy highlander: it was long before he was able to leave his bed, and even now, although several years have elapsed, he declares he has never recovered from the effects of that excessive depletion.

A medical student from the country, who was one of my assistants when in general practice, (and whose ample opportunities of improvement at that time have afforded him decided advantages over some of his competitors,) was in the habit of sitting up night after night (with greater zeal than prudence) till a very unseasonable hour, for the purpose of reading;—spitting of blood, and great oppression of the chest, were the consequence:

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#### ADAPTATION OF THE

from these he was relieved chiefly by bleeding, but not till it was carried so far as to produce fainting. Although cautioned against renewing the cause of his illness, the relief after the bleeding was so complete, that his lucubrations were soon renewed; his spitting of blood and oppression at the chest returned, and were again relieved by the same means. A gentleman of high reputation who saw him, and observed the quantity of blood which had flowed from his lungs, pronounced him to be in a consumption, and recommended his removal to a warmer climate. This could not be complied with, and, aware that his illness might be clearly traced to the cause already stated, I did not hesitate to express my firm conviction that he might regain his health, if he would abstain from late sitting and adopt those general precautions in addition to medicinal treatment, which his very precarious state of health absolutely required. He had several returns of his complaint, and the urgent symptoms were in no instance relieved until depletion was carried so far as to produce fainting; but however small was the quantity of blood by which that effect was produced, the relief was as complete as if the loss of blood had been carried to the greatest extent. By bleeding him from a free orifice, when in the erect position, the fainting was produced without greater loss of blood than from four to six ounces'

#### MEANS TO THE END.

and on several occasions the smaller quantity sufficed. Had he been treated with the *vigour* which the unthinking are too apt to extol, regardless of ulterior consequences, but actively zealous to annihilate present symptoms, it is probable that the prognosis of the gentleman who recommended a warm climate would have been fulfilled. After a considerable period of rest, nursing, and antiphlogistic remedies, aided by country air, as soon as he was able to leave town, he perfectly recovered. Since that period he has enjoyed health, and so extensive a medical practice in the country, (now as M. D.) that if the acquisition of wealth can confer or certainly lead to happiness, he must be on the high road towards it.

Thus the effects which blood-letting may be designed to produce, may be either a sudden depression of strength by as small a loss of blood as may be adequate to that end; or to diminish the quantity of circulating fluid to the greatest extent the system can bear with safety. In the latter case, (and such will be required in penetrating wounds of the thorax, and in some other injuries requiring surgical treatment) the horizontal position, and a moderate-sized orifice, must be adopted. Large quantities of blood are sometimes lost, without producing faintness, provided the loss be gradual, as the vessels contract and

### 152 PREPARATORY ATTAINMENTS

adapt themselves to the diminished bulk circulating within them; whilst the same quantity suddenly withdrawn from the circulation would endanger the immediate loss of life.

It has already been remarked that blood-letting may be *general* or *local*; the former being performed by opening some of the larger veins; the latter by arteriotomy, leeches, scarification, cupping, &c.

Local blood-letting may be carried so far as to produce, in addition to its immediate agency in unloading the vessels of the neighbouring parts, the effects usually resulting from general bleeding.

Venesection. Before any one should be permitted to perform on the living body, he ought to be made acquainted with the strict anatomical relation of the parts on which he is about to operate; the bend of the arm is the place usually preferred. It is not sufficient that he be able to find a vein, for that is generally obvious enough, but he should be able to trace the course of the superficial nerves which accompany the veins, and also of the artery, that he may be enabled to avoid the injury of that vessel. The fascia, the tendinous expansion, &c. should be sufficiently known, that their situation may be distinctly traced. The principal points to which the attention of the student should be directed will be found in the illustrations of the

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surgical anatomy of the bend of the arm, which accompany these lectures.—(See the Plates and Explanations.)

There is often considerable irregularity in the superficial veins at the bend of the arm; but the deviation of greater importance is that of the high division of the humeral artery, when one of its branches, generally the radial, but sometimes the ulnar, becomes more superficial than in the usual course of that vessel. Notwithstanding this more superficial course, it still passes under the vein and fascia, so that nothing short of gross ignorance, awkwardness, or inattention, can endanger the opening of the artery in performing venesection. Study accurately the relation of these parts to each other, and you may certainly avoid the disgrace of so dangerous a mistake. The practical illustrations of the surgical anatomy of the parts concerned in blood-letting, being chiefly demonstrative, (viz. by actual dissections, aided by a series of models, drawings, and engravings, showing the usual relation of the parts and the more common deviations, and by tracing the situation of the blood-vessels and nerves upon the living arm, explaining the circumstances which should determine the point to be selected for the performance of the operation) cannot be fully conveyed by engravings alone, however accurate. The plates and explanations which accompany these lectures

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will, however, it is hoped, enable the student to proceed with advantage, and to profit by the dissections which he may have the opportunity of making, which should not be neglected. Drawings or engravings may recall impressions derived from actual dissection as vividly as they were at first imprinted; but no zealous student will content himself with graphic illustrations, to the exclusion of actual dissection.

The *difficulties* occasionally experienced in performing venesection arise from various causes: -a cold state of the skin, by forcing the blood towards the internal parts, will often cause the superficial veins to be so empty as to be opened with difficulty, and when opened the quantity of blood is frequently insufficient and unsatisfactory; in such cases it is better to restore the warmth of surface before proceeding to the operation. Fear may produce effects similar to those of cold;-faintness, unsteadiness, the bluntness of a lancet, the condensation of the parts from previous festering, may each occasionally produce difficulty;-the smallness of the veins in females, who are tolerably plump, and in young children, frequently prevents them from being seen, so that their situation can only be ascertained by the touch.

The *requisites* for venesection are—a correct anatomical knowledge of the relation of the parts, a lancet in good order, bandages, compresses,

### RELATING TO VENESECTION. 155

cups or vessels to receive the blood, water, towels, sponge, and, in case of faintness, hartshorn or ammonia, and these should be arranged within reach previously to making the puncture. In cases of emergency, a lancet, and any common material to serve as a bandage, will suffice. The placing the patient so that the light may fall upon the part should not be forgotten, for it is an indication of great awkwardness in the operator to place himself between the patient and the light, so as to intercept it and overshadow the part on which he is about to operate. The assistant should take care to prevent the blood from flowing upon the dress or bed of the patient, which may be effected by a little adroitness.

Before proceeding to tie up the arm, examine whether the pulsation of the artery is felt in the usual course of that vessel, or whether there be any deviation from that course. The high division of the humeral artery when present may generally be traced upon the living body; so that accident from ignorance of such an unusual or irregular distribution of blood-vessels may be with certainty avoided.

Although the vein which covers the artery may be opened without danger by an operator who is well acquainted with the relative situation of the vessels, and whose steadiness and dexterity can be depended upon; yet, as a general rule, it

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is safer to avoid opening the vein immediately over the artery.

In persons who are very corpulent there is often difficulty in ascertaining the precise situation of the veins at the band of the arm; but though the veins cannot be seen they may be distinguished by the touch, so as to enable a careful operator to proceed with certainty and with safety to the patient. The interval between tying up the arm and opening the vein should not be too long.\*

In performing the operation of venesection, the bandage should be applied from one to two inches above the intended opening of the vein, sufficiently tight to obstruct the circulation in the superficial veins, but not in the other vessels of the limb; if it obstruct the pulsation of the artery it is too tight. The position of the patient, and the extent of orifice, must be regulated by the effect which it is designed to produce by the loss of blood; let

<sup>\*</sup> The changes which the blood undergoes when drawn from the vein of a patient labouring under inflammation, namely, the separation of the buffy coat and the subsidence of the red particles, are best observed by using small vessels; for if the vessel be so large as to allow, during the flowing of the blood, any approach to coagulation of that portion first drawn, or if the blood trickle down the arm, the distinction above alluded to will be only very imperfect. I prefer the use of cups capable of containing about six ounces each; common tea cups answer the purpose very well, and afford an indication of quantity much nearer the mark than when a large vessel is used.

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the light be sufficient: the position, if the patient be sitting, may be with the arm held aside, or rather backwards, so as to prevent the first jet from falling upon the clothes. Supposing the right arm to be that on which the operation is about to be performed ;-supporting or grasping the fore-arm of the patient, with the left hand and fingers, apply the thumb of the same hand about an inch below the intended orifice, and press so as to keep the vein steady, but not to slide the skin either to one side or the other. Holding the lancet between the thumb and forefinger of the right hand, rest the other fingers firmly upon the fore-arm of the patient, at a convenient distance to afford steadiness to your own hand and allow of the free motion of the point of the lancet. Whenever an awkward accident happens, you hear of the patient having started at the moment of using the lancet; if you make the rest with the fingers sufficiently firm, in the manner above described, the patient may start as much as he pleases, and your hand moves with his arm as steadily as if it were a part of it. The hand of the operator is firmly supported, the motion given to the lancet, if neatly managed, being communicated entirely by the finger and thumb between which it is held :- in this manner I have, without any fear of accident, succeeded in bleeding children, when, without such precaution, the

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operation would have been dangerous or impracticable. The same remark applies to patients labouring under delirium or mania. It is a clumsy, as well as a dangerous awkwardness, to make a plunge with a lancet by a motion of the whole hand and arm of the operator, yet such is the case when there is no point of rest or support between the shoulder joint of the operator and the point of the lancet. The orifice is made by entering the point of the lancet on the side of the vein nearest the hand of the operator, and carrying it forward in an oblique direction till the opening of the vein is sufficiently large, then raising its point so as to cause it to cut its way out. The pressure below the orifice must of course be removed as soon as the orifice is completed and the vessel presented so as to receive the blood. I have seen the wound of the skin made many times more extensive than the diameter of the vein; this is not necessary, and providing the opening be not valvular, the incision through the skin need be very little larger than that of the vein; large orifices are particularly apt to fester. The making of very large orifices frequently arises from want of thought; for it must be obvious, were the outer opening made as wide as the mouth of a funnel, no larger stream could be furnished than that which the aperture in the vein could supply.

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A sufficient quantity of blood having been allowed to flow, the vein is again compressed below the orifice, the bandage removed, and the arm freed from any stains of blood; after which the lips of the orifice should be accurately closed and supported in contact by a well-adapted compress. If there be any difficulty in preventing the flow of blood, I prefer graduated compresses, by means of which the orifice, sides, and portion of the vein immediately below the orifice; may be compressed without any tightness of bandage, which may be capable of injuring the limb by obstructing the circulation in the vessels, which ought not to be interfered with. I prefer a bandage made of calico, about an inch and a half wide and from one to two yards in length, either to tape or silk ribbon, being more elastic and less apt to slip. When the bandage is applied, the fore-arm should be in a state of semi-flexion upon the arm; for if straight, the bandage will become too slack when the arm is bent; and if bent, when applied, the bandage will be too tight when the arm is extended. Rest of the arm should be enjoined during, at least, the first twenty-four hours succeeding the operation.

In the performance of venesection, the right hand of the operator is more conveniently adapted to the right arm of the patient than the left; hence when it becomes necessary to open a vein in the

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left arm, the left hand of the operator, if sufficient steadiness and precision in the use of it have been acquired, will afford greater facility in the operation.

Every student should acquire the perfect command of his left hand, at least for those occasions in which the right hand cannot be conveniently employed. That the mechanism of the one hand is as perfect as that of the other, and that the superiority of the right over the left may be traced to the more frequent use of it, is not likely to be disputed. Among Franklin's Essays is an amusing one on this subject, called, "The petition of the neglected sister."

At our next meeting, in considering the occasional ill consequences arising from venesection, you will be enabled to judge how many of these accidents may be prevented by a more careful attention to nicety and accuracy in details, which many consider too triffing to be worthy of their notice.

# LECTURE VI.

On the occasional ill consequences of Venesection. —Reflections on the Adaptation of Bloodletting as a Remedial Agent.—Defects and Accidents in performing Venesection.—The causes of Accidents examined.—Dexterity—On what it depends.—Fainting from Blood-letting, sometimes fatal.—Precautions and Treatment.— Aneurism from Wound of the Artery in Bleeding.—Different kinds of Aneurism.—Cases.— Treatment of a recent Wound of the Artery.

PREVIOUSLY to entering upon the details of the occasional results of venesection, it may be well to recapitulate some points of the past Lecture. I alluded to the imperfection of our knowledge on the subject of inflammation, and the means by which that knowledge may be extended, namely, by reading, observation, and experimental research. The effects of loss of blood, whether accidental or remedial, whether general or local,

### 162 OPINIONS OF MR. BENJAMIN BELL.

were considered. The necessity of a strict knowledge of the surgical anatomy of the bend of the arm—the difficulties occasionally experienced the requisites when complete, and the simplification of the means in cases of emergency—the precautions and steps of the operation were particularized.

Mr. Benjamin Bell has illustrated the importance of blood-letting, in his system of surgery, in the following terms:

"Blood-letting, whether we consider it as to its influence on the system, or with respect to the nicety with which it ought to be performed, is perhaps one of the most important operations in surgery. From being so frequently practised, and every pretender to knowledge in the healing art being able to perform it, the public have been induced to consider it as trivial with respect to its execution; but every practitioner of character will acknowledge, that in order to perform it properly, the greatest nicety, steadiness, and exactness, are required. Every other operation in surgery I have frequently seen well performed; but I have seldom seen blood-letting with the lancet correctly done. When properly performed, it is a neat operation; but when not done with exactness, it is the very reverse."

The difficulties occasionally experienced have been already noticed; the *defects*, some of which

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not unfrequently frustrate the intentions of the operator, are, 1st, The bandage being too tight, or the reverse; 2dly, The incision too small or too large; 3d, The valvular form of the aperture; 4th, The turning of the hand and fore-arm.

It may seem superfluous to point out the advantage, nay, the necessity of being able to bleed with neatness and certainty, whenever it may be essential to the welfare of the patient; for it is of little moment to be able to point out the appropriate remedy for a dangerous disease, if that remedy be not carried into effect; and in the inflammation of a vital organ, it is not by any ordinary local blood-letting that the disease can be arrested or subdued with the same certainty as by general blood-letting. Hence the loss of time, by the use of inefficient means, sometimes allows disease to proceed to a fatal termination, when the malady might have been cut short by efficient treament. Instances have occurred in which the reputation of medical men has suffered by unsuccessful attempts to open a vein, whilst others have superseded them by observing the cause of the failure, and doing that with certainty at once which had been previously and repeatedly attempted in vain; - and others in which the supposed impracticability of the operation, after failure, had given way to the use of trivial substitutes, till the disease had become irremediable. This error I have frequently had oc-

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casion to observe in the diseases of children, such as croup, inflammation of the larynx, &c.

The adaptation of any remedy requires discrimination and sound judgment, and the *abuse* of general blood-letting, when local abstraction would suffice, is to be guarded against as carefully as the opposite error.

The accidents and ill consequences resulting from bleeding are generally slight, but sometimes have proved fatal;—not in a solitary instance or two, but unfortunately on many occasions, and scarcely a year passes without instances of the fatal termination, occurring in the hospitals of this metropolis, of cases not originally dangerous from the extent of injury, but becoming so through some of the mishaps consequent on venesection. It is in surgery, as in common life, important effects are produced by apparently trivial causes; and Franklin's illustration of the loss of the rider from a triffing beginning, if homely, is as likely to be remembered as any I can offer you.\*

The causes of accidents and ill consequences may be referred to,—1st, Peculiar habit or state of health of the patient;—2nd, Mismanagement on the part of the patient; sometimes, however,

<sup>\* &</sup>quot;A little neglect may breed great mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost, being overtaken and slain by the enemy; all for want of a little care about a horseshoe nail."

### DEXTERITY, WHAT?

it is to be feared the mismanagement may appertain to the operator;—3rd, The want of sufficiently accurate knowledge of the parts to be operated upon;—4th, Want of skill, and this more frequently arises from the deficiency of accurate knowledge than from other circumstances; for when the ideas are clear, the hand is generally obedient to the will;\*—5th, Want of care, provided the requisite knowledge and skill have been attained; and lastly, though for the honour of the profession I believe it to be of very rare occurrence, it has been known, that the hand of an operator has been unsteady owing to intoxication.

The accidents which may arise from bleeding are more numerous than may be generally supposed. One of the most frequent is the occurrence of *syncope* or fainting. Generally this does not depend upon the timidity of the patient, but

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<sup>\*</sup> Many persons suppose that manual dexterity may be found in those not remarkable either for soundness or acuteness of intellect:-perhaps it may, -sufficient to drive a *Cab*, or to play agame at billiards,-or, by dint of repetition, in some limited matters of mere routine in surgery, -liable however to some such mishaps as that illustrated by Æsop, (alluded to in page 34); but habitual dexterity, the dexterity which shall avail in the sudden and unforeseen accidents and emergencies of surgical practice, can only result from that cultivation of mindthat thorough knowledge of the subject-which may enable the operator to perceive clearly and to determine promptly *what ought to be done*,-what are the dangers to be avoided,-

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upon the physical effects produced by the loss of blood. The brain, like the other parts of the body, depends for the due performance of its functions upon an adequate supply of arterial blood, without which these functions immediately cease; again, the organs of circulation and of respiration depend upon the influence of the brain and nervous system, and cease to perform their functions if that influence be withdrawn; this also happens to the muscles which give firmness . or motion to the body; hence, if a quantity of blood be lost or abstracted so largely or speedily that the vessels cannot adapt themselves to the diminished quantity circulating within them, the blood is no longer propelled in sufficient quantity to support the energy of the brain, and loss of power, of sensation, and of consciousness are the immediate result:-every one knows that a person

and what the best modes of carrying these dictates of judgment into effect.

The force of habit is very great—some are habitually observant and expert—others as slovenly and "numb-fingered" in all they do.

The "spilling of salt" has been considered as an unlucky omen —and truly, as an indication of clumsy awkwardness, there are few occupations in which such mark of qualification would serve as a recommendation. I should propose as a test equivalent to that of the salt, that the surgical aspirant be observed in some such simple matter as the manner in which he sets about the application of a bandage.

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in a fainting fit is like one apparently dead. Sometimes this condition is merely momentary, and is immediately succeeded by the return of consciousness and power; at other times it continues so long as to cause alarm for the patient's safety; it has happened that from this state of apparent death the unfortunate sufferer has not revived! One instance of this kind, which came to my knowledge many years ago, led me to observe, whether the more beneficial effects, usually observed in the treatment of acute disease when bleeding had produced fainting than when that effect had not been induced, might not be obtained without carrying the depletion to that extent which should, in any degree, endanger the patient's safety. From these observations I have been long convinced, and particularly in those acute inflammations of parts essential to life, which, when uncontrolled by art, speedily run a fatal course, that by adapting the mode of abstracting the blood to the existing circumstances of the individual or particular case, a much less loss of blood will suffice than is often resorted to; by which a correspondent saving of the strength and vital powers of the patient is effected. Those medicines which act particularly in diminishing the powers of the circulating.system, employed after a first efficient bleeding, may very generally supersede the necessity of repeated

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abstractions of blood, or may render the less debilitating loss of a few ounces, locally, equivalent to a full bleeding without these remedies. But although these medicines are invaluable aids, when general bleeding has preceded, yet, being more slow in producing their effects, it would not in the more severe cases be safe to trust to them alone in the first instance.

A gentleman who enjoys in a high degree the confidence of his professional brethren, lately informed me that a relation of his, a surgeon in the country, had bled a lady, who fainted and died upon the spot. My informant, with that candour which becomes the members of a liberal profession, observed, he did not know that any blame was deserved; but the accident proved very detrimental to the practice of the unfortunate operator.

Mr. HADEN, in the second volume of his Journal of Popular Medicine, has inserted a very able though short article "On the great care which is required to avoid evil from large bleedings," in which he adduces several instances of loss of life, through inattention to very simple precautions.

"A young female was bled largely and repeatedly for puerperal fever. She was directed to remain strictly in bed, and even to sit upright as little as possible. Regardless of these directions, she felt so well, and indeed she was well compared with her state when the disease was upon her, that she got up

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and walked about two yards to a chair. She felt faint and tried to return to her bed; but whilst taking the second step, she fell down dead.

"A person was bled largely for the cure of an acute disease. He became faint; some delay occurred in placing him in the horizontal position, and he immediately died.

"A similar case to the above might be related, and indeed, many such have occurred.

"A man cut his throat. He' lost a very large quantity of blood, but as symptoms of inflammation occurred afterwards it was deemed necessary to bleed him at the arm. After the blood had flowed for some time, he became faint, evidently from the weakened state of his frame in consequence of the previous loss of blood. He was permitted to remain in the upright position and he suddenly died."

What should be our treatment when fainting continues so long as to indicate danger to the patient? The rule of practice which Mr. Haden has given in the article just mentioned is both simple and appropriate. " Under all circumstances after very large losses of blood or in cases of fainting after bleeding, keep the horizontal position." In slighter cases, the placing of the body horizontally, and the application of stimuli to the nostrils, face, &c. will generally suffice; but unless the patient speedily revive, the most approved means for restoring suspended animation must be immediately carried into effect, taking care that the head and the upper part of the body be not too much elevated. The usual means for restoring suspended animation will admit of much simplification, which I shall endeavour to point out in a future lecture.

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Some persons merely bend the body of the patient forward, if he be sitting when syncope occurs; this position, by compressing the bloodvessels within the abdomen, may propel a supply of venous blood to the heart; but I am far from depending as much on this position, as upon placing the patient horizontally. Pressure may be made for a short time upon the abdomen; but must not be allowed to interrupt respiration, when it returns. Even the blood circulating within the limbs may be rendered available as a momentary supply in cases of great emergency or extreme exhaustion.

Transfusion has been recommended in cases of danger from loss of blood; but although it has been performed in some instances, in which the necessity for its performance does not appear to have been clearly made out, and patients have recovered; yet all have not been so fortunate; besides, unless the danger be foreseen and the preparatory arrangements for transfusion be at hand, if the danger be really imminent, the fate of the patient will probably be decided before this operation can be carried into effect. Moreover an awkward operator may be more likely to destroy his patient by injecting air as well as blood into the vein than to insure safety: some of the instances terminated in death.

The absurdity of burnt rag, &c. applied to the

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nostrils—or even the application of the knife as a stimulus to any part when both respiration and sensibility are suspended, is too obvious to require comment. Even were respiration going on feebly, the inhalation of air deprived of its oxygen by combustion would be more likely to extinguish life than to rouse sensibility.

Thrombus, ecchymosis, or diffusion of blood under the skin, is one of the slighter accidents from bleeding; although to the young operator, who has not been taught how to avoid its occurrence, it may appear sufficiently alarming. The cause may be either an oblique or valvular opening in the first instance, or the skin may be moved after the orifice has been made, so as to cover the opening of the vein. This may occur by the twisting of the fore-arm and hand, as is often done by patients, when not cautioned to avoid it. When this is perceived, let the opening in the skin be made to correspond with that of the vein, and the farther effusion of blood under the skin will be prevented. The blood is generally absorbed within a week or a fortnight, and this result it is believed may be expedited by evaporating lotions.

Aneurism, arising from wounding the artery in bleeding, is a more dangerous accident. I have before stated my opinion that it may certainly be avoided by adequate knowledge of the parts, and

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by skill and precaution in the operator.\* I have seen several instances, but none occurring in competent hands; and, when to this circumstance it is added that in the extensive practice of a public institution during a series of years, by the simple precautions already demonstrated when describing the steps of the operation, maniacs, children, and others, who could not be influenced by reasoning or entreaty to keep the arm steady, have been bled, and such cases have not been rare, yet no wound of the artery has occurred: if, therefore, under these unfavourable circumstances it may be certainly avoided, what should cause the danger under the more favourable condition of a rational patient, capable of comprehending and anxious to follow the directions of the operator?

Aneurism, arising from a wound of the artery in bleeding, may be *diffused* or *varicose*. In the former the blood is driven among the surrounding parts; in the latter it escapes into the vein, but this is a comparatively rare occurrence. When the artery is wounded in bleeding, the blood flows in jets, and is of a more florid colour than that issuing from the vein. It is impetuous, and restrained with difficulty; pressure below the orifice

<sup>\*</sup> It may not be irrelevant to recommend the student to recur to the surgical anatomy of the parts concerned in the operation of blood-letting, when there is a deviation from the usual distribution of the arteries of the arm.

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does not prevent the stream; but compression upon the artery above the orifice (that is, at a point nearer to the heart) stops it. If, by pressure upon the orifice, the blood is prevented from flowing outwardly, it is driven into the surrounding parts, and produces a swelling more or less extensive—this increasing, at length requires the performance of the operation for aneurism, which consists in exposing and securing by ligature or ligatures the wounded artery.\* Other results,

\* The distinctions between the diffused and the varicose aneurism will not present much difficulty to the attentive observer.

In the Diffused the extensive driving of the blood into the cellular membrane and under the fascia between the muscles, is not only marked by swelling, but the fore-arm cannot be extended; even the fingers are bent, as if instinctively, to diminish the tension of the distended parts. The pulsation of the tumor at first is usually distinct, but when it has become large and the blood coagulated, the pulsation may not be present. The swelling may be either general or circumscribed, more frequently the latter; but there is no obvious enlargement of the vein.

In the Varicose the enlargement of and pulsation in the course of the vein towards the heart are the most obvious symptoms. The enlarged vein becomes tortuous. There is not that extensive swelling which occurs in the diffused aneurism. The use of the stethoscope may also aid in the distinction—in the true aneurism of the arteries of the limbs (and probably it may be the same in the diffused, before coagulation has taken place) the sound is simply that designated bruit de soufflet, or bellows sound, and not very strong, except in the early stage : in a case of varicose aneurism of the arm, produced by transfixing the vein and wounding the artery in bleeding, the sound produced, when examined by the stethoscope might be

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less likely to occur under skilful surgical care, are repeated hæmorrhage from the wound, and inflammation sometimes terminating in mortification. The unfortunate patient, when in ignorant hands, has bled to death. Sir A. Carlisle relates a case which came under his own observation :--- a country blacksmith had bled a patient and opened the artery, but did not succeed in stopping the flow of blood; surgical assistance was sent for, but ere it arrived the patient had expired. On questioning the operator as to the circumstances, he said that "he had bled him in the thumping vein" and could not stop the blood. This was a case of high division of the humeral artery, and the more superficial trunk had been mistaken for a pulsating vein.\*

compared to that of a circular saw acting upon wood, one small portion of the circle seeming to bear in a less degree upon the wood than the remainder; but the diminution of the sound scarcely amounted to a perfect intermission.

\* The particulars of an instance of bleeding, which terminated fatally, in ——— Hospital, as elicited by a Coroner's inquest, were published in the Lancet, (of May 28, 1825) Vol. VII. pp. 227, et seq.—The inquest, it is stated, was holden on the 3d of March, 1825, and the verdict "Died from the accidental opening an artery in the arm, and from the want of proper attention."

See also the Drawings illustrative of the case of ——, in another Hospital, who underwent several successive operations for securing the blood-vessels, without success.—Amputation was performed as a last resource, but the unfortunate sufferer expired. Some account of this case was published in the

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Suppose the artery actually wounded in bloodletting, what should be the treatment? The securing of the wounded artery by ligature without delay, as in any other accidental wound, is the obvious treatment, by which the more remote and dangerous consequences may be prevented.

Another question occurs, should the person, by whose want of skill the accident has taken place, be suffered to attempt the more dangerous and intricate operation of laying bare and securing the artery, which he had not the knowledge and skill to avoid? I should not like to trust my own arm to such an operator; for if every greater contain the less, how can the person who has failed in the more simple operation be supposed competent to that which really calls for a higher degree of skill and self-possession? These qualifications

London Medical and Physical Journal for June 1827, vol. lvi. p. 518.

I might contrast these unfortunate instances both in treatment and result, with a case of diffused Aneurism from wound of the humeral artery in bleeding, treated by Mr. SMILES, one of the Surgeons of the Newcastle Infirmary, in which the difficulties surmounted were very considerable. Comparisons are seldom agreeable; but truth obliges me to declare, that although the Court of Examiners virtually deny that the Surgeons of provincial hospitals are capable of instructing their pupils, yet I sincerely believe, that the surgical skill, the zeal and humanity, which are daily and unostentatiously evinced by the medical officers of many of these excellent Institutions, are not surpassed, to say the least, either in the metropolitan hospitals of this, or of other countries.

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are not very likely to characterize any one towhom such an accident, as to wound an artery in bleeding, might be a probable occurrence. Should such an accident occur, the safest plan both for the patient and for the unfortunate operator, would be, not to attempt to stop the bleeding by the inefficient application of cloths or compresses, nor by tight bandages, which might mask the danger, but if long continued, might produce the strangulation and subsequent mortification of the limb; but simply for the operator to place the tip of his finger or thumb upon the orifice, and make there sufficient pressure, by which he may, without further injury to the patient, prevent the hæmorrhage, till adequate surgical assistance be procured.

I had been invited to attend the operation of securing the artery, and it was stated that an experienced anatomist was to be the operator; but I found the young gentleman who had been so unfortunate as to wound the artery, was about to operate. The patient was not disposed to suffer him to proceed, but begged of me to perform the operation. Not wishing to humiliate

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the young man whose patient she was, I recommended her to let the operation proceed, assuring her that every attention should be paid to her safety. The division of the skin was effected freely enough, but it now became obvious that the operator had not qualified himself by previous study either to separate the artery neatly from its connection with the nerves and veins, or to distinguish the parts which the incisions exposed he became confused, and what might have been the result may be easily conceived, had not the kind assistance of his friends relieved him from his anxiety, and the patient from the danger in which she was placed. She recovered without any untoward circumstance.

Mr. Charles Bell, in his Lectures at the College of Surgeons, related a case in which he had operated, but the unfortunate patient lost his life. Although the peculiarities of the case were not discovered during the treatment, yet the circumstances, when the whole case was explained, appeared clear enough—but it was stated, that during its progress the obscurity was very great; —that it must have been so, to mislead so able an anatomist and so humane a man, may well be conceived by any one who can appreciate Mr. B's. excellence as a surgeon, and his anxiety for the welfare of his patients.

Some surgeons still entertain fears lest mor-

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tification should take place by the immediate ligature of the artery, before the inosculating branches have time to enlarge. I do not participate in these fears, and, were it my own arm, would submit to have the artery tied, when the surrounding parts were in a natural state, rather than when they were likely to pass into unhealthy suppuration from the long-continued contact of extravasated blood. So far from having fears of the want of support by the inosculating vessels, the very freedom of these inosculating vessels is more likely to give rise to secondary hæmorrhage by the retrograde passage of the blood, if the artery has only been secured by a ligature above the wound.

To those who may yet have any doubt on this subject, I would recommend the careful perusal of Mr. Turner's recent and able work on the inosculations of the arteries.\*

In ——— case, (alluded to p. 174,) the secondary hæmorrhage, for which amputation was performed, was from the lower part of the artery.

In this part of the course the details of the operation for aneurism, when that has been allowed to form, would be out of place; but when we come to the demonstration upon the subject

\* A Practical Treatise on the Arterial System, &c. by THOMAS TURNER, Lecturer on Anatomy, &c. 1825.

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of the operations for aneurism and for securing wounded arteries, I shall have to point out among many other precautions, one, the omission of which has been known to produce mortification of the limb. It may, however, be useful to show the means adopted in a case of wounded artery, by which the formation of aneurism was prevented.

Several years ago I was called to a patient who had received a wound at the bend of the arm, An and who was stated to be bleeding to death. assistant arrived before me, and restrained the hæmorrhage till my arrival, by pressing with his finger upon the point from which it issued. From the situation of the wound, and the gush of blood which took place on removing the finger, it was probable that the trunk of the humeral artery was wounded. On exposing the vessel 1 found that the ulnar artery had been severed from the trunk of the humeral at the very point from which it was given off. Allow me to ask you before I proceed-What should be the treatment of such a case?-Bearing in recollection an unfortunate case of wounded humeral artery, which, in one of the metropolitan hospitals, had terminated fatally by secondary hæmorrhage from the artery after a ligature had been applied to that vessel above the wound, I determined to guard against a similar accident by tying the artery both above and below

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the wound. I therefore tied the humeral artery above this point, and also the open mouth of the ulnar artery. Notwithstanding these precautions, secondary hæmorrhage occurred .--- Again let me induce you to consider what you should do under such circumstances?-Should you re-open the wound, doubtful whether you had or had not secured the principal artery, and having re-opened it perhaps find that the blood flowed faster than you could sponge it out, then proceed to apply the tourniquet and subsequently to grope your way, unable to distinguish the artery, calling to your assistants again and again to give you jets by slackening the tourniquet, the sufferer all the while in danger of bleeding to death, and perhaps ultimately, after repeated failure in attempts with the tenaculum to secure the bleeding vessel, despairing of success to dive with a needle and ligature, at all hazards?-Such scenes have unfortunately been performed in the surgical tragedies of real life!-Or, rather should you recur to your knowledge of surgical anatomy,-to those habits of accurate investigation which enable you to divest your mind of parrot-like rules and preconceived opinions, and to examine and unravel the intricacies of any given case,-to those principles of surgery which, when aided by the exercise of common-sense, enable you to determine promptly what ought to be done! If you

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can proceed without error thus far, fear not that your hands may want dexterity, when a thorough knowledge of the subject shall enable you to foresee and to guard against all probable difficulties. Whenever you can clearly trace effects to their causes, the difficulties, if in their nature surmountable, are almost overcome.

Being certain that both the humeral and ulnar arteries were securely tied, it became an obvious induction, that the blood must have flowed so freely by the inosculating branches, as to retrograde through the radial artery, and by distending that vessel, to escape through the side of that artery at the point from which the ulnar had been severed, below the ligature on the trunk of the humeral.—The cause of the hæmorrhage and course of the blood being thus ascertained, the treatment presented little difficulty; the principles to be fulfilled were obviously to prevent the retrograde course of the blood in the upper part of the radial artery, above the point where the recurrent branches entered, and at the same time to avoid any compression of the limb generally which should endanger the circulation in the inosculating branches; these were effected by simply applying a graduated compress, supported by a bandage, so as to act upon the radial artery at its upper part, whilst by thus concentrating the pressure upon the point on which it

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was designed to act, the general pressure around the limb was so slight as not in any degree to obstruct the circulation. The wound was not disturbed. There was no recurrence of hæmorrhage, and the patient recovered without any untoward symptom.

### LECTURE VII.

The accidents and occasional ill consequences resulting from Venesection, continued.—Secondary hæmorrhage.—Puncture of a nerve.— Puncture and Inflammation of the Fascia.— Wound of a lymphatic.—Suppuration of the Orifice, &c.—Abscess.—Erysipelas.—Inflammation of the Vein.—Strangulation of the Limb.

SECONDARY hæmorrhage, occurring at a period more or less remote during the first twenty four hours after bleeding, is not an unfrequent occurrence. Sometimes the quantity of blood thus lost is inconsiderable, yet it seldom occurs without exciting distrust in the mind of the patient of the skill or care of the operator. This accident may take place from the imperfect adaptation of the bandage and compress, or from their giving way after having been adjusted: I have known it occur by the patient having taken off the bandage within a few hours after being bled, and thus lose

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a quantity of blood far exceeding what any remedial intention could justify.

A young surgeon, in a maritime town, bled a seaman, and from some cause or other, which was not satisfactorily explained, hæmorrhage from the orifice recurred; this, however, did not prevent the patient from going to sea when his ship was ready; the hæmorrhage returned from time to time, and before the vessel returned to the port from which she sailed the unfortunate patient had died. No doubt, in the well-meant endeavours of his companions, their attempts to stop the bleeding had been very unskilful, but that circumstance did not prevent the opinion from spreading over the town, that the untimely death of the poor fellow was the consequence of the unskilfulness of the operator. So widely did this impression obtain, that the surgeon was no longer employed, and was obliged to leave the place where his prospects, previously to the occurrence of this fatal accident, had been unusually promising.

I could mention other cases, but this will suffice to put you upon your guard to prevent, by due care, the recurrence of any similar misfortune.

Puncture of a nerve may happen in the hands of the most skilful, as well as in those of the uninformed, for the branches of the cutaneous nerves sometimes pass over the vein, when their usual course is to pass under it: unlike the

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artery, which may be felt by its pulsation, and thus any deviation from its regular course be observed, these cutaneous branches of nerves afford no external sign by which they can be distinguished. The branches of the internal cutaneous nerve generally pass under the median basilic vein, whilst those of the external cutaneous more frequently pass over the cephalic and median cephalic veins. A gentleman, who was housesurgeon in one of the metropolitan hospitals, suffered for several weeks uneasy and painful sensations in his arm from the puncture of a nerve in bleeding. I have heard of tetanus being an occasional consequence of this accident, but no instance of so severe a result has come under my own observation, although the possibility of such an occurrence cannot be doubted, knowing what slight injuries sometimes give rise to that formidable disease.

Puncture of the fascia, and its supposed consequence, inflammation of the fascia, have been described by authors as sometimes taking place. The puncture I do not question; but that the symptoms usually ascribed to this accident are really produced by inflammation of the fascia, I believe there is sufficient reason to doubt;—for whilst it is known that the fascia is much less vascular and sensible than the textures immediately in contact with it, the symptoms usually

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described would certainly result from inflammation and swelling of the parts underneath the fascia. The tension and distress arising from this swelling beneath the fascia have sometimes required the division of the tendinous expansion of the biceps near its insertion into the fascia; whilst extensive suppuration, burrowing under the fascia, has called for a more free division of both it and the integuments.

Wound of a lymphatic vessel I have known to happen, although of rare occurrence. In one case a capillary aperture remained for some weeks, from which there was a constant oozing of limpid fluid, capable of being restrained by pressure below the orifice, but not affected by pressure higher up the arm. No other inconvenience was experienced, and the aperture healed spontaneously.

What in common language is called *Festering* of the orifice, which consists in *Inflammation* and Suppuration of the orifice and of the integuments and subjacent cellular substance, is the most frequent of the accidents resulting from blood-letting. It may extend from a mere spot surrounding the orifice, sometimes to a considerable distance, and in degree may be slight or severe. There is stiffness of the arm, attended with pain and swelling. Sometimes the lymphatic vessels and glands partake in the inflam-

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mation, and hence swellings of the glands in the axilla, &c. occasionally supervene. I have not known an instance of this affection of the lymphatics, from bleeding, where the orifice had healed without festering. If the sides of the orifice be accurately placed in contact and be thus retained, without being disturbed, for a sufficient time, (and this period is generally about twentyfour hours) the want of union will be extremely rare; but when it is considered how apparently slight the causes are which may prevent union; the frequency of that occurrence cannot excite surprise. If the sides of the orifice be not in contact, they cannot unite by adhesion, or, as it is technically termed, by the first intention; hence the wound scabs or suppurates, and inflammation may accompany to a greater or less extent. Sometimes a small particle of fat protrudes at the orifice, and if this be not removed or replaced, union is prevented; any extraneous matter, such as particles from a dirty sponge, blood coagulated in the orifice, or the compress so placed as to separate the edges, may prevent union; this may also be effected by the too early use of the arm; a foul or rough lancet may be an occasional cause; it has happened that a lancet armed with vaccine virus has been used by mistake; constitutional causes or a highly vitiated atmosphere may, perhaps, prevent union; but when the requisite

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precautions have been used, I am well convinced the want of union will be of rare occurrence. I have in recollection a case in which union, after several successive bleedings, was effected without festering, although the health of the patient was so bad that numerous abscesses had formed in various parts of the body. I have often been surprised to observe in hospital practice, the sponges used for the dressing of ulcers and other purposes, applied to clean the orifice after bleeding. The practice is not only revolting but fraught with danger. I have known a sloughing sore of great extent thus produced. I have known the compress applied over the orifice to be dipped in oil, or smeared with greasy ointment, a filthy practice, likely to prevent union. I can conceive a crowded hospital, in which hospital gangrene may prevail, and even the slightest scratch endanger the patient; but this pestilential condition, rarely, if ever occurs, unless under the almost total want of means, or by extremely bad management. I have entered thus fully into the causes of festering, as, though mere festering is the least of the occasional ill-consequences of bleeding, it is, as it were, the parent of greater evils. The treatment consists in rest and such remedies, both local and constitutional, as may subdue the inflammation of the part; if the inflammation be not subdued it

#### ABSCESS-ERYSIPELAS.

not unfrequently terminates in erysipelas, abscess, or in inflammation of the vein; sometimes in sloughing or mortification to a greater or less extent.

Abscess in some instances has proceeded to a dangerous and alarming extent; I have seen the deeper parts at the bend of the arm laid bare for the space of several inches, by the loss of substance occasioned by abscess of the cellular membrane, and sloughing of the integuments. In one instance, the patient, who had been bled as an out-patient of a hospital, was one of those unfortunate beings, an Irish labourer, forming one of the inmates of a crowded apartment, where every thing was unfavourable to health, and so great was the constitutional irritation, that for many days his life was in danger. He recovered; but for several weeks was unable to use the arm.

*Erysipelas* may arise from bleeding when the orifice does not heal kindly. It bears the same characters as when taking place on other parts of the body, and is generally connected with constitutional derangement, on which must in a great degree depend the mode of treatment; but I have not known it to occur in any instance when festering of the orifice has not preceded. You are aware that erysipelas sometimes terminates in mortification and death. The various modes of treating erysipelas have been recently and amply

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#### 190 INFLAMMATION OF THE VEIN.

discussed at the Medical and Chirurgical Society great difference of opinion prevailed. An able paper by Mr. Lawrence gave rise to the discussion. The general opinion seemed to be that in mild cases the usual modes of treatment were sufficient, but that in more severe cases much benefit may be derived from punctures, scarifications, or free incisions.

Inflammation of the vein (Phlebitis) is another of those dangerous consequences of venesection, which has in many instances terminated fatally. This, like the former accidents, has its origin in the irritation and suppuration of the orifice, which proceed upwards in the course of the vein. Unless the inflammation be subdued by early and judicious treatment, it extends along the course of the vein towards the heart, and dissection has shown the vessel filled with pus as far as its termination in the subclavian vein, although the accumulation of pus is generally limited to the distance between the orifice and the next considerable vein or branch which joins the inflamed vein. Whether the pus thus found be formed within the vein, or have passed into it by the open orifice from whence the inflammation proceeded, does not appear to have been ascertained; but of the dangerous and fatal results of pus carried into the circulation we cannot doubt, since the experiments by M. Gaspard, related in an early volume

# INFLAMMATION OF THE VEIN. 191

of Magendie's Journal of Physiology, afford demonstrative evidence upon that interesting subject.

An illustration of the morbid appearances in inflammation of the vein, which occurred in a case of tetanus, will be found in one of the plates.

The frequency of this disease, (Phlebitis) has not been sufficiently attended to: three fatal instances occurred at the Military Hospital of Val de Grace, in Paris, within the period of a few weeks, in the summer of 1825. Our own hospitals also afford as frequent examples.

The subject of inflammation of the veins in various injuries and diseases, is both too extensive and too important to be discussed incidentally only. The consideration of its various bearings, will recur in future parts of the course, when treating upon the accidents and diseases in which inflammation of the veins is most liable to supervene. It may however be mentioned, that many of those collections of pus, such as have been traced in vital organs after death, though overlooked whilst the patients were living, have their origin in inflammations of the veins.

The *causes* which lead to inflammation of the vein have been already enumerated under the head of *Festering*, which is generally the precursor of Phlebitis.

Local Symptoms.-Pain in the tract of the vein-tension of the skin--redness-increased

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sensibility when compressed, afford presumptive signs of Phlebitis. Following venesection, the pain—swelling of orifice—suppuration or sanious discharge—swelling of the surrounding soft parts, shew the beginning of this affection, and were these premonitory symptoms attended to, the more serious consequences might in general be prevented or averted.

Very often the patient does not apply till the limb is become swollen, tense and painful, the inflamed veins being apparent under the skin, by thick lines of a redder colour than the rest of the the limb, if the veins be superficial: in the deeper veins this increased redness of surface is not found; but the pain, swelling, and tension in the direction of the veins is greater than under other circumstances.

The constitutional symptoms are so various that there is scarcely an important viscus or organ which has not been found to be implicated in the mischief.—Destructive inflammation has proceeded, it has been stated, *imperceptibly*; but unobserved would probably be nearer the truth; for 1 cannot conceive that destructive inflammation of the lungs, for instance, can elude the attentive scrutiny of any one who is well qualified to investigate disease in its various and Protean forms, so as to leave the discovery to be made by dissection after death. Do errors arising from

# IS LIFE OF VALUE ?- OR NOT? 193

inattention, or from insufficient investigation, cease to be errors, or are they less dangerous or destructive, because they may happen to occur in the practice of those who have acquired a high reputation? Or, is it surprising that gentlemen of high attainments in a separate and limited department of the science of medicine taken as a whole, dazzled by the overrated admiration for operative surgery, should undervalue or despise the more laborious and less attractive duty, the investigation of internal diseases, - a subject which they may not have been induced to study sufficiently to be aware of its value, even as conducive to success in surgery? There are surgeons of high reputation, who unblushingly declare, nay almost boast, that they know nothing of physic. I have been led by painful observation and reflection to set a very different value upon medical attainments as essential to the surgeon, if the welfare of the sufferers intrusted to his care be the proper test. What does it signify that a mere surgical operation be dextrously performed, if the unfortunate patient be allowed to sink under an internal disease, that disease perhaps induced by the operation, yet remediable in its nature, but passed over unobserved and unalleviated, till beyond human aid? It is true that the detection of internal disease, supervening during the progress

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## 194 WHAT OUGHT TO BE THE OBJECT

of surgical treatment, at that early period when by appropriate means it may be almost certainly subdued, has nothing of the *éclat* of a great surgical operation; but it may and often does make all the difference between the recovery of the patient and the loss of life.

A paper by Mr. Arnott, displaying considerable research, was read to the Medical and Chirurgical Society in October, 1828. It has since been published in their Transactions, Vol. XV. part I. entitled "A Pathological Inquiry into the Secondary Effects of Inflammation of the Veins." It is to be regretted, that the great end of pathological investigation, that of rendering it subservient to improvements in practice, by establishing rational principles of treatment, instead of mere empirical dicta and frequently erroneous rules, does not seem to have sufficiently occupied the attention of the author. The numerous facts collected are valuable; but they would have been much more so, had they been analyzed-had it been shewn in what degree the uniformly disastrous results (for all the cases terminated fatally) were unavoidable, or might have been averted by early and appropriate treatment-how far the treatment fulfilled the rational indications of cure, or in what respects, were such cases to recur, it might be improved, &c. but, (although the paper consists of 130 printed pages) the reader may search

#### OF PATHOLOGICAL INVESTIGATION. 195

in vain for those practical conclusions which should demonstrate the rational indications to be fulfilled, or which may enable him in any degree to direct the treatment, either so as to prevent, to mitigate, or to cure the disease.

The application of a compress above the punctured part has been recommended, and a total division of the vein has been suggested by Mr. Abernethy, as a mode of treatment which may be proper; with great respect for Mr. Abernethy, I not only doubt the propriety of this treatment, but from the knowledge of the fact, that inflammation frequently begins and extends from veins cut across in surgical operations, believe it to be, like the extirpation of an injured part after tetanus has supervened, merely the infliction of additional injury; I should, therefore, much rather trust to those means which might subdue the inflammation.

The preventive treatment will be found in those attentions which promote union by adhesion, and thereby preclude suppuration, which is always the first stage of the mischief that so frequently terminates in inflammation of the vein or veins. Details of treatment when *phlebitis* is actually established, must vary not only according to the constitution, age, and habit of body of the patient, but also with strict reference to the accidental complications, which, by implicating vital organs,

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#### 196 PATHOLOGICAL INQUIRY-WHAT?

often become more important and dangerous than the original disease :--- neither is it sufficient that the condition of the principal organs be as fully ascertained as our limited means will admit; the state of the fluids circulating within, or thrown out upon the surfaces of those organs, is frequently so far vitiated as to be incompatible with health, or even with life. Adventitious depositions in the advanced stages often seem to be the means by which life is extinguished; and in the vagueness which passes current for Pathological Inquiry, we are left to conjecture whether such morbid changes of the fluids are primary or secondary-cause or effect-on what they depend -in what they consist-or by what means, rational or physical, they may be counteracted or cured! Hoc opus, hic labor est.\* Reference has been made by way of elucidation to the inoculation of morbid poisons, as in wounds received in dissection; but in the imperfect state of knowledge on that subject, what is it but an attempt to explain *ignotum per ignotius*. There remains much to be done to divest pathological investigation of the jargon and mystery by which it is obscured, and common sense outraged; but whilst

" Moctes atque dies patet atri janua Ditis; " Sed revocare gradum, superasque evadere ad auras,

" Hoc opus, hic labor est."

# THE ROAD TO EMINENCE AND HONOURS. 197

the chilling influence of the highest surgical authorities declares that knowledge, however comprehensive and efficient, shall be of no avail, unless paid for at certain favoured schools;—whilst this feeling usurps the place of that encouragement which, by cherishing honourable competition, might call forth the best and most strenuous exertions of the members of the profession, it may easily be perceived, that he who aims at eminence and honours may find much shorter cuts than the laborious study of the means by which he may be enabled to alleviate or to remove the sufferings of his fellow-creatures.

But to revert from this digression to the treatment of phlebitis:—in the young and plethoric, and in the early stages of the disease, active depletion and antiphlogistic remedies, judiciously adapted to the exigencies of each particular case, may prevent destructive disorganization; but the early and manageable period allowed to pass uncontrolled, till the advanced stage when destructive disorganization has arrived, you may blow hot or you may blow cold,—but the sufferer's doom is sealed.

In those previously much debilitated, the greatest caution must be employed to subdue the local mischief by the mildest means possible. Some of you have witnessed the instance which I am about to adduce, by way of elucidation :

#### 198 TREATMENT OF PHLEBITIS.

a surgical student, after several months hard fagging, became much out of health: he was bled; but from some circumstance or other secondary hæmorrhage supervened. He replaced the compress himself, but probably with less precision than ought to have been used: the orifice festered -the arm became extremely painful, and the course of the vein might be distinctly traced by a cord-like hardness and extreme tenderness all the way from the orifice to the axilla: he could neither move the arm nor turn himself in bed without great pain;-pus could be pressed from the vein at the orifice. He was too much reduced to admit of any thing like general depletion-leeches were applied in the course of the vein, and the inflamed parts were soothed by fomentations and mild poultices; the milder means of reducing the action of the heart and arteries, by absolute rest, carefully regulated diet, &c. were used, aided by colchicum, ipecacuanha, and laxatives, as auxiliaries :- by great care and persevering attention, with removal from a confined lodging to a purer atmosphere, as soon as practicable, he recovered; but not without several weeks confinement to his bed, and the formation of large abscesses in the axilla, or rather under the great pectoral muscle. His health was however too precarious, after the severe shock it had sustained, to admit of his returning to his studies

#### STRANGULATION OF THE LIMB. 199

for some time, it was therefore deemed prudent for him to return into the country to recruit his health and strength.

Strangulation of the limb by undue or excessive tightness of the bandage after bleeding has not, so far as I know, been noticed by authors; a fatal instance occurred in an out-patient of one of the metropolitan hospitals, in the summer of 1822. The patient was so slightly indisposed as to have continued his employment up to the time he was bled; he was bled by one of the pupils, and there was, perhaps, some difficulty in stopping the blood. The arm was tied up, and directions given not to untie it. In the afternoon he complained of stiffness in the arm, and in the evening that it was painful. The pain increased so as to prevent him from sleeping, and his wife stated that "his groans were dreadful." Early in the morning he awoke his wife, stating to her that the pain had been so great he had not been able to close his eyes. She removed the bandage from his arm, and he became somewhat easier. She observed the arm was swelled. He passed another restless night. His wife was obliged to leave him during the day, and when she returned he said "he had suffered a martyrdom." She observed that the arm was of a darkish kind of purple for a hand's breadth above the wound, and red below it, and very much swelled. His night was again

#### FATAL INSTANCE OF

restless, and next morning (the fourth from the bleeding) the arm was black about a hand's breadth on each side of the wound, and the upper part of the limb was swollen very much. In the course of his illness his head became much affected. The further details were such as mark the progress of mortification. This poor unfortunate patient was bled on the Saturday, and expired on the following Thursday, leaving a widow and three children without any means of support.

The treatment, I fear, will not bear scrutiny. From the Saturday till the Tuesday the time was unfortunately lost, nothing having been done; and the widow, in deploring her loss, expressed her grief that her husband, although unable to leave his bed, and notwithstanding her repeated solicitations, had not been visited by any of the principal surgeons of the hospital, where he had been bled, till within an hour of his death.

In reviewing this melancholy case, it may serve to impress upon your minds the necessity of attention even to the smallest details, upon which the welfare of a fellow creature may depend.\*

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<sup>\*</sup> I was informed by one of the fellow-students of the unfortunate operator, that he was a worthy young man, of benevolent mind, and anxious to learn his profession, although he had not had the advantage of careful instruction. Even the widow of the deceased patient observed that he was much distressed when her husband became so alarmingly ill. The distressing result of this case preyed upon his spirits—he lost his

## STRANGULATION .- REFLECTIONS. 201

It is probable that the difficulty in stopping the blood might arise from the orifice being made larger than necessary; this circumstance, and a laudable anxiety to prevent after-bleeding from the wound, might lead to the undige tightness of the bandage; this, and the caution given not to untie the bandage, allowed the first progress of mischief to go on increasing, whilst the patient bore the pain for many hours with great fortitude, till he no longer could support the suffering. Even here all might have been retreived, had he been fortunate enough to receive judicious surgical aid, but much valuable time was lost, and when competent assistance was obtained it was too late!\*

health and became desponding-his illness terminating in dissolution !

\* Should such a case recur, the mischief arising from a degree of tightness, which if continued might terminate in strangulation and the consequent death of the part, would be best counteracted by gentle friction of the limb in the direction of the veins; by by mild fomentations for a short period after the friction, and by very gentle and equable support, by means of a neatly applied bandage from the fingers to the shoulder; removing the bandage and renewing the friction, and then the fomentations at intervals greater or less, according to the urgency of the symptoms. Whatever constitutional derangement may be produced by local injury, it should be attentively considered, and be treated by appropriate remedies, as if it had occurred spontaneously; but such treatment should be *moderate*, for the well-informed surgeon knows that the subsidence of constitutional disturbance, arising from local injury, is most essentially

#### 202 HOW ERRORS MAY BE OBVIATED.

The gradual increase of pain and swelling whilst the bandage was continued, marks the progress towards strangulation; and you will do well to bear in mind, that whether the bandage be used after bleeding, or as part of the dressing of an accidental wound or of a fractured limb, whether it be too tight at first, or become so by the gradual swelling of the part, still the injury may be such as to endanger the limb, or even the life of the unfortunate sufferer.

From what has been shown, it is obvious that simple as the operation of venesection may be considered when perfectly performed, yet dangerous and even fatal consequences have resulted from errors apparently very trivial in the outset. I have endeavoured to trace the causes of these errors, that you may avoid them. The principle I have habitually acted upon has been, where the responsibility has rested upon myself, to let *Instruction, careful and assiduous instruction*, precede practice, by which I have avoided many anxieties which must otherwise have fallen to my lot. Many years engaged in public as well as in private practice, my pupils have not had the opportunity, nor, I believe, the inclination to

promoted by soothing and relieving the injured part. The advantages from rest, appropriate diet, and other general treatment, must be too obvious to any one in the habit of reflecting, to require to be enumerated.

#### HOW ERRORS MAY BE OBVIATED. 203

be idle. One of them who, during a period of more than nine years, was first my pupil and then my assistant, and whose habitual attention to his professional duties won my esteem, had occasion to perform venesection in thousands of instances, and without one single untoward accident; his junior, one of your fellow students, kept an account of more than eight hundred instances in which he performed blood letting, and he assures me that only four of these festered, to which may be added one in which inflammation of the parts under the fascia required rest of the arm for two or three weeks. No serious accident occurred. The case of wounded lymphatic happened in my practice, but whether in my own hands, or those of my pupils, I do not recollect; for I profess to have no superiority over them (beyond that extreme caution to guard against error, the result of painful observation and experience, which can not be acquired in youth) in whatever they have been instructed in, since I have no secrets to withhold. A solid foundation in elementary knowledge-habits of attentive observation-and diligence in the performance of duties, have been sedulously inculcated, and have supplied the place of secrets; whilst order and methodical arrangement have conduced both to the

#### RECAPITULATIONS.

despatch of business and to the comfort of all concerned.\*

\* The recapitulation of the arrangements and attentions relating to venesection may serve as an example, and may perhaps be useful to the young student by enabling him to guard against omission and consequent inconvenience.

Preparatory to bleeding, make the necessary arrangements see that the position be conveniently arranged, respecting light, &c.

Requisites.-Warm water in wash-bason-cold water in a glass-clean sponge-towels-cups or other vessels-two bandages-compresses-lancet in good order-an assistant-an artificial light if required-hartshorn or ammonia.

Steps of the operation .- The requisites to be placed within reach -position-defence of clothes-examination if any deviation of artery-bandage-its place-tightness-mode of tying-selection of a proper vein-if the veins do not rise, the causes to be traced, &c .- vessel with water within reach to receive lancet when used-steady the vein-rest the hand-mode of using the lancet-make the orifice--when vessel presented to receive the blood, raise the thumb from below the orifice-let the patient's wrist be supported if necessary-place the lancet (defended by the scale) in the water-remove blood from fingers if soiled-regulate the orifice if necessary-if the blood do not flow freely, observe and remove the cause-when sufficient blood has flowed, compress the vein below the orifice-(assistant to remove vessel and to present warm water)-remove the bandage-cleanse the arm (but do not touch the orifice with a sponge used for any common purpose)-elose the orifice neatly and accurately-apply the compress-remove the pressure of the thumb from below the orifice, supporting the compress till the bandage be applied-apply the bandage-see that no stains of blood be left on the arm or bandage-adjust the dress over the arm-place the arm in an easy position-give the directions for such precautions as may be necessary, rest, &c.-when the

#### PRINCIPLES OF CONDUCT.

In expressing my belief that the ill consequences occasionally succeeding venesection may, by proper care, be almost wholly avoided, I speak from no very limited experience; but far from thinking there is any merit in having possessed ample opportunities, I am the more convinced that it is the imperious duty of every one who enjoys such advantages to render them subservient to the welfare of others. Since all are liable to err, there is no need, in alluding to errors of practice, to hurt the feelings of individuals, the object being to prevent the recurrence of similar evils; but the surgeon who conceals the errors he may have fallen into, or which he may have observed, is as blameable as the pilot who should conceal his knowledge of rocks and shoals which had caused shipwreck and destruction.

Gentlemen, in your intercourse with your fellow students, with your professional brethren, be ever anxious to learn, as you should be ready to communicate, whatever may be useful to your fellow creatures. In a science which teaches the godlike art of preserving and restoring health, he

patient has received the proper attentions, clean the lancet, &c.-if the repetition of bleeding be required within twentyfour hours, the former orifice may perhaps suffice-direction to the patient or friends in case of any unforeseen or untoward circumstance after bleeding.

### 206 PRINCIPLES OF CONDUCT.

who keeps secret the knowledge of that which he believes might prove beneficial to his fellow creatures, forfeits all claim to esteem, by preferring his own sordid interest to the duties of humanity.

### LECTURE VIII.

Blood-letting from the Veins of the lower Extremity—from the external Jugular Vein its advantages and disadvantages.—Instances of fatal results of Bleeding from the Jugular Vein.—Moral Considerations respecting Operations.—Value of Ordinary Duties.—Local Blood-letting.—Occasional ill-consequences.

Blood-letting from the veins of the lower extremities is but little practised in this country, although generally used in France. By many it is supposed to possess peculiar advantages; but the circumstances adduced in its favour would apply equally to any mode of abstracting blood, by which a sufficient impression should be made on the powers of the heart and arteries. Successfully performed, it may answer the same purpose as bleeding from the arm; but in my opinion, the instances (if any) in which it is really preferable are very few. It is sometimes performed to unload varicose veins of the legs; but as I shall endeavour to

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shew when considering the treatment of these affections, it is by no means essential, whilst the risk of inflammation of the vein supervening is much greater than after venesection at the bend of the arm.

The coats of the veins of the lower extremity are much firmer and thicker than those of the arm; hence, unless the degree of resistance to the lancet be anticipated, failure is not unfrequent. When the vein is fairly opened, it occasionally happens, that after the first jet, or after a very few ounces have flowed, a stream of blood is not obtained so as to be received into any vessel capable of serving as a measure, the limb requiring to be immersed in hot water to promote the flow of blood.

In addition to the general precautions already pointed out as relating to venesection, the operation will be facilitated by previously immersing the limb for a few minutes in water, as hot as can be borne without discomfort. By this immersion the skin is relaxed, and the superficial veius are more fully distended.—A bandage must be applied below the knee—the lower part of the saphena is that usually opened. The pressure of the thumb to keep the vein steady when it is opened, should not be omitted, as the vein is more apt to roll if unsupported; if the lancet be not in good order, the resistance of the vein is considerable;

### -FROM THE JUGULAR VEIN. 209

but with those attentions which are sufficient to ensure success in bleeding from the arm, with a sufficient knowledge of the structure of the parts, and the exercise of common sense, there is but little probability of failure in this operation, whenever it may be deemed proper to perform it. The closing of the orifice, and resting the limb till the lips of the wound are united, are obvious and necessary precautions.

Blood-letting from the external jugular vein. The occasions for this operation are, when it is necessary to abstract a large quantity of blood more speedily than it can be drawn from a vein in the arm; or when it is desirable, in addition to the effect of a general blood-letting, to diminish more immediately the fulness of the vessels of the head; sometimes, also, it is called for in the diseases of children, when general blood-letting is required, and yet the veins of the arm may be so small or so deeply imbedded in fat, as to render bleeding from the arm difficult, or, in the opinion of some, impracticable.

Whatever be the advantages or disadvantages of this operation, it is necessary that the surgeon should be able to perform it with precision and safety, whenever it may be deemed essential to the welfare of the patient that it should be performed.

By some the advantages of abstracting blood

#### 210 PRECAUTIONS AND MODE OF

from the external jugular have been considered to be very great; but it may be doubted whether the more speedy effects than from ordinary bloodletting, are attributable to the vicinity of the vein to the head:—most probably it will be found that more depends upon the rapid diminution of the supply of blood to the heart, than upon the situation of the vein from which it may be abstracted.

The surgical anatomy of the neck, particularly of the superficial and lateral parts, should be carefully studied before the student be permitted to perform this operation on the living body; for though it is extremely simple in skilful hands, yet fatal accidents have been known to result from its performance. The point usually selected for opening the jugular vein, is where that vessel crosses over the sterno-mastoid muscle, and is covered only by the integuments and the platisma myoides. This thin muscle, which must be perforated before the vein can be reached, affords a somewhat greater resistance than that which is experienced in bleeding at the bend of the arm. The same precautions of placing the thumb so as to keep the vein steady, and using the fingers, not employed in holding the lancet, as a rest to afford steadiness to the hand, are at least as essential as in bleeding from the arm. Nay, the greater freedom of motion in the neck than admitted by the hinge joint of the elbow,

#### PERFORMING THE OPERATION. 211

renders the vein less steady, and calls for great attention in affording the necessary support at the time of making the puncture, if the operator wish to avoid the discomfort and discredit of failing in this simple matter. The operation is performed by compressing the external jugular of each side at its lower part, and this may be done by the fingers and thumb of the operator's left hand as readily as by a bandage. The point of the lancet is entered obliquely to the direction of the vein, and carried through the integuments and platisma myoides till it open the vein, but not deep enough to transfix it, when the point of the lancet is raised so as to make the aperture through the integuments directly over that of the vessel. Care is required so to arrange the position, that it should not be altered during the performance of the operation, for a slight motion of the neck is apt to change the relation of parts. so as to render the opening valvular, and thus prevent the abstraction of a sufficient quantity of blood.

I should particularly suggest an attentive watching of the countenance and pulse of the patient during the abstraction of blood from this large vein, as the effect produced is comparatively more sudden than in ordinary bleeding, and in children this precaution becomes imperatively necessary. I should further recommend the

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#### PRECAUTIONS, &c.

abstraction to be suspended, if not before, at least as soon as the countenance and pulse indicate the approach of syncope, by which I believe every remedial indication may be fulfilled without danger; whilst, in carrying the depletion so far as to produce perfect *deliquium*, a state of danger is induced, from which no one can with certainty say the patient shall recover.\* A sufficient quantity of blood having been abstracted, the finger may be placed above the orifice so as to prevent the oozing of blood, whilst the pressure below the orifice is continued (to prevent the possibility of the admission of air into the vessel) till the orifice be cleaned: it must then be neatly and accurately closed, and its sides be retained in contact, either by a strip or strips of plaister, or by compress and bandage. In this, as in other parts of surgery, there are lesser precautions, which are not unworthy of attention. In performing this operation upon children, it may be well to ascertain that the steadiness of the nurse or assistant can be depended upon. That intensity

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<sup>\*</sup> It has been stated by authors that however careful the operator may be, it is scarcely practicable to prevent a part of the blood from flowing down the neck, so that the quantity abstracted cannot be ascertained: this however is an error, for if the vessel be held by an intelligent and well disciplined assistant, this operation may be performed with as little daubing of the person of the patient as when a vein in the arm is opened.

of parental feeling, which every one must honour, is sometimes too powerful to be under the control of sound judgment, and therefore renders mothers doubtful assistants on such occasions. I have been informed of a case in which, during the performance of this operation, the child, supported on its mother's knee, fainted. The pallid deathlike countenance of her infant might well alarm a mother, who had never seen a person faint before; in her alarm she raised the child upright, grasping and pressing it to her bosom, and apparently insensible to the entreaties made to place the child instantly in the horizontal position; the effect of the upright position was equivalent to a larger loss of blood, convulsions supervened, and the unfortunate sufferer expired.

Another precaution has been deeply impressed on my mind, by having been present at the examination of the body of an unfortunate patient, whose immediate death had followed the omission of the precaution to which I allude. It is that of guarding against the drawing in of air by the orifice; for it is a well ascertained fact in physiology that the admixture of any considerable quantity of air with the circulating blood, produces almost instantaneous death.

The experiments of Dr. Barry have demonstrated that at every inspiration, the pressure of the atmosphere within the chest is diminished,

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the pressure of the external atmosphere on the surface impelling the venous blood, in addition to the other powers acting at the same time, towards the heart. (It may in common language be said, as if the heart exerted a sucking power during the act of inspiration.)

In ordinary and quiet respiration this attraction of the blood towards the heart is very slight; but if the person be agitated, so as to breathe forcibly, then the power by which the blood is impelled (or as it were sucked) towards the heart, is sufficient, should there be an open orifice of a vein so circumstanced as to admit a quantity of air, to impel or draw it in so as instantly to destroy life. The patient above alluded to became convulsed.\*

· The extent of the orifice was about an inch in length, in the direction of the vein, which had been transfixed. The morbid appearances were so striking as unequivocally to demonstrate, that although the quantity of blood abstracted might have been perhaps even so excessive as to induce the convulsions, yet the quantity of air in the blood vessels of the head alone was sufficient to have caused almost instant death. The blood vessels of the brain were distended with air-this is an unusual circumstance when the body has not undergone putrefaction, and in this instance the examination was made a few hours after death - Up to this period of the examination the suddenness with which death had taken place was a matter of surprise, but the cause had not even been suspected. It was clear that the air contained in the blood vessels could not result from putrefaction, for it had not taken place in the slightest degree;-on examining the gash by which the vein had been opened, the probability of the admission of air into

#### SECONDARY H.EMORRHAGE.

Secondary hæmorrhage, in proportion to the largeness of the vessel, is more to be feared than that from the arm. Several years ago, an unfortunate instance of secondary hæmorrhage from the external jugular, after bleeding, came under my cognizance, which forcibly illustrated the

the vessel so as to destroy life; became obvious, from its similarity to a fatal accident which occurred in the practice of M. Dupuytren, who was performing an operation upon the neck, when, by the sudden drawing in of air through a wound of the vein, death took place almost instantaneously. That such had been the course of this unfortunate case, was clearly traced—the Physician who had directed the bleeding, being in the ward at the time, recollected having heard an unusual sound, similar to the sucking in of air ;—when he went to examine what had occasioned it, he found life extinct. The right auricle of the heart was distended with air, and the lungs also shewed that the air had penetrated into the blood-vessels.

Fearful lest I might in this memorandum of morbid appearances have omitted any essential circumstance (for at the time the case was noticed in the Lecture, the occurrence was so recent, as not to need reference to written notes, which have since been mislaid) I have to express my thanks to the Gentleman under whose care the patient was, for the following short statement. It is but justice to state, that with a degree of manliness which does him honor, and following the meritorious example of M. Dupuytren, far from wishing the error to be concealed, it was his desire that the circumstances should be made known that the recurrence of any similar disaster might be guarded against.

"I have merely a few notes, the substance of which is, that the right side of the heart was distended with air, and that all the cavities were as empty of blood as if they had been washed; a very large opening was in the jugular vein, and no blood was found between the wound and the heart."

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necessity which I have previously dwelt upon, of giving directions respecting any probable occurrence which should be avoided, and of adapting the mode of communication to the intellect of the patient or attendants. The operation had been performed, and considerable relief experienced; the orifice was closed by compress and a bandage, and was supposed to be secure. The patient was a child, and, as too often happens in humble life, when the alternate exercise of indiscreet indulgence and hasty chastisement supersede more rational means of moulding the character, was habitually fretful and obstinate. The mother had unguardedly left the child without any attendant, and when she returned, found it, as it were, deluged in blood, and expiring or dead. The gentleman who had performed the operation was known to be liberally educated, and humane and attentive in the exercise of his profession, yet, strange as it may seem, I found an altercation had taken place, scarcely to be expected, recently after so lamentable an occurrence;-the unfortunate mother accused the practitioner of having killed her child, and he retorting that she had caused its death by leaving it for the purpose of going out to get drunk; perhaps some cause of blame might attach to each. The orifice had certainly been made larger than I should, under ordinary circumstances, have deemed necessary,

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and the poor mother was not free from indications Notwithstanding the large of intoxication. orifice, as the bleeding had been restrained in the first instance, it might have been commanded subsequently; for even supposing the child by its restlessness to have displaced the bandage and compress, yet had the probability of such an occurrence been pointed out, and constant watching been insisted upon and adopted in consequence, even had the bleeding recurred, a finger placed upon the orifice would have restrained the further loss of blood, till the parts might have been more effectually secured by the professional attendant, and thus the fatal event might have been prevented.

Should there be great difficulty in restraining the hæmorrhage after bleeding from the neck, a circumstance which I have never experienced, although I have had frequently occasion to bleed from the external jugular in cases of hooping cough, croup, &c., where the impulse given to the blood during a fit of coughing was extremely liable to disturb the parts, yet care being taken that the orifice has been no larger than required, I have found the flow of blood to cease immediately on removing the pressure below the opening; so that I have generally found a strip of plaster, after the orifice had been carefully closed, a sufficient security; but if there has been the

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slightest probability of return of bleeding, I have adopted the precaution of using graduated compresses and bandage, in addition to careful superintendance. Although from the extensive motion of the neck there may be some difficulty in retaining the bandage in its proper situation, yet, when we come to consider the use and application of bandages, I shall have occasion to demonstrate that the simple roller, or bandage, may be so applied as to make efficient pressure upon any part of the body.

The mode which nature adopts to restrain hæmorrhage is, first by fainting, by which the blood, ceasing to flow, coagulates at the point from which it issued; and secondly, by extravasation into the surrounding cellular membrane, there coagulating and mechanically diminishing or closing the aperture from which the blood had flowed. This is often observable after the application of leeches, the livid colour produced by extravasation of blood having sometimes been mistaken for the approach of mortification.

Should any case occur in which there appeared sufficient reason to apprehend the occurrence of secondary hæmorrhage, although I consider it to be the duty of every surgeon to avoid the unnecessary infliction of pain upon those confided to his care, yet I should employ the twisted suture, as affording perfect security against it, in

#### ADAPTATION OF MEANS.

preference to the risk of the loss of life, which I have shown you may result; but means of treatment must vary with circumstances: with attentive nurses, and the practitioner within a short distance, danger may be prevented; whilst in the country, and at a great distance from the patient, should the attendants be wanting in presence of mind, death might ensue before the practitioner could arrive.

I would again exhort you to reflect on the rational indications of the treatment of disease, drawn from the consideration of the previous history and symptoms, and to see your way clearly, that you may neither omit those measures which are essential, nor use dangerous and severe remedies when the patient's safety may be effected by those which are mild and safe. Thus in apoplexy, and some other diseases, when a vital organ, such as . the brain, may be undergoing dangerous injury by the bursting of one of its blood-vessels, it is our imperative duty, if called in time, to adopt instantaneously those energetic resources of the healing art which are capable of immediately arresting the further progress of injury, and you will find, in such cases, the abstraction of blood from the jugular vein, or from the temporal artery in such quantity as to act as a general bloodletting, amongst the most efficacious means with which we are acquainted.

#### MORAL CONSIDERATIONS.

Having shown you that the taking blood from the external jugular vein may be performed with safety and advantage, under judicious care, when the circumstances of any case require it, yet you must be aware that the attempt to perform it often fails in the hands of those who have not been at the pains to learn, with sufficient precision, the various circumstances of situation, depth, and relative position of the parts concerned in the operation. The instances I have adduced will be sufficient to put you on your guard that the operation is not always free from danger; hence I need not enlarge on the unprincipled folly of performing a dangerous operation when the recovery of the patient may be equally promoted by safe and simple means. If the public sometimes attach undue importance to operations which may have been needlessly performed, such consideration ought not, for one instant, to bias your judgment in the choice of means, which ought to be guided solely by the welfare of the patient confiding in, or committed to your care and integrity.

Taking this view of the duties of your profession, you cannot be made too sensible, that the ordinary duties of surgery are much more frequently demanded than those exertions of talent rarely required, which sometimes stamp the character of a daring operator; and as you advance in life you will become convinced, that precision in the use of ordinary means is of higher value, as

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### LOCAL BLOOD-LETTING.

subservient to the relief of your suffering fellowcreatures, than any degree of skill in extraordinary operations : moreover this precision in ordinary duties does not preclude operative skill.

Local blood-letting may be effected by leeches, by scarification and cupping, and by arteriotomy.

The object of local bloodletting is to relieve more particularly the distension of the vessels of a part of the body, without withdrawing from the circulation a quantity sufficient to act generally on the system by depressing its powers.

It is necessary for the practitioner to be aware of the details relating to the remedies which he directs, or discomfiture or failure may be the consequence. What does it signify if in an inflammation of the eye, threatening destruction of vision, that appropriate remedies be directed, if, from want of knowledge or aptitude in those who should apply them, they fail of being carried into effect? In the metropolis, and in large towns, the attendants upon the sick generally possess a tolerable share of intelligence; but in remote situations in the country, where intellect would almost seem to be an exotic, it behoves the practitioner to be aware with how small a degree of intelligence the ordinary business of life may be carried on, and how inadequate such limited powers of mind are towards carrying into effect many of the details required for the welfare of

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the sick. Hence it becomes necessary, not only that the medical attendant should give clear and explicit directions, but also that he should have the patience to ascertain whether that which appears perfectly distinct to his own mind be fully comprehended by the person to whom, in his absence, the care of the patient must be confided. Thus from the simple application of leeches, and the want of the precautions previously indicated, I have known, even in this metropolis, a child bleed to death, large leeches having been applied to the neck and chest, the attendants neither having been made aware of the probable indications of danger, should the loss of blood exceed that which was designed remedially, nor instructed in the mode of stopping the flow of blood, owing to which omissions their unskilful attempts proved fruitless.

The best natural history of the leech with which I am acquainted was published by Dr. J. R. Johnson, a few years ago; and you will find many useful practical observations, relating to the application of leeches, in the late Mr. Haden's Journal of Popular Medicine.

- The occasional ill-consequences, after the application of leeches, are similar to those following venesection, such as hæmorrhage too long continued or secondary; festering, inflammation, ulceration, &c. In some persons erysipelas is

### LEECHES-CUPPING.

known to follow every application of leeches. Cold from the exposure of a large surface of the body to evaporation, during the continuance of the bleeding from leech bites, (although the attendants may be supposed occupied in fomenting the parts,) I have known to prove much more injurious than the abstraction of the blood was beneficial. Although leeches afford great facilities when local bleeding only is required, yet you must bear in mind the inefficiency of mere local bleeding when general bleeding only can fulfil the rational indications of remedial treatment.

The French use leeches very abundantly. In large numbers leeches may produce the effect of general blood-letting, but it is a question with some, which remains to be decided, whether the supposed superiority of the application of leeches over other modes of depletion, be real or gratuitous? That there are occasions in which local blood-letting is indicated, when the pressure of cupping glasses could not be borne and the disfiguration left by the scarification, would be quite inadmissible, cannot be doubted.

Cupping.—There is a fashion in medicine and surgery as well as in manners and dress, and perhaps many of those who order cupping on all occasions might be as much at a loss to explain and define the principles on which it should be occasionally preferred to other modes of abstracting

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blood, as they would be to give a sufficient reason for the peculiar cut of the collar of a coat.

The occasions for the use of cupping may arise from determination of a preternatural quantity of blood to a part, or from local inflammation, when the contiguous surfaces can bear the pressure of the glasses without injury. Hence cupping is often useful in inflammation of the joints, of the eye, &c., whilst in acute inflammation of the brain, of the viscera of the chest or abdomen, it is mere triffing, unless carried to a much greater extent than sufficient to afford relief by general blood-letting. You may convince yourselves of this principle, by observing that the loss of a large quantity of blood slowly poured out from hæmorrhoids, from the nose, &c., is neither capable of preventing nor subduing inflammation in particular organs, although the loss may be sufficient to be detrimental to health; and by contrasting these effects with those produced by the sudden loss of a much less quantity, by the bursting of a varicose vein, or by an accidental wound.

There is much nicety and some dexterity required to perform cupping so as to abstract a considerable quantity of blood and at the same time to avoid inflicting unnecessary pain. In London this operation is generally performed by professed cuppers, who do nothing else, not extending their

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practice beyond the carrying into effect the directions of physicians and surgeons relating to cupping. In the country the surgeon must depend upon himself. A surgeon in the country who enjoys the confidence of his patients and the merited esteem of many friends, but who does not consider it beneath his attention to understand the details of surgery from its highest duties to its humblest offices, has had patients come to him from a distance of forty miles to be cupped, after having undergone painful and unsuccessful attempts to have that operation performed in their own immediate neighbourhood. In contrast to this, I have witnessed patients writhing in agony under this simple operation, and declaring they would rather suffer blindness than the torment thus inflicted.

An essential circumstance, in avoiding unnecessary pain, is to have the instruments in good order. Notwithstanding that in London others may be called to perform cupping, 1 am still of opinion that every surgeon should be able to do whatever may be necessary in the way of surgical operation for the relief of his patient; in the country, where many of you may probably exercise your profession, no substitute can be expected; and even in town, I have known instances of professed cuppers, though possessing considerable mechanical dexterity, failing in their attempts, till

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#### CUPPING.

the cause of failure, which was obvious enough to any one sufficiently acquainted with the elements of scientific knowledge, was pointed out to them.

On the subject of cupping there are two treatises by professed cuppers; the one consists of 94 pages of text, the other of 176.-Surely this simple operation ought to be "made plain to the lowest capacities" in 270 pages! Yet I can only say that they who, by the most attentive perusal of them, without the aid of demonstration (or a knowledge of the principles of general science, on which the success of the operation depends, bevond what these works contain) should be enabled to perform cupping neatly and efficiently, must be clever fellows: although to those who already possess a knowledge both of the principles and of the details relating to the subject, it may be a matter of amusement to trace how learnedly a simple matter may be made mysterious.

The demonstration of cupping, aided by a candid statement of the mode of conducting each step of the process so as to guard against failure, and to insure neatness of manipulation, will be of greater use to the student than the most elaborate description, unaided by demonstration.

Were cupping performed and explained as a philosophical experiment, it would form an agreeable illustration, well worth the attention of the surgical student.

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### LECTURE IX.

Recapitulation of some points.—Hæmorrhage from Leech-bites.—ARTERIOTOMY, its value as a remedial agent—Precautions and mode of performing it.—Secondary Hæmorrhage.— Principles relating to Compression.—Advantages and Dangers of Arteriotomy.—Rules of Conduct.

Recapitulation of, and additions to, some points of last Lecture.—Blood-letting from the External Jugular Vein. The occasions for it were stated to be apoplexy—the more severe inflammatory affections of the Throat—Phrenitis, &c.—Also in some of the Acute Diseases of Children.—If the vein do not rise sufficiently to be readily distinguished, it is probable that the compression of the superficial vessels, either on one side of the neck or other, is imperfect. In patients who are capable of being directed, the distension of the vessel may be increased by forcibly moving the lower jaw, as in mastication: in children the same effect may be produced by placing the head and neck in a depending position.

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The surgical anatomy.—Some advise opening the vessel lower down than the point I have been used to select: and M. Jules Cloquet recommends that the vein be opened at the lowest point possible, to avoid the branches of the cervical plexus. He mentions, on the authority of Bosquillon, two instances which had proved fatal from the puncture of branches of the third pair of cervical nerves.

The accidents. - I adduced fatal instances arising from scyncope—from the admission of air —from secondary hæmorrhage. I suggested materials for reflection as to the adaptation of remedial measures, &c.

Local blood-letting.—The occasions in which it should be preferred to general blood-letting were pointed out, and others in which as a substitute for general, it must prove futile and inefficient.

The advantages of, nay almost the necessity for every practitioner, whether physician or surgeon, understanding all the details relating to the remedies he may direct, were considered.

Hamorrhage from leech bites has been known to terminate fatally: this leads me to add a few remarks on the means of restraining hæmorrhage from leech bites.

It has been suggested to me, by one whose experience and knowledge of his profession entitle his opinions to respectful deference, that it might be useful to the junior student, to point out, more particularly, the mode of restraining hæmorrhage

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from leech-bites, much difficulty having been occasionally met with, and unsuccessful attempts not unfrequent, whilst the opinions of professional men are by no means unanimous, or conclusive, as to the best means to be employed on such occasions. Having alluded to the excellent work of the late Mr. Haden, whose decease in the meridian of life is a loss to medical science, I should not deem it necessary to revert to this point of practice were it not that in Mr. Haden's publication, in addition to clear and definite directions for the restraining of hæmorrhage by pressure, other methods are pointed out which I conceive to be unnecessary and objectionable; I allude to the application of caustic, and to the passing a needle through the bleeding orifice and wrapping thread round it, as is done round the pin which is used to secure the vein when horses are bled. Should I ever meet with a case in which I could not command the hæmorrhage by more simple means, I should not object to adopt this method, and I am aware that it has been actually practised on the human body; but, until I meet with such an instance, I shall content myself with the simple plan which I have uniformly found to answer the purpose, namely, regulated pressure upon the orifices. So confident have I been that this must succeed, whenever the necessary know ledge of the principle, and mechanical skill in the application of compresses and bandage, had been

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attained, that I have trusted, without disappointment, to the youngest of my pupils whose instruction had been carried beyond the point allotted for the consideration of the means of restraining hæmorrhage in the various accidents of common occurrence.

The mode I have adopted has been to form extremely small compresses, equal in number to those of the bleeding orifices, and, placing each upon its corresponding orifice, to make sufficient pressure upon them with the tips of the fingers, to prevent the further hæmorrhage, till time should be afforded for the coagulation of the blood within the orifice to take place; then, gently removing the fingers, to supply their places by a series of other compresses, larger than those next the surface, and subsequently to retain them in their situation by a bandage adapted to the size and situation of the parts on which it was designed the pressure should be exerted.

ARTERIOTOMY.—This operation consists in making an aperture in one of the smaller arteries (generally the temporal) for the abstraction of blood, instead of the more common method in daily use, of taking it from the vein. Arteriotomy may be made to answer the purpose of either *local* or *general* blood-letting; the temporal artery is that usually preferred. Perhaps there is no other mode by which relief may be so speedily afforded, in certain cases, as by arteriotomy; and I need not again urge the duty of the medical attendant, to promote the recovery of his patient by the most efficient remedies and by the avoidance of those excesses in the use of them, which sometimes leave the sufferer in a condition little less deplorable than when labouring under the disease for the relief of which the treatment had been employed.

I have known in a case of delirium, arising from inflammation of the membranes of the brain, that the abstraction of twenty-four ounces of blood from the arm has produced but a very slight and temporary mitigation of symptoms; whilst half that quantity, freely abstracted from the trunk of the temporal artery, afforded immediate and complete relief.

The situation to be preferred for the performance of arteriotomy must depend upon the intention which the operation is designed to fulfil; if a small local blood-letting be intended, the anterior branch of the temporal artery will generally suffice;—if, on the other hand, the full effect of general bleeding be required, then it will be necessary to open the trunk of the artery.

The *requisites* for the performance of this operation, are, as in bleeding from the arm, an accurate anatomical knowledge of the situation of the parts on which the operation is to be performed, a good light, and steadiness, as well on the part

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of the patient as on that of the operator : an as sistant, to keep the head steady and to apply the sponge when needful, will facilitate. There should be at hand, hot water, clean soft sponges, towels, lancet or scalpel, cups or other vessels, ligatures, (if the trunk of the artery be the part selected) scissors, adhesive or court plaster:—some use compress and bandage; but from the distress I have witnessed attending the tight binding of the head for several days, I do not adopt this method, neither could I submit to its inconvenience, were I the patient. It may be necessary to remove the hair covering the part before beginning the operation.

In opening the anterior branch sometimes the use of the lancet, as in venesection, will suffice, but not very certainly; the scalpel is occasionally used instead, but in either case, unless the vessel be fairly exposed, or its size be greater than usual, there is often great difficulty in obtaining any considerable quantity of blood; the opening may become valvular; arterial blood more speedily coagulates than that poured out from a vein, thus filling up the wound; or the artery may be divided across and retract.

The mode which for many years past I have preferred, has been, to see the vessel clearly before I have opened it, and I do not recollect a single instance in which I have failed. My senior pupils have also, by attending to this

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precaution, succeeded with certainty, whenever the condition of the patient has not required that strict and intense attention which will not admit of delegation; but in the more urgent and dangerous instances of disease, the surgeon will do well not to trust to giving his directions for the performance of this operation; but to perform it, or at least, personally to superintend; since circumstances may arise, requiring a greater exercise of mature judgement, than can reasonably be expected from a pupil.

The trunk of the artery is to be found with great certainty, as it rises before the ear and passes over the zygoma; higher up its course is somewhat irregular, but may be traced by the pulsation. (Models and drawings, showing the relation of the artery to the surrounding parts, were exhibited.)

There are various modes of performing this operation; they who are desirous of further information respecting the methods which others have adopted, may consult Mr. Benjamin Bell's System of Surgery, vol. iii.; Dr. Butter's Work on Arteriotomy; and Mr. Burn's Surgical Anatomy of the Head and Neck.

In taking blood from the trunk of the temporal artery, the hair covering the part having been previously removed if necessary, I make an incision, about an inch in length over the artery;

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when the integuments are divided there is a fascia underneath, covering the artery, which must also be divided to expose the artery; the vein is generally seen before the artery, (and sometimes branches of nerve) but I have observed occasionally, even between the right and left in the same patient, considerable difference in the relative position of the vein. This is a point on which you must be able to see your way clearly, that you may avoid error. (In two of the drawings, the one from the right and the other from the left side of the same subject; the vein was anterior to the artery in the one and posterior to it in the other.) Hence you will infer, that I trust less to position than to the difference in texture to distinguish between the artery and vein; the artery itself, in this part, is so delicate that it may be easily mistaken for a vein. You will do well to bear in recollection the modifications which the blood-vessels exhibit in various parts of the body; in the lower extremities the veins are firmer in texture than the arteries in the brain, and in some of the upper parts of the body. It is generally stated, "oh, you can always readily distinguish an artery in the living body by its pulsation ;" this, however, is not always quite so simple in fact as in words; moreover, I dislike the poking of a finger into a wound to grope for the pulsation of an artery, which may

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be exposed to view and be distinguished without giving needless pain to the patient; if the surgeon cannot distinguish an artery from a vein when he sees it, in the name of humanity let him return to the dissecting room and learn, lest he imbrue his hands in the blood of his fellow-creatures. The direction and extent of the incision should be such as to avoid needless injury of the nerves which are numerous; they are branches of the portio dura, and the division of them might produce paralysis (as relates to motion) of the muscles to which they are distributed.

Another caution should be observed, not to wound the artery in seeking for it, nor to sever any small branches proceeding from the trunk; for should this circumstance take place, the flow of blood will greatly impede the further steps of the operation.

It may be necessary to steady the artery above and below the point to be opened at the moment of making the aperture. It may also assist, in giving a fuller stream, to compress the artery above the orifice, during the flow of blood.

The artery being clearly seen, a sufficient opening must be made on its anterior part; I do not consider it of much importance whether the orifice be longitudinal, oblique, or transverse; nor whether it be made with a lancet, a scalpel, or scissors, provided it be made with sufficient

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precision, and do not wholly divide the artery. If the exposure of the artery be neatly made, it may be opened with as great facility in the living body as in the dead subject; but it must be at once, for if it be opened by too small an orifice, the flow of blood, though wholly inadequate to relieve the patient, will yet be sufficient to fill the wound as fast as it may be removed, and to obscure the parts so as to render precision in completing the operation out of the question.

The artery having been fairly opened, the blood is generally projected to a considerable distance *per saltum*. (The difference between an arterial jet and a stream from a vein should be known even to the young student.) A sufficient quantity of blood having been abstracted, the vessel should, in my opinion, be secured by ligature; and I prefer using one below and another above the orifice to a single ligature; the reason for this preference will be stated in considering the causes of secondary hæmorrhage from this vessel.

The next steps are to clean and bring the edges of the wound into accurate contact, and to retain them by a strip of plaster, leaving one end of each ligature a little without the wound, the other ends having been removed near the knots. The usual attentions to remove any stains of blood, &c. should not be omitted.

I have been accustomed to place the ligatures

around the artery before opening it; but so long as the end be effected, every one may use his own judgment in the choice and adaptation of subordinate means, which are more frequently regulated by convenience than by any strict reference to principle.

When arteriotomy has been judiciously directed, the relief of the patient thereby has been in a direct ratio to the sudden abstraction of blood; for I have not been able to trace any greater benefit than from ordinary bleeding, when the blood, instead of flowing in a full stream, has merely trickled from the wound. I am inclined to believe that the opinions of some relating to the comparative value of arteriotomy and venesection, may have been formed from having merely directed the operation to be performed, without superintending its performance, and thus informing themselves of details essential to the full remedial effects which may be thus afforded.

That it is easier to *prescribe* than to *perform* arteriotomy is not likely to be questioned, and that men of eminence in their profession may sometimes fail is not very wonderful, since the humbler details relating to the ordinary duties of the surgeon are seldom held of any value, unless the neglect or omission of them occasion accident or failure. I am led to make this remark, from the knowledge of the circumstance that a

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physician, who highly appreciated the use of arteriotomy, was under the necessity of discontinuing to prescribe it, on account of the frequent failures in attempting to carry his directions into effect. Another instance may, perhaps, serve to impress the importance of minor surgery, as it is sometimes called, more strongly upon your memory. A gentleman of considerable influence in the City, informed me, that a celebrated surgeon had, on a former occasion, ineffectually attempted to draw blood from his temporal artery, although the attempt was persevered in for a considerable time; the consequence was, that the patient lost all confidence, and not only consulted another surgeon, but proclaimed, among his numerous acquaintances, in no very gentle terms, the incompetence of him who had failed.

Dr. G. when in Paris, had prescribed arteriotomy, and had sent for a celebrated surgeon, that he might perform the operation. As soon as the latter knew the purpose for which he had been called, he hastily left the room and did not return. On a subsequent occasion Dr. G. inquired his motives for so unaccountable a procedure? "What!" replied the surgeon, "do you think I should risk my reputation in attempting to perform arteriotomy—from which I could derive no credit if I succeeded; but should be disgraced if I happened to fail?"

#### TRIFLES.

Perhaps an eye saved or lost may be a light matter, when put in competition with any circumstance which may affect the consequence of a great operator;—but to the patient, probably, it may not be quite a trifle.

With the precautions before stated, I neither use compress nor bandage, the ligatures separate in a few days, and the incision unites by adhesion. Since I have adopted this method, I have had no further trouble than the mere performance of the operation, although the accidents which I have witnessed from arteriotomy have been so severe and dangerous, as to make me determine neither to direct nor perform this operation, unless the condition of the patient should render its performance essential to his welfare.

That men, ardent in the pursuit of any favourite remedy, sometimes unconsciously prefer dangerous and violent measures to those which are known to be safe and effectual, the history of our profession will abundantly testify. As an instance relating to arteriotomy, you may read Dr. Butter's relation of his attempt to take blood from the trunk of the *carotid* artery, which you will find at page 5 of his work. This work was published about forty years ago, and its author extolled the advantages of the practice of arteriotomy far beyond what the profession has confirmed. He proposes a kind of bandage, the description of

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of which, and the mode of its application, occupy seven pages. (Dr. Butter's engraving of his star bandage was shown.) No doubt the bandage which he describes will answer the purpose, as well as a tourniquet which I have seen, for compressing the vein in the simple operation of bleeding; or as the common tourniquet used in amputation, which has been applied to the lower extremity (instead of a simple ribbon or bandage) as a preliminary to taking blood from a varicose vein of the leg;-but, gentlemen, I fear, in surgery, the more complicated the means, the less likely they are to be the result of judgment matured by reflection and a thorough knowledge of the subject; for these generally lead to simple yet efficient measures.

A bandage, of whatever kind it may be, must either bear upon the part sufficiently to compress the artery and obstruct the flow of blood, or it is useless. This force, if applied to the exact point, need not be very great; but the want of accuracy is generally compensated by a firmer degree of pressure over a larger surface. It is of more importance that you should have clear ideas of the principles by which your practice must be regulated than, in the earlier part of education, is generally supposed necessary; for when the principle is clearly understood, the adaptation of the means to the end follows, if not as a matter of

## PRINCIPLES LEAD TO PRECISION. 241

course, at least as one of induction. To apply this observation to our present subject: the diameter of the temporal artery is small enough to be effectually compressed by a surface of the extent of one square eighth of an inch, accurately bearing upon it; suppose the required pressure to be equivalent to the weight of one pound, (or any other quantity that may not be productive of inconvenience or injury) so long as this bears upon the proper place, its use will be as effectual as that of any greater weight, even if increased a hundred fold; but again, suppose, either intentionally or through want of consideration, the surface of the compress by which the pressure is made be increased to that of one square inch, (a much less size than often used in compresses or pads for restraining hæmorrhage) what must be the pressure exerted to produce the same effect upon the artery as that of the smaller surface? The answer is obvious: the relative extent of surfaces being as one to sixty-four, the pressure upon the larger surface must be sixty-four times that of the smaller to produce the same effect upon the artery, or sixty-four pounds where the pressure of one would as fully suffice!

I have known great distress result from the application of a tight bandage to the head after arteriotomy, and I have also known it continued during nine days, — a fortnight, — and, when

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#### OCCASIONAL DANGERS

secondary hæmorrhage has supervened, to a much later period. Personally I suffer so much from any tight bandage around my head, even for a short time, that I can well conceive the distress patients must undergo when so circumstanced; I therefore prefer the ligature of the vessel, which is productive of no inconvenience, and the patient is not encumbered even with the semblance of a bandage.

Inflammation and suppuration of the surrounding parts may follow arteriotomy as readily as any other wound of the same part, and I have seen erysipelas, in more instances than one or two, succeed slight injury, and proceed to a fatal termination. The wounds of the head inflicted during drunken frays, or broils, not unfrequently are succeeded by erysipelas.

Aneurism is sometimes the result of arteriotomy, but is not a very frequent occurrence, although I have seen several instances. A case which was operated upon in one of the hospitals of this metropolis, at no very distant period, terminated fatally.

The ligature not coming away at the proper time is an occasional circumstance; it is owing to a branch of nerve, or a portion of fascia, being included within the knot, which ought to embrace the artery only.

Beware, gentlemen, that it is possible to carry the loss of blood from the temporal artery so far

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#### FROM ARTERIOTOMY.

as to endanger or even to destroy the life of the patient. This had nearly happened, on one occasion, to a robust man who was under my care, by complying with his earnest entreaty to go on longer than I deemed prudent. He had been subject to attacks of illness, with great determination of blood to the head and delirium; but had previously been relieved from all his unpleasant symptoms by arteriotomy, and other antiphlogistic means. On the occasion to which I allude, although quite irrational when the artery was opened, he became perfectly sensible to all around him when about twelve or fourteen ounces of blood had flowed. I was desirous of stopping the blood when a little more had been abstracted, but his assurance of the great relief he experienced as the blood flowed, and his urgent entreaty that I would not stop it so soon, induced me to go beyond the limit which the apparent effects made me believe to be sufficient. He fainted, and for a considerable time appeared as if lifeless; when he recovered from his swoon, the re-action was violent in the extreme, and his hallooing (supposing himself following the hounds) made the apartment re-echo with his noise. This violent exertion continued about two hours, when he sank into a tranquil sleep, from which he awoke free from any urgent symptom, perfectly rational, but unconscious of all that had happened from

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#### RULE OF CONDUCT.

the moment he had fainted till he awoke; his recovery was very speedy, and he remained long without any return of illness. From this case a useful rule of conduct may be deduced;—namely, —to hear and weigh whatever a patient may be pleased to suggest or to recommend to you relating to his treatment, yet not to suffer yourself to be seduced by his feelings or his wishes, but to follow your own judgment and act firmly, preferring his welfare to every other consideration.

In Dr. Butter's work, pages 49 and 53, you will find the details of instances of *secondary hæmorrhage*, from which the following are abstracts :—

"Case 1.—A young man, aged nineteen years, had his left temporal artery opened for an ophthalmia, October 19.

Oct. 24. The artery broke open last night, and he lost above eighteen ounces of blood from it, and about eight more this morning.

Oct. 30. He lost about ten ounces of blood by the artery last night; his head-ache is gone, and his eyes are a great deal better."

"Case 2.—A man, aged twenty-two years, had his left temporal artery opened Oct. 16th, from which he lost twenty ounces of blood.

Oct. 22. He went out yesterday, and the artery broke open of its own accord, and discharged as was supposed, three or four pounds of blood

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## SECONDARY HÆMORRHAGE. 245

before it was stopped. His head is no better; his pulse is a little quick, and not very low.

Oct. 26th. The artery bled twice last night; his head is a good deal better.

Oct. 29. The head-ache is quite gone. The artery discharged eight ounces of blood yesterday."

In the course of the eight following days, the artery burst open six different times, but the quantity of blood lost is not mentioned.

At an early period of my practice, a young woman received an accidental injury of the eye, which produced extravasation of blood into the anterior chamber. Being called a few minutes after the accident, and having witnessed the unfortunate termination in blindness of similar accidents under ordinary treatment, I determined to take blood freely from the trunk of the temporal artery; this was effected without loss of time, and a sufficient quantity of blood abstracted to induce faintness; the bleeding ceased spontaneously, when she became faint. The artery was divided across, for at the time this case occurred, before any severe instance of secondary hæmorrhage had come under my own observation, I trusted to the statements of authors that the full division of the artery, and the subsequent retraction of the ends of the vessel, would be a sufficient security against hæmorrhage. Before an

### 246 SECONDARY HÆMORRHAGE

hour had elapsed, I was hastily summoned to revisit the patient, who was losing blood from the temple so profusely, as to alarm those about her, so that their attempts to stop it had proved quite ineffectual. I secured the lower end of the artery by the tenaculum and ligature; but still the blood continued to flow almost as fast as before the ligature was applied. On careful examination it was evident that the blood did not flow from the lower orifice, which I had tied, but from the upper portion of the divided artery, the inosculations having been sufficiently free to supply the upper part with blood so fully as to produce a continuous stream. On securing this upper orifice in the same manner as the lower, the flow of blood instantly ceased. The parts were cleaned, the edges brought together by a strip of plaster, and no further inconvenience was experienced. The blood effused into the anterior chamber of the eye was absorbed, and she regained perfect vision. This case induced me to reflect upon the causes of secondary hæmorrhage, and established in my mind the principle, that it was not consistent with the patient's safety to trust either to the division of the artery, or to a ligature placed on the lower orifice only, which opposes the direct current of blood from the heart; but that to be perfectly secure, the upper orifice must also be tied to guard against the pouring out of blood in

a retrograde direction, when the inosculating vessels are so free, as in the preceding case, as to supply fully the upper part of the vessel above the orifice.

I may mention another case which came under my observation, by the occurrence of alarming secondary hæmorrhage. The patient, a man beyond the middle period of life, had had the trunk of the temporal artery opened during an epileptic fit, with immediate relief; a bandage had been applied to the head. At the distance of several days I was called from my bed to visit the patient, who was drenched in blood, pale and exhausted. Being in humble circumstances, he was not accustomed to burn a light in his room during the night, and the attention of his wife was called to him by hearing a sort of groan, and finding the bed wet between her and her husband. She got up, and was horror struck when she found her own linen and that of her husband, as well as the bed, steeped in blood, which had flowed from his temple. No very accurate estimate could be made of the quantity of blood thus lost, but it must have been very considerable. The further hæmorrhage was easily prevented by a graduated compress and bandage; but as its continuance became irksome, his attempts to shift the inconvenience, probably disturbed the situation of the compress, and at intervals of a few

## 248 ADVANTAGES AND DANGERS

days, hæmorrhage recurred, although to no greater extent than might be expected, being immediately commanded by the pressure of the finger, till the bandage was re-adjusted. Under these circumstances, I determined to expose and secure the artery, which was effected, but not without some difficulty; for the condensation of the surrounding parts had deprived them of all that elasticity of the cellular membrane which affords facility in exposing an artery when the parts are in their natural condition, and the dividing of the condensed parts was like cutting through cartilage. The ligatures separated, and the wound healed without any untoward circumstance, there being no return of hæmorrhage after the vessel was tied.

Some years ago, a poor woman applied as an out-patient to a hospital, labouring under that effusion of lymph or matter into the anterior chamber of the eye, the result of intense inflammation, which authors designate by the term *hypopion*, and which so frequently terminates in blindness, by the bursting of the anterior part of the eye. Having mentioned several similar instances in which recovery had been effected by the use of arteriotomy, combined with other usual means, I was requested to open the artery. The patient was timid, and faintness occurred in the beginning of the operation; the artery was fairly opened, but, as might be expected under such

#### OF ARTERIOTOMY.

circumstances, the blood did not flow immediately. Being called away, I placed a couple of small ligatures under the artery, to be in readiness to secure the vessel after sufficient blood should be drawn, and cautioned the gentleman for whom I had officiated in opening the artery, "Take care, Mr. —, the artery is fairly opened; the poor woman is faint from apprehension; wait till she recovers from her faintness, and you may take as much blood as may be necessary; but don't forget to tie the vessel above and below the orifice." One of the surgeons coming into the room, ridiculed the idea of ligatures to the temporal artery! and directed them to be taken away. The poor woman was sent about her business, but before an hour had elapsed, she was brought again to the hospital, almost lifeless from the loss of blood; so much was the poor creature reduced, that for some days it was doubtful whether she might recover; she did recover, and was fortunate enough to save the eye, to relieve which the opening of the artery had been performed.

In thus pointing out to you some of the occasions which have led me to take the precautions I have recommended, to prevent secondary hæmorrhage, I must in candour inform you, that my ideas on this subject are widely different from those of many of my professional brethren, whose

## 250 DIFFERENCE OF OPINION

rank and opportunities entitle their opinions to respectful consideration; and whilst I thus differ in professional opinion on what I consider an important point of practical surgery, I yet entertain feelings of regard and esteem for some of the individuals whose opinions and practice are opposite to my own.

I have never known any harm result to patients from carefully securing, by ligatures properly adapted to the size of the vessels, every arterial branch which from its size or situation might be likely to produce secondary hæmorrhage; but I have known much alarm and injury to patients by omitting these precautions, and I dare say there are few, who have seen much of surgical practice, who have not known of instances of secondary hæmorrhage proving fatal after surgical operations.

I recollect the case of a child (in one of the metropolitan hospitals) who died from repeated hæmorrhage, from the accidental division of the temporal artery, in opening an abscess.

In an operation performed in one of the hospitals of this metropolis—the extirpation of a diseased female breast, the wound was dressed, and the patient put to bed without one single bloodvessel having been secured by ligature, although several arterial branches were divided, and the patient lost so much blood as to become faint

## RESPECTING HÆMORRHAGE, &c. 251

before the operation was concluded. Secondary hæmorrhage took place in less than an hour after the operation, which alarmed the patient, and rendered the bandage and every thing in contact with her wet with blood. It was necessary again to open the wound, and before the hæmorrhage was fully restrained, eight vessels were secured by ligature.

I could adduce many instances of similar import, were it needful. I do not mention the difference of opinion before alluded to, for the purpose of censuring the practice of others, but to explain the grounds on which my own opinions and practice have been formed and to induce you to examine and reflect upon such cases as may fall under your observation, that you may thereby be enabled to judge for yourselves.

Having now pointed out to you the various modes generally adopted, and the motives usually acknowledged for the abstraction of blood, let me entreat you not to content yourselves with the mere ability to perform the different operations for this purpose in a safe and unexceptionable manner. No doubt some of you may be called upon to perform these operations, by the direction of others who hold the responsibility; but every surgeon ought to be enabled to determine the propriety of any operation he may be called upon to perform, and firmly, though without asperity, to

## 252 CONDUCT OF A SURGEON.

decline the performance of it, if he feel assured that it is inconsistent with the welfare of the patient.

I may mention an instance in which this determination of the surgeon averted a premature death by surgery. A patient of a public charity, had a arge swelling, which projected at one of the loins and was in consultation determined to be lumbar abscess. One of the surgeons of the institution was directed to open it. It was an aneurism of the abdominal aorta, which he immediately recognised as such, and declined to perform the operation. The accuracy of his diagnosis, was verified at a distant period by dissection.

The difficulties of determining, of estimating the various indications, presented in many doubtful or obscure cases, for and against blood-letting, often require the exercise of a sound judgment, which can only result from accurate elementary knowledge and habits of careful observation and induction.

Very often there is only a choice of difficulties, when I need scarcely remind you, the course the least injurious in its consequences should be preferred; and not a mere temporary relief at the greater cost of remote and protracted suffering.

This involves the consideration of *milder means* as, in many instances, safe and proper substitutes for *heroic* remedies and *heroic* doses.

### RATIONALE OF BLOOD-LETTING. 253

You should ask yourselves on what principle you direct blood-letting?

To what extent it may be necessary and safe? Under what circumstances, excess of depletion (sometimes even in a slight degree) may be either immediately or remotely dangerous?

What particular modification may be the most conducive to recovery in any given case?

In fact, to understand, as far as our limited knowledge will permit, the *rationale* of the remedy, and not either to prescribe it empirically when rational indications of treatment may be traced, or to perform it mechanically, like a mere machine, when circumstances may occur during the operation, requiring modifications which might be overlooked or not anticipated by the mere prescriber

# LECTURE X.

Recapitulation.—Means of restraining Hæmorrhage—Mode of Instruction adopted—Importance of Ordinary Duties—Mr. John Bell's Reflections—Dangers from Ignorance—The Value of Precision—How to be acquired— The Compression of Arteries—Its practical Value—Fatal Accidents—How to be averted —Rules and Reflections.—Various suggestions relating to Hæmorrhagies, from the Nose, from Varicose Veins, §c.

*Recapitulation* of last lecture.—Some details of the mode of restraining hæmorrhage from leechbites.—The occasions calling for, and some additional precautions relating to bleeding from the jugular vein.—The accidents.

Arteriotomy—its uses—its comparative value the situation to be preferred according to the intentions of the operator—the requisites—the anterior branch—the mode which I have adopted when it was intended to open the trunk of the artery—the precautions to guard against failure the preference which I have given to ligatures over other modes of obviating secondary hæmorrhage—

# MODE OF INSTRUCTION ADOPTED. 255

allusion to the accidents which have been known to result from arteriotomy, with instances—and lastly, the importance of being enabled to take correct views of the remedial powers of bloodletting, that without error, the means may be adapted to the end.

ON THE MEANS OF RESTRAINING HÆ-MORRHAGE.—It is not my intention at this period of the lectures, to enter upon the consideration of the various operations for securing by ligature the principal arteries, which will form an essential part of the subsequent course; but to point out the mode in which some of the hæmorrhages from common accidents may be restrained, and to add a few remarks on the compression of the trunks of the great vessels, in addition to the *demonstration upon the living body*, without which verbal directions, on this subject, will be of little value.\*

Over hæmorrhage from internal vessels we have little controul, except by taking off, or reducing

This explanation is necessary to account for the brevity of the notice, which is not meant as a full description, but merely as a memorandum of the subjects elucidated by demonstration.

<sup>\*</sup> Not only was the compression of all the principal arteries demonstrated by the Lecturer upon the living model, but it formed a part of the *Practical Exercises of the Students* under his immediate superintendance, not merely by the application of the tourniquet, but also in the simplest manner, by the finger only, until both readiness and precision were attained.

### 256 VALUE OF ORDINARY DUTIES-

the impulse of the heart, by a more speedy loss of blood, so as to induce faintness; but in wounds of the extremities, the hæmorrhage may, for a time, be commanded by compressing the arterial trunks as they pass out from the body.

Among the ordinary duties of the surgeon, there are none of higher importance than those which relate to the suppression of hæmorrhage, in the various and sudden accidents which expose the larger blood-vessels to injury. Even the young surgical student should be early initiated by practical instruction, into the means by which hæmorrhage may be temporarily restrained, until competent surgical aid can be obtained; and I have great pleasure in reflecting upon the fact, that I have known this early initiation in useful attainments to be the means of preserving several lives, which must have been sacrificed, had the time been lost, until the assistance sent for in the first instance was procured.

How much the efficiency of the surgeon depends upon his knowledge of surgical anatomy, has been forcibly illustrated by Mr. John Bell, in the preface to the second volume of his Anatomy, which relates to the Heart and Arteries.

"The arteries, I will now venture to say, should be with the the surgeon as familiar as his name; and there is no argument which proves it more strongly than this, that a man of real learning, of sterling good sense, of a clear head and steady hand, a man accomplished in all other respects, and fitted by

# MR. JOHN BELL'S REFLECTIONS. 257

nature and genius for performing the most difficult operations, if yet he want this part of knowledge, may, in one unhappy moment, do things which he must think of with horror during all his life. A surgeon hardly believes this strict knowledge of the arteries to be so great a point. In the midst of an operation, or in a common wound, it gives him no concern to see arteries bleed which he did not look for; nor has he great reluctance to drive his needle among parts which he does not know. An artery bleeds, and he looks for it; he calls out at last to screw the tourniquet, and it stops; the tourniquet is loosened again, and again it bleeds; again the screw is tightened on account of the loss of blood ; he expects to strike the artery; he is accustomed to strike it, not by knowing where it lies, but by seeing it bleed: at last some lucky dab of the needle succeeds, or perhaps from faintness of the patient the bleeding ceases: the surgeon is relieved from his present anxiety; but in a few hours he is called back to this scene of confusion and dismay: yet at last the bleeding is somehow or other mastered; and thus he gets on through all his difficulties, accident after accident, operation after operation, till at last he almost forgets that anatomy was a branch of his education, or the knowledge of blood-vessels necessary in operations or wounds.

"I will not say that a man cannot suppress a bleeding from a wound in the arm, because he is not acquainted with the anatomy of the arm; but this surely I may be allowed to say, that it is a piece of knowledge which at all times, but especially in those circumstances, can do no harm; and that if you leave a patient to choose betwixt two surgeons, one skilled in the knowledge of arteries, another knowing them only by seeing them spout out blood, it is easy to foretel where his choice will fall.

"Perhaps some will be so hardened as to say, 'and yet we seldom hear that patients die of bleeding.' Is it then a merit that your patient is not plainly killed; that he does not expire under your hands? Is it nothing to lose blood from day to day? Is it nothing that your patient is reduced to extreme weakness, suffering every thing but actual death? Is it nothing that he lies with tourniquets round the limbs in fear and anxiety, attended by young surgeons appointed to watch that bleeding, which may burst out while the patient turns in bed, and destroy him in one moment? Is it nothing to have fresh incisions and new searchings for the artery to endure ?- These are real difficulties and dangers, and they should be provided for; our honour as well as our duty requires it. Bleeding from a great artery is to the patient the greatest danger : the very report of an ill accident is to the surgeon (though, God knows, he may be blameless) the greatest disgrace; and, lastly, though it should not be so, his taking up a bleeding artery dexterously and quickly, when others have failed, is a great honour."

There are many useful points of instruction which are passed over as self-evident; and yet a want of precision in these apparently trifling matters, has been known to endanger life. Every tyro is supposed to know how to apply and to manage the tourniquet: yet have I seen in an operating theatre of a public hospital, not only awkwardness in the use of it, when managed by students, but even in the hands of the principals, it has happened at no very distant date, that the adjustment has been so entirely inefficient, that on dividing the parts in amputation of the thigh, the blood has gushed out from the femoral artery to a distance of several feet, and as freely as if no tourniquet had been applied !

The tourniquet, in ignorant hands, is a dangerous instrument, and strangulation and mortification of the limb have in many instances been known to result from its too long continued application: moreover, even in its use for a moderate

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time, many who employ it, are not aware of the tremendous extent of mechanical power gained (at the expence of velocity) by the combination of three of the mechanical powers, namely, the lever, the screw, and the pullies. which are united in this instrument, to compress a blood-vessel which may be effectually obstructed by the point of the finger, applied exactly to the spot where the compression ought to be made. The principle already pointed out (page 241) relating to the temporal artery, is equally applicable to the temporary or permanent compression of the larger arterial trunks.

Before the young student be trusted to use the tourniquet upon the living body without superintendence, as may sometimes happen in cases of great alarm from sudden hæmorrhage, he should try it upon one of his own limbs, and then (if his knowledge of mechanics should fail in the way of premonition) his feelings would inform him, that the application of a degree of force easily exerted by the hand, when applied to the handle or double lever of the instrument, might cause an infliction of pain which could not readily be forgotten.

The arrangement of the strap—the place of the buckle, of the pad, and of the instrument itself, should be clearly understood, so as to guard against error in actual practice, and this degree of

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# 260 PRECISION, HOW TO BE ACQUIRED.

readiness and precision may be acquired as certainly as that of the recruit under the discipline of a drill-serjeant. Can it be supposed that the means of preserving life are unworthy of the instruction systematically adopted in teaching the means of destroying it: or that young gentlemen, brought up to the study of surgery should be incapable of that persevering exertion from a sense of duty, which the recruit adopts from necessity, till his exercises are unexceptionably performed?

Let the surgical student, when instructed in the elementary knowledge which is necessary as a preliminary, be made to perform (under superintendence which may both lead and assist when required) the following exercises upon the living body.

The compression of the arteries which supply the face and scalp, (and which in wounds often pour out blood so freely, as to render the securing their open mouths by ligature, difficult) namely, the fascial, the temporal, and the occipital.

The compression of the subclavian artery above the clavicle, just after it has emerged from between the scaleni muscles, and where it rests upon the first rib.

Let the student be aware (by the same mode of instruction as that suggested relating to the tourniquet) of the difference between the compression of the artery, so as effectually to stop the current

## THE COMPRESSION OF ARTERIES. 261

of blood, and consequently, the pulse at the wrist, (which may be done without pain) and an equal degree of pressure upon the nerves which lie contiguous to the artery; and which unless the pressure be neatly and properly applied, can scarcely escape: he will then have some idea of the difference between a proper degree of care and the want of it. He should also be taught to estimate the number, size, &c. of the branches which by their inosculations may still pour out blood, even when the trunk of the artery is effectually compressed.-At the shoulder and hip these sources of supply are very important; for although they may occasion difficulty during an operation, they are the means by which the life and circulation of the limb are preserved when the principal trunk has been obliterated, either by disease or by surgical operation.

The compression of the continuation of the same artery, (though called by a different name) below the clavicle. The soft parts being thicker, this situation for compression is not to be preferred.

The compression of the axillary artery in the arm-pit.

Let the student ascertain practically in which of these three different situations the artery can be most readily and most effectually compressed,

## 262 COMPRESSION OF ARTERIES-

and at the least expense of pain to the (model or person representing the) patient.

The compression of the humeral artery, at various points between its origin and termination, noting the point to be preferred, on the grounds above stated.

The compression of the radial and ulnar arteries at the wrist.

This frequently is necessary in wounds of the arteries of the hand.

The compression of the inguinal or femoral artery as it passes over the edge of the pelvis.

The same personal observation as to the difference between compressing the artery only, and including the anterior crural nerve, which is contiguous, in the pressure.

The pulsation of the anterior or posterior tibial artery at the foot, will afford the test, whether the pressure be inefficient or effectual.

The compression of the femoral artery at the upper and inner part of the thigh.

The compression of the popliteal artery in the ham.

The compression of the anterior and posterior tibial arteries, at the foot.

When the student can perform the preceding exercises unexceptionably, making the pressure with his own fingers or thumbs, by which he will acquire a more correct knowledge of the degree of pressure required, than by using any inanimate substance intermediately; then, and not till then, should he be allowed to repeat the same exercises, using the tourniquet instead of the pressure of the fingers.

Many suppose that the tourniquet cannot be used in some of these situations; but by a little mechanical ingenuity, it may be made to bear upon any given point, and when a qualified assistant cannot be obtained, must be made to serve as a substitute: and if a regular tourniquet cannot be had, the means of making a simple, yet effectual one, from common materials, must be known.

Of the practical value of this sort of knowledge, I cannot adduce a stronger instance than one related by Mr. John Bell, and which at an early period of my own studies, made a deep impression upon me.

"All these accidents must come upon the surgeon very suddenly; and if they come upon him unprepared, all is in a moment lost. I once saw a fine young fellow die from this alarm of the attendants and confusion of the surgeon. He was a tall, stout, young man, who was sitting at table with his companions eating bread and cheese, taking his glass, and telling his tale. He had in his hand a sharp pointed table knife, which he happened to hold dagger-wise in his hand, and in the height of some assertion or oath he meant to strike the table, but the point missed, and slented over the table; he had stabbed himself in the femoral artery, and with one gush of blood he fell to the ground. When I came, I found the young man stretched out upon the floor; he was just uttering his last

#### FATAL ACCIDENTS-

groan; the floor was deluged, all slippery, and swimming with blood. The wound was covered with a confused bundle of clothes, which I instantly whirled off; and in that moment two gentlemen, who had been first called, and who had both run off for tourniquets (because tourniquets are used to stop bleedings) returned; and had the unhappiness to see that the hole was no bigger than what I could close, and had actually shut up with the point of my thumb; and which, had it been shut and put together with a good compress, would have healed in three days, forming a large beating aneurism within, allowing time for a deliberate operation."

Several years ago, I witnessed as a casual spectator, (for the gentleman in charge of the patient, did not choose to receive assistance) an unfortunate sufferer expire from hæmorrhage, the femoral (where it becomes the external iliac) vein having been torn by a spike, owing to a slip in getting over an iron railing. In this instance, the mistake in compressing the part above the wound, supposing the artery to be wounded, although the dark colour, and uniform stream of the blood shewed it to be from a vein, was a great and dangerous error: but, although I believed that the immediate loss of life from hæmorrhage might have been averted; yet, from the uniformly disastrous results of operations for aneurism, in which I have known the principal vein of the limb to have been wounded or included in the ligature, I doubt whether any surgical treatment could have effected more than a temporary prolongation of life.

Let me entreat you, in the performance of your trying and arduous duties, not on any occasion to

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# HOW TO BE AVERTED .- RULES, &c. 265

lose your presence of mind, but to qualify your selves to see and distinguish what is before your eyes, which, in surgery, may be considered a power of almost inestimable value. This self-possession, which enables the mind in the moment of danger to view things as they really are (and not as distorted by alarm or by vague fears) is very different from mere animal courage, and can only be acquired by faithful studies-by a confidence derived from the requisite elementary foundation in knowledge appertaining to the subject; and from the habit of considering, what, under certain probable circumstances or accidents, ought to be done: these preliminary considerations will be greatly facilitated by tracing and analysing the various cases, alas! far too numerous, which have terminated fatally, owing to the absence of this preparedness on the part of the surgeon.

I have endeavoured to lead you to deduce principles of treatment; but should you wish to have a general rule for your guidance, in wounds implicating the larger blood-vessels, I must say, that no absolute rule can be applicable to all cases: the treatment must vary with circumstances.

If in a recent injury of this kind, competent surgical aid can be obtained, the securing the wounded artery by ligature or ligatures, I should consider the proper treatment; and far more consistent with the safety of the patient, than that

## 266 PRINCIPLES AND RULES.

suggested by Mr. John Bell, at the conclusion of the impressive case, which I have related from his work (page 264) of permitting aneurism to form, for the purpose of allowing time for a deliberate The surgeon whose mind is preoperation. pared for the faithful performance of his duties, the more arduous of which may be suddenly required, will be especially careful to ascertain correctly the facts of any case, that he may rightly (yet as promptly as the urgency of the case may demand) determine what ought to be done; and having so determined, the least practicable delay in carrying the dictates of a sound judgment into effect, will most essentially promote the safety of the sufferer in need of surgical aid. Every ope ration, whether required suddenly, or after long deliberation, ought to be performed with decision, yet tempered with that anxious regard for the patient's welfare-with that caution and foresight which guard against every probable and superable danger, and as far as human means can effect, tend to insure success.

On the other hand, suppose a student to arrive first, or even a practitioner (however unwilling to be thought incompetent) who might be conscious that neither his previous studies nor his habits or opportunities qualify him for a task, on which the life or death of a fellow-creature depends,—a task, however simple and easy it may be to any

one who has made himself thoroughly master of the subject, yet to the unprepared both difficult and dangerous :--- (so difficult as in many instances to have proved impracticable-the Gordian knot being solved-by amputation;-yet even this dreadful infliction perhaps too late to save the life of the sufferer :---)under such circumstances, I should deduce the following aphorism as applicable to the temporary management of the case, and as a General Rule in recent wounds, attended with great hæmorrhage: namely, that to compress steadily with the tip of the finger the very point from which the blood issues, will command the largest artery which may be divided; neither need the pressure, if accurately applied, be so great as to prevent its being continued for a considerable time if required.

Hamorrhage from the nose may arise from various causes, such as the simple rupture of a blood-vessel, from erosion by ulceration, and not unfrequently from surgical violence in the removal of polypi from the nostrils. The first may, generally, be restrained by position, by diminishing the quantity of blood in the system by a speedy abstraction from a free orifice in a vein, and by the direct application of cold and styptic remedies to the internal surface from which the blood is poured out. Should these means not succeed in restraining the hæmorrhage, the

# 268 HEMORRHAGE FROM THE NOSE.

plugging of the posterior orifice of the nostril must be resorted to; and although it will seldom be required when the previous measures have been judiciously employed, yet it may happen that the patient is so far exhausted before surgical assistance be obtained, as to render the immediate plugging of the nostril necessary to his safety. An instance of this nature, occurred in the person of a poor Irish labourer, who, when at work, was seized with vomiting of blood, and so sudden was the effect produced that his fellow workmen believed him about to expire on the spot. His countenance was pale and deathlike, and he was unable to support himself, having become faint by the loss of blood, the quantity of which was extremely large, and, as has been stated, had been ejected from the stomach; but, on investigating the case, I found the blood had flowed from the nostrils before he became sick, and that his position had subsequently been such as to allow the blood to fall into the throat, from whence it had passed into the stomach; this was verified by the continuance of the hæmorrhage from the back part of the nostrils, though, from his enfeebled state, it was not so rapid as at first. In this case no time was to be lost, and the plugging of the posterior aperture of the nostril was speedily effected, and the hæmorrhage immediately ceased.

## INVESTIGATION OF THE CAUSES. 269

I may be allowed to digress to recommend you to accustom yourselves to make, before-hand, your arrangements for the treatment of sudden and dangerous accidents, that when they occur you may readily find the necessary apparatus; for delay, in the proper use of means, often amounts to the loss of life of the unfortunate sufferer.

There are few instances of disease in which the patient may not derive advantage from the medical attendant investigating the circumstances under which the disease has occurred, so as to enable him to take a comprehensive view of the causes, and thereby adapt the treatment to the exigencies of the case. A gentleman was suddenly seized with hæmorrhage from the nose, and the quantity poured out was sufficient to excite alarm; although considerably diminished by the usual means, the flow of blood was not quite stopped; it recurred, in a greater degree, at short intervals, and I feared I should have been under the necessity either of plugging the nostril or of carrying depletory means to an extent to which I have great objection, as it is too apt to injure the patient, or at least to leave him in a state of extreme debility for a long time; both these methods were avoided, by my having ascertained that this gentleman laboured under hypertrophy of the heart, and, consequently, that to take off the impulse of the blood from the vessel

#### CASES AND

ruptured in the nostril, it was necessary to moderate the excessive action of the heart, which had not been effected by the loss of blood he had sustained. This end was obtained, in a few hours, by the use of colchicum and digitalis, the successive doses being regulated by the influence which these remedies exerted over the heart's action. In this case, not only was the recurrence of bleeding from the nose prevented, but the disease of the heart, which had been the cause, was so far relieved by regulated diet and a mild use of the remedies before-mentioned, that for many months afterwards he enjoyed a degree of health to which he had long been a stranger.\*

In the employment of powerful remedies, I would strongly impress upon your minds the necessity of watching the effects produced, and of

• Notwithstanding that the gentleman whose case is here alluded to was a man of cultivated mind and of strong understanding, yet after a considerable period of freedom from indisposition, he discontinued those precautions relating to restrictions in diet, and particularly with respect to diluting liquids, and other circumstances of general management, which had been urged by his medical friend as essential to his safety : he suffered an attack of paralysis, which deprived him of the use of one side for a considerable time. Even from this alarming condition, by persevering care and attention, he again recovered; but at a later period, he suffered another and more severe attack, which suddenly terminated in death. His memory will long be cherished by those who knew and could appreciate the benevolence, piety and active humanity, which characterized his conduct.

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### ILLUSTRATIONS.

regulating the doses accordingly In an underdose, the best medicament is inefficient, and I need not tell you that an over-dose may destroy life. Constitutions and idiosyncrasies are so various, that what in one patient should be a proper dose, would be almost without effect on another, and yet capable of producing injurious effects upon a third.

The treatment of hæmorrhage from the nose, when it depends upon erosion by ulceration, although it may occasionally require the aid of the plug to restrain immediate loss of blood, must be regulated by more enlarged views, and that state of health which led to the ulceration and destruction of parts be corrected.

A gentleman in the country, who was supposed to labour under syphilis, for which he had taken quantities of mercury, sufficient to undermine the strongest constitution, after having suffered from ulceration within the nostrils and exfoliation of part of the spongy bones, became liable to frequent loss of blood from the diseased parts. A pint of blood was less than the average quantity thus lost, and the recurrence took place after irregular intervals of a few days; this repeated draining was more than, in his enfeebled state of health, he could sustain. It was suggested to the practitioner, under whose care the patient was, to plug the posterior aperture of the nostrils, which he

# 272 PRECAUTIONS AND INSTRUCTIONS

determined to adopt; but delayed from time to time, owing to the bleeding having generally ceased by the patient becoming faint before he could arrive, (the patient living at some distance from the town in which the surgeon resided) at length the sinking became so obvious, that the surgeon determined to use the plug the very next time that the hæmorrhage should return; he was called, and went provided, but before he arrived the sufferer had expired.

That hæmorrhage from the vessels which supply the anterior part of the nostril may take place, and which do not proceed from the spheno-palatine artery, cannot be denied; but from the lesser size of these branches the plug will rarely be required in such cases. Should it be necessary, the closing of the anterior orifice would then no longer be a matter of choice, as it would restrain the flow of blood beyond the cavity of the nostril, till that poured out should have time to coagulate.

In performing this operation, the object is rather to compress the artery which chiefly supplies the nostrils, (the spheno-palatine) than to prevent the blood escaping by closing the posterior orifice. An accurate knowledge of the form and extent of the posterior aperture of each nostril, and of the situation of the artery where it enters the upper and lateral part of the cavity, must be obtained by the study of the dissected

# IN PLUGGING THE NOSTRIL. 273

subject, as a necessary ground-work; for if the plug, or compress, be too large, it will not enter so as to make pressure at the proper place, and if too small it will not be effectual. The size of the openings in the prepared skull may serve as an approximation to the proportion in the living body, but cannot be accurate, the soft parts having been removed. It is also necessary to ascertain, whether the flow of blood proceed from one or both nostrils, for if from one only, to that should the compress be used.

The means may be simple enough : a bougie,\* curved, so that when passed along the nostril and carried onward, its point may be seen behind the soft palate; a thread, or ligature, slightly affixed or inserted into a nick made at the curved end of the bougie; a pair of dressing forceps; and a piece of fine soft elastic sponge, cut to the required size, to serve as the compress when introduced.

The operation consists in introducing the bougie with the ligature attached, through the lower part of the nostril, till the point appear behind and below the soft palate; this will be facilitated by inclining the head backwards; then, taking hold of the anterior half of the ligature, separate it from the end of the bougie, bring it out at the

\* A wire or metallic tube may answer the purpose as well as the bougie.

## 274 PRECAUTIONS AND INSTRUCTIONS.

mouth, and withdraw the bougie from the nostril; make a sliding loop on the fold of the ligature, into which introduce the sponge, carry it behind the soft palate with the forceps, then, removing the forceps, draw the ends of the ligature, which have remained at the anterior nostril, till the compress be fixed in its proper situation in the posterior aperture. The entrance of the sponge into the posterior aperture may be known by a slightly increased resistance; if properly adjusted, the cessation of the hæmorrhage is the immediate result. A small light compress may be placed at the anterior nostril, on which to tie the ends of the ligature, but it is rather with reference to the removal of the sponge, that it is convenient to keep the ends of the ligature sufficiently long, than from any necessity respecting the flow of blood from the nostril, for I have known this anterior compress removed soon after the operation without the slightest return of hæmorrhage.\*

• In plugging the posterior nostril, although the introduction of the conductor or bougie by the lower aperture is the most convenient to both the operator and patient, yet the point at which the spheno-palatine artery enters the nostril, being just behind and below the posterior extremity of the upper spongy bone, and consequently between that and the lower spongy bone it would be desirable that before the compress be drawn into the nostril, the ligature should be elevated so as to direct the compress between the upper and lower spongy bones.

This might easily be effected by using a tube as conductor to the ligature, instead of the bougie-or if the latter should be

### BLEEDING FROM HÆMORRHOIDS. 275

The compress should not be allowed to remain beyond the third or fourth day, and should be removed by pressing it gently backwards by a bougie, till a part of it may be seen and laid hold of by the forceps introduced by the mouth; the present use of the attached ligature being to prevent the sponge from falling down into the pharynx, when detached from the nostril.

The principal occasional difficulty relating to this operation, results from the unsteadiness of the patient. When the patient is steady, a very few minutes will suffice to complete it.

Hamorrhage from the hamorrhoidal veins, unless when a consequence of surgical operation, seldom takes place, but as a symptom of some constitutional derangement, which requires attention in a greater degree than the mere local malady. The local treatment consists in rest, the copious injection of cold or astringent liquids, such as the decoction of oak bark, the decoction of tormentil, &c. Should any case occur which did not yield to these means, the introduction of

preferred, a loop at the end of a twisted wire, an eyed probe, or other simple instrument, not too large for the space between the septum (which divides the bones) and lower spongy bone, might serve as a point of support to elevate the ligature at the moment the compress entered the nostril.

Without the above-named precaution to elevate the compress, to be effectual it must be larger than necessary, and the pressure be extended to parts beyond where it ought to act.

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a portion of compressed sponge, by means of a pair of forceps into the lower portion of the bowel, would act as a compress upon the vessels, the sponge by its elasticity adapting itself to the form and size of the parts, and expanding in a greater degree as moisture might be absorbed; but by attending carefully to the constitutional cause of the hæmorrhage, I have not found it necessary to use local compression.

Hamorrhage from the bursting of a varicose vein in the lower extremity is often dangerous, and sometimes fatal, from the sudden loss of a large quantity of blood.\* Patients who labour under a varicose state of the veins are extremely liable to ulceration of the legs, and the ulcers are less disposed to heal than under ordinary circumstances. The tying or dividing the varicose vessel has been recommended by some, and objected to by others, on account of the dangerous results which have followed it. In the early part of my practice I have performed the former operation, and without any ill effects; but as I have satisfied myself since that by due attention to the general health, and by well adapted support of the limb, the comfort and safety of the patient may be secured, I do not think it right to

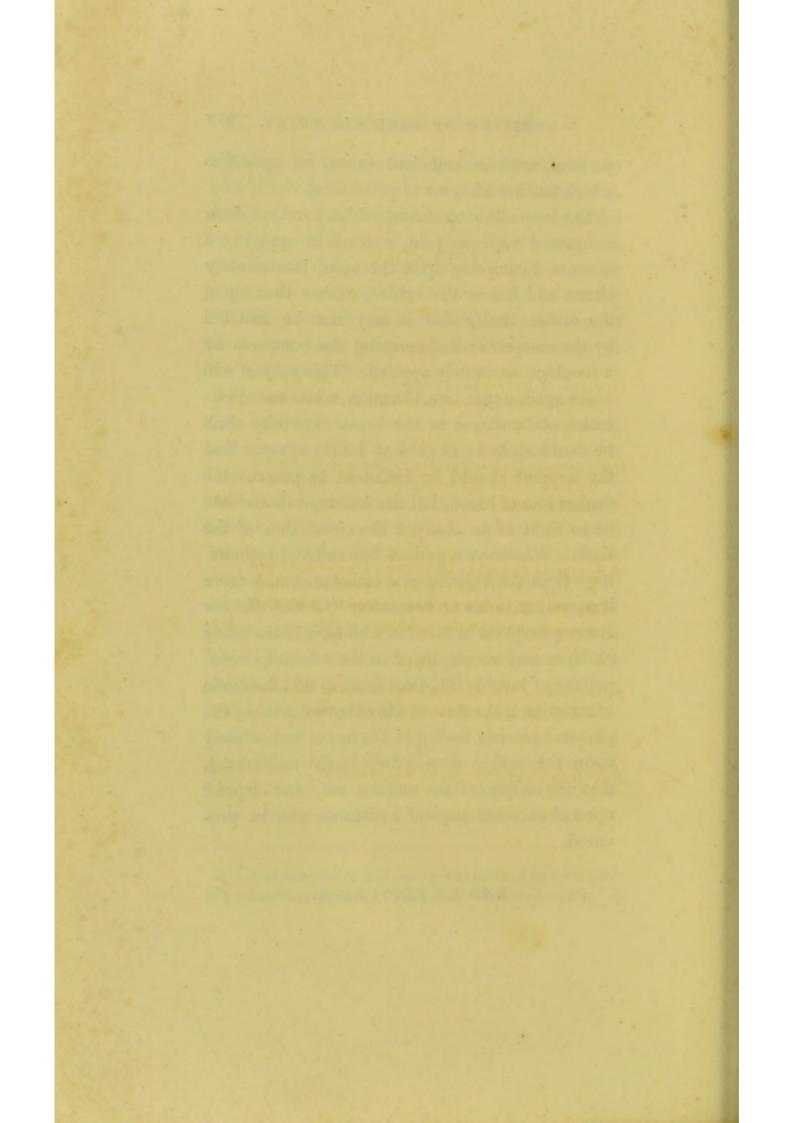
\* A fatal instance of this nature was detailed in the report of a coroner's inquest, in "The Times" of December, 1825.

## BURSTING OF VARICOSE VEINS. 277

perform, without sufficient cause, an operation which has been known to prove fatal.

The immediate treatment of hæmorrhage from a ruptured varicose vein, consists in applying a graduated compress upon the vein, immediately above and below the orifice, rather than upon the orifice itself, that it may not be irritated by the compress; and securing the compress by a bandage accurately applied. This subject will come again under consideration when the application of bandages to the lower extremity shall be demonstrated; at present I may observe that the support should be sufficient to prevent the further loss of blood, but the bandage should not be so tight as to obstruct the circulation of the limb. Whenever a patient has suffered hæmorr hage from the bursting of a varicose vein, I deem it necessary to his or her safety (for this disease is more frequent in females who have borne many children and are employed in the laborious occupations of humble life, than in men) that the mode of restraining the flow of blood by uncovering the part and placing the tip of the finger immediately upon the orifice should be clearly understood, that the safety of the sufferer may not depend upon chance till surgical assistance can be procured.

### END OF LECTURE X.



## APPENDIX.

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#### APPENDIX.

## (A.)

# OUTLINE of the GENERAL ANATOMY of the MUCOUS MEMBRANES. (Referred to in the Text at page 116.)

THE following are the Anatomical Descriptions with Physiological and Pathological Remarks, originally published in the "Observations on the Inflammations of the Mucous Membranes of the Organs of Respiration," which are alluded to in page 116, and there omitted, as supposed to be already in possession, or within the reach, of every member of the profession who might have access to a well selected library. But as the works to which reference was made are chiefly foreign, and are not translated into our language, and as there are some students who do not read French works, it is deemed proper to insert them in this place; it having been observed by a gentleman who had derived his first knowledge of the subject from this outline, when in the country, that he did not think he could have understood the subject so as to act upon it as he had done, in the case of a near relation, with decided benefit, had the anatomical descriptions and remarks which were introductory to the "Observations, &c." been omitted.

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### OUTLINE OF GENERAL ANATOMY. 281

### OF THE MUCOUS SYSTEM.

The Mucous System is invariably found under the form of membrane: its name is derived from that of the fluid which habitually lubicrates it, and which is secreted by small glands inherent in its structure.

In speaking of the mucous organs, they are almost always designated by the name of membranes. The study of these membranes is perhaps not yet sufficiently cultivated, though few of the parts of which the human body is composed deserve more attention, as these membranes are the seat of numerous maladies. We are indebted to the philosophic labours of Pinel and Bichat for the first anatomical and physiological investigation of them.

### OF THE DIVISIONS AND FORMS OF THE MUCOUS SYSTEM.

The mucous membranes occupy the interior of the cavities which communicate with the skin, by the different openings which this covering presents at the surface of the body. Their number, at first sight, appears very considerable; for the organs within which they are reflected, are numerous. The mouth, the œsophagus, the stomach, the intestines, the bladder, the urethra, the uterus, the ureters, all the excretory ducts, &c. borrow from these membranes, a part of their structure. Notwithstanding, if we consider that they are continuous, that we see them throughout prolonged the one into the other, as they arise primarily from the skin, one may conceive that the number should be singularly limited. Although in practice, we must consider them as individual membranes, according to the part over which they pass; yet if taken in their connected form they may be reduced to two general surfaces, which, on account of the diverse parts to which they are distributed, may be called, the one gastro-pulmonary, the other genito-urinary. The former is met with in the head, in the neck, the chest, and in the abdomen. The latter in the abdomen, and in the pelvis.

There is yet a small insulated mucous surface, it is that

which enters the opening of the nipple, and lines the lactiferous tubes. But it is so small, that it merits little attention.

### OF THE TWO GENERAL MUCOUS MEMBRANES, THE GASTRO-PULMONARY AND THE GENITO-URINARY.

The gastro-pulmonary surface penetrates into the interior by the mouth, the nose, and the anterior part of the eye.

- 1. It lines the first and second of these cavities; it is prolonged from the one into the excretory ducts of the parotid and submaxillary glands; from the other it extends into all the sinuses, forms the conjunctiva, dips into the lachrymal passages, the nasal canal, the lachrymal sac, and is continued into the nose.
- 2. It descends into the pharynx, and furnishes a prolongation to the eustachian tube, and thence into the internal ear.
- 3. It is continued into the trachea and is distributed to all the aërial passages.
- 4. It penetrates into the asophagus and into the stomach.
- 5. It extends into the duodenum, where it furnishes two prolongations, destined, the one for the ductus choledecus, to the numerous branches of the hepatic duct, to the cystic duct, and to the gall bladder; the other for the pancreatic duct and its diverse branches: it then lines the small and large intestines, and lastly, terminates at the anus, where we find it identified with the skin.

The second general mucous membrane, which has been named as the genito-urinary, penetrates in man by the urethra, and from thence extends in one direction, to the bladder, the ureters, the pelvis of the kidneys, the mamillary processes, and the capillary tubes which open at their summits; in the other, it descends into the excretory ducts of the prostate, into the ducts of the vesiculæ seminales, the different canals, and the innumerably folded branches which produce them.

In the female, it lines also the vagina and uterus, and terminates at the extremities of the fallopian tubes, where it joins the serous membrane.

The division of the mucous membranes into two general surfaces, rests on anatomical inspection, confirmed by pathological observation, for it is found that the different portions of each general membrane may be affected, whilst there is no disease in the other.

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### OUTLINE OF THE MUCOUS MEMBRANES. 283

The sympathetic phenomena, if the term may be permitted, between the various parts of the mucous surfaces with each other, and between the mucous system and the skin, and other parts, will afford ample scope for reflection, and if accurately considered, may also suggest valuable indications in the treatment of the diseases of the various organs. Thus by way of illustration, irritation of the membrane lining the nostril, will frequently call into forcible action all the more powerful muscles of respiration in the act of sneezing. The irritation of calculus in the bladder is often felt at the extremity of the urethra, far distant from the point of contact—the troublesome itching sensation in the nostrils, from irritation in the bowels by worms, &c.

The minute description of structure, relations, &c. would be misplaced in this outline. It may however be observed, that each portion of membrane presents two surfaces, the one adherent, the other free. The latter presents the important consideration, that it is at all times exposed to the contact of substances heterogenous to those of the animal. From this consideration we may infer, that the mucous membranes interpose a limit or barrier between our organs and extraneous bodies, and perform the same office to the internal organs, as the skin performs to the external, guarding them from the hurtful impression of those bodies which surround the animal, and constantly act upon it.

The organization and vital properties of these membranes, are adapted to this habitual contact of bodies heterogenous to the living economy, and many substances which in other parts of the body, would excite inflammation and suppuration by their simple contact, pass along the surface of these membranes with impunity, if they do not possess asperities to occasion mechanical injury. The mucous surfaces, when they protrude without the body, become exposed almost with impunity to external excitants. This forms a striking contrast with the exposure of the serous membranes. Hence we may conclude, that the mucous and cutaneous systems only, are capable of supporting the contact of extraneous bodies without injury, or merely suffer by an increased secretion, by no means dangerous. It would further appear, from the sensibility possessed by these two systems, (the mucous and the cutaneous) that nature had provided them as sentinels, to give notice of that which might be hurtful.

The thickness of the mucous membranes is often much altered by disease. The papillæ which cover the chief of the free surfaces, are in many parts perfectly obvious.

The various results of different observers, esteemed for the accuracy of their observations, would when applied to the strict and minute structure of the mucous membranes, almost lead us to the mortifying consideration, that little or nothing is certainly known of their ultimate structure. The study of the vital properties, which these membranes exhibit, may be of greater use, and will probably suffice for all practical purposes. It has been observed, that microscopic instruments do not appear to have afforded any great or essenital assistance to anatomy and physiology, since every one sees in his own manner and according to his own fancy.

Besides the blood-vessels, the exhalants and the absorbents, there are intimately connected with the membrane, numerous minute glands, called the mucous glands. Situated under the chorion, or even in its substance, they pour out incessantly, by imperceptible orifices, the mucilaginous fluid by which these surfaces are moistened. These glands are apparent in the bronchia, œsophagus, &c.

Although the composition of the mucous fluids is but little known, from the difficulty of collecting them in a natural state, the functions which they perform do not admit of doubt, viz. as before hinted, to defend the mucous surfaces from the impression of the bodies with which they are in contact, and as it were to supply a layer, whose properties correspond with those of the cuticle. As the impression becomes hurtful, these fluids are increased in quantity, as may be instanced by the effect of a catheter or sound kept in the urethra. This also is one of the causes of the difficulty of keeping an elastic tube in the trachea, the abundance of mucus closes the orifices of the instrument, renders the frequent introduction necessary, and even threatens the patient with suffocation ; indeed this

## OUTLINE OF THE MUCOUS MEMBRANES, 285

has actually happened in experiments on the lower animals.

It appears then, that any strong excitement of the mucous surfaces, determines a remarkable increase of action in the correspondent glands. Many facts might be adduced in illustration of this position.

On this principle of irritation we are in the habit of using blisters, and it is but reasonable to expect, that we shall experience in many cases, still greater benefit from the excitement of the mucous membranes. Much of the benefits arising from emetics, purgatives, &c. may be attributed to their action on the mucous membranes. Bichat has observed, that we may generally advantageously substitute the excitement of the mucous surfaces in the treatment of diseases for that of the skin ; as the former requires only the simple contact of a body, without producing a sort of ulcer, as in the latter. My own experience has led me to consider the excitement of the mucous surfaces as infinitely more effectual than any cutaneous irritation; the surface on which we may act is much more extended, and the sympathies more direct. Few would trust the treatment of any important disease, say croup for example, to blisters and external irritants, but we well know that this disease and many others for which blisters are usually employed, may be successfully treated without their use.

The importance of the mucous membranes as emunctories, is well worthy of investigation; and when we consider the great extent of surface which they cover, and that they separate their fluids from the blood, and discharge them from the body, it will be readily conceived, how much the derangement of their functions must "influence the general health of the body. In some diseases, as dysentery for instance, the disease appears almost wholly confined to these surfaces, &c. The accumulation of the mucous secretions occasions uneasy sensations, which produce 'the effort to expel 'them'; Thus cough is a general result of accumulation of mucus in the bronchia, and serves to expel that fluid. Other instances might be adduced.

The blood vessels of the mucous membranes are numerous,

and on one side are but slightly supported, hence the frequency of hæmorrhage from the vessels of these membranes on severe coughing, and other violent exertions.

The exhalation from the pulmonary surfaces of the mucous membranes is too obvious to require elucidation. But whether the exhalation be merely aqueous, or whether any of the mucous fluid can be converted into vapour at the temperature of the human body, does not appear to have been submitted to direct experiment. Neither are we certain, that in a state of health, the fluids which lubricate the pulmonary surfaces, are of the viscid nature which we observe them to be in disease. Perhaps the contact of the air does not require that the surfaces exposed to it should be so much protected as those exposed to ruder materials. Nay, it is more than probable, that this viscidity prevents in some measure, that change in the blood which is effected by respiration; and, that in some cases, it goes far by its tenacity and accumulation to prevent that change totally, and thereby to produce suffocation. This will not appear the less probable, when we observe, that there is no expectoration in a state of perfect health, and that the quantity of fluid secreted appears to be perfectly counterbalanced by the evaporation or exhalation, perhaps aided by absorption from those parts.

Absorption by the mucous membranes is proved to take place in many instances—as the chyle from the intestines, &c.

Bichat has remarked, that the origins from the skin of these membranes, where the animal sensibility is the most marked, are supplied by nerves from the cerebrum, as the pituitary membranes, the conjunctiva, &c.; whilst the deep seated parts are chiefly supplied by the ganglia, as the intestines, the excretory ducts, &c.

The mucous surfaces do not contract adhesions with each other.

In the deep seated organs, there is no perception, the excitants which act only by contact being presented to them in nearly the same state; but at 'the beginning of the mucous membranes, sensations may be distinguished.

# OUTLINE OF THE MUCOUS MEMBRANES. 287

The sensibility of the mucous system is greatly increased in inflammations.

The organic sensibility and the tonicity of Bichat are well marked in the mucous system, the functions therefore which this system performs, are the indices of the state in which the organs are, and the products are greatly varied.

The term sympathy, as it relates to the organs of the body, has often been objected to, but unless we find some other term more expressive of the relation of one part to another, we must be content to retain it. One point of the mucous system being irritated in any manner, all the vital forces may be called separately into action in the other systems. Thus, as before noticed, the same sympathies appear on any extraneous body becoming entangled between the mucous edges of the glottis, &c. Stone lodged in the kidney may induce vomiting; the latter may be also effected voluntarily by irritating the uvula. The relation between the skin and the internal organs can scarcely have cscaped the notice of any attentive observer.

There are other sympathies in which the mucous system appears to become secondarily effected.

The vital properties of this system cannot be too fully investigated. There is a general organization of the system, and a particular organization to each of its divisions. It is not therefore surprising, that the diseases of this system should be very variable. There is an order of symptoms common to all catarrhs; but each has its peculiar signs, each its different products. The fluid thrown out from a pulmonary catarrh does not resemble that from the nostrils. The extensive influence of disorders of the stomach has been well investigated by Mr. Abernethy and others.

At birth, when respiration and digestion begin speedily, these membranes take on an increased activity. The great vascularity and ready excitement of these organs, give rise to numerous diseases during the periods of infancy and childhood, from causes which would scarcely produce any hurtful effect in more advanced age.

# (B.)

# REGULATIONS

PROPOSED TO BE OBSERVED, WHICH WERE SUBMITTED FOR THE CONSIDERATION OF THE STUDENTS OF MR. ALCOCK'S CLASS, BEFORE THEY COMMENCED A SERIES OF PRACTICAL EXERCISES AND OF SURGICAL OPERA-TIONS, UNDER HIS IMMEDIATE SUPERINTENDENCE.

EACH student to endeavour to qualify himself for the due performance of the operations which fall to his lot, as diligently as if he were about to perform them upon the living body.\*

\* Both the distribution of the operations and the arrangement of assistants were determined by lot, by which every feeling of partiality or preference was excluded. The operations to be performed, and the explanations required as one exercise, (the heads of which are merely indicated) arranged under each number, being written upon papers which afforded no external difference of appearance, were drawn, (as in the public *concours* and examinations of the candidates for office or honours, relating to the Hospitals of Paris' and after the whole were thus distributed, the subjects to be treated were examined, and the name of the student to whose lot each exercise had fallen was annexed to the paper or card on which the heads were written. Thus every one was enabled to make

# REGULATIONS.

He ought also to inform himself under what circumstances each operation ought or ought not to be performed—of the precautions—the preparatory arrangements, &c. and to be prepared to proceed without delay.

In case of the absence of any student, at the proper time when called upon in the order of proceeding, the absentee shall forfeit his opportunity of performing that operation, and the next operation in numerical order of which the operator is present, shall be proceeded with. Punctuality and preparedness are essential.

Both operator and assistant must be careful not to obstruct, unless unavoidably, the view of those present as mere observers.

Each operating student shall be permitted to introduce to Mr. A. before the commencement of the exercises for the day, one visitor, to be present during the operations, unless Mr. A. should see cause to object.

If, from the parts of the subject having been previously rendered unfit, or from other cause

the necessary arrangements, that no plea might be admitted for omission or incompleteness.

The proper selection of assistants to operators in the actual duties of the profession is of greater importance than it is generally thought to be. In these exercises, the offices of operator and assistant, were reciprocal; the operator who received the assistance of his fellow student, becoming assistant to him when it was the turn of the latter to operate.

# APPENDIX.

which may not be obviated, any operation cannot be proceeded with, the student who should have performed it shall state briefly and distinctly the principal circumstances relating to the operation.

The assistant must on all occasions endeavour to qualify himself to act instantly as principal, should any circumstance, (such as want of knowledge or of aptitude of the principal) render such transition necessary. He must however render his assistance to his principal in the best manner he is able.

The subjects should be previously considered so as to enable each student to express his ideas without ambiguity, hesitation, or waste of time.

In those operations which admit of being repeated upon the opposite or corresponding portion of the body, the assistant to the operator shall be permitted to perform the duplicate operation, assisted by the previous operator, at a convenient time arranged for the purpose, and between the conclusion of the superintended demonstration, and that of the next appointed day.

When the operations shall have been completed, the full dissection of the parts operated upon may still prove highly useful: the allotment of such portions to be arranged by the contributing students in such manner as they may think proper.\*

\* It seems scarcely necessary to add, that as the Lecturer voluntarily gave up his time (and in so extensive a series of

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#### REGULATIONS.

Each student about to operate, is requested to write previously, a list of the *requisites* for such operation, and to call over the articles, and see that they are perfectly ready and conveniently arranged, when required for use. Blank cards are very convenient for this purpose.

Those students who are able to draw, will do well to make illustrative plans or diagrams relating to the operations which they have to perform. If on a bold scale, they will be more easily visible to their fellow-students present as observers.

exercises, the sacrifice of time was no trifle) for the superintendence of these operations and exercises, beyond the engagements he had entered into with his class, the means (materiel) necessary for carrying these extra arrangements into effect were of course provided by those pupils who chose to participate in the exercises and in the practical instructions which they elicited. The instructions being adapted to the degree of preparedness of each operator and assistant, and in relation to his probable future destination, and every encouragement being afforded to the students to state any doubt or difficulty they might experience or anticipate, it is obvious that the opportunities thus offered of correcting errors, and of supplying deficiencies, as well as of adding information, bearing upon the very point of difficulty, as it occurs, must elicit many useful observations and reflections, which are neither to be found in the works of systematic writers, nor likely to be anticipated in the regular demonstration of the operations by the Lecturer, in the usual course.

U 2

# (C.)

# A SERIES

#### OF

# SURGICAL OPERATIONS,

# PERFORMED (UPON THE DEAD SUBJECT) AND EXPLAINED BY STUDENTS ATTENDING MR. ALCOCK'S CLASS, UNDER HIS IMMEDIATE SUPERINTENDENCE, DURING THE SPRING OF 1829.

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- 2.-Fistula Lachrymalis.-The operation for fistula lachrymalis -The symptoms, causes, progress and treatment-The various operations, and which to be preferred, stating the grounds of preference.
- 3.—Hare-lip.—The operation for hare-lip—To state the indications to be held in view in the treatment, and the best means of carrying them into effect.
- 4.—Obstruction of Urine.—The introduction of the catheter— The occasions which may require the operation and the errors which may occur—Circumstances which may render the operation impracticable.
- 5.-Puncturing the Bladder.-To describe the various modes of puncturing the bladder when the catheter cannot be introduced-To perform the most eligible operation.

- 6.--Hæmorrhoids.-Extirpation of piles or hæmorrhoidal tumours by incision-by ligature---To describe the symptoms, the preventive and general treatment, to trace the causes, and to point out the essential circumstances to be carried into effect-or to be avoided.
- 7.-Fistula.—The operation for fistula in ano—To/trace the causes, progress and treatment of the disease, and to explain the grounds of prognosis.
- Operations for the Stone, -To sound the bladder to ascertain the presence or absence of calculus-To perform the operation for the extraction of calculus above the pubes.-To state the mode of performing this operation by Cheselden, and the results of his practice.
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- 12.-Femoral Hernia.-(Particulars as detailed relating to inguinal hernia.)
- 13.—Arteriotomy, &c —To perform the operation of arteriotomy —to secure the trunk of the facial artery—To introduce a probe into the parotid duct.
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- 15.—Treatment of Wounds of Arteries.—To shew the mode of applying compression in case of wounded artery under the angle of the jaw, when the artery cannot be distinguished

so as to be secured by ligature-May the needle be employed in such cases?

- 16.—Laryngotomy —The occasions which call for laryngotomy —To perform the operation—Precautions—After treatment.
- 17.—*Tracheotomy*.—The occasions which call for tracheotomy— The operation—Precautions—After treatment.
- 18.—Paracentesis Thoracis.—The occasions for paracentesis thoracis\_Diagnosis\_To perform the operation.
- 19.—Paracentesis Abdominis.—Occasions which require the operation—Diagnosis—Various modes of performing the operation—Grounds of preference—The mode of applying the bandage, and the point to be selected to be demonstrated upon the living.

### **OPERATIONS UPON THE ARTERIES**,

#### Relating to the Treatment of Wounds, Aneurisms, &c.

- 20.—Axillary Aneurism.—To secure the subclavian artery above the clavicle – Difficulties – Precautions – To illustrate by plans or diagrams the strict anatomical relations of the parts.
- 21.—Axillary Artery.—To secure the axillary artery below the clavicle—Advantages and disadvantages of this operation compared with that above the clavicle.
- 22.-Brachial Artery.-To secure the brachial artery at its uppermost point-To tie it in the middle of the arm.
- 23.—Humeral Artery.—To secure the humeral artery at the bend of the arm (first puncturing it as in an awkward bloodletting.)
- 24.—Ulnar and Radial Arteries.—To secure the ulnar and radial arteries as near their origins as may be proper—Rule respecting the place of ligature near the giving off of large branches of arteries.
- 25.—Ulnar Artery.—To secure the ulnar artery at the middle of the fore-arm—To point out the parts where the ulnar artery may be secured, and where it is inaccessible without injury to other important parts.
- 26.-Ulnar Artery.-To secure the ulnar artery at the wrist, as near the hand as may be.
- 27.-Radial Artery.-To secure the radial artery at the middle of the fore-arm-Ditto in front of the wrist.

- 28.-Radial Artery.-To secure the radial artery at the back of the hand-There are two situations in which this may be effected-To state the rule of practice in punctured and penetrating wounds of the hand.
- 29.—External Iliac Artery.—To secure the external iliac artery —Anatomical relations of the parts.
- 30.-Femoral Artery.-To secure the femoral artery above the profunda-Anatomical relations of the parts.
- 31.-Arteria Profunda.-To tie the arteria profunda femoris.
- 32.—Popliteal Aneurism.—To perform the operation for popliteal aneurism at the inner edge of the sartorius—Advantages and disadvantages of this operation.
- 3 Popliteal Aneurism. To perform the operation for popliteal aneurism on the outer edge of the sartorius—Advantages and disadvantages.
- 34.—Arteries in the ham and leg.—To expose the polipteal artery so as to be enabled to tie it, and also the anterior and posterior tibial arteries near their origins.
- 35.—Posterior Tibial Artery.—To secure the posterior tibial artery at the middle of the leg.
- 36.—Fibular Artery.—To secure the fibular artery at the middle of the leg.
- 37.—Posterior Tibial Artery.—To secure the posterior tibial artery at the inner ancle.
- 38.—AnteriorTibial Artery.—To secure the anterior tibial artery at the middle of the leg.
- 39.—Anterior Tibial Artery.—To secure the anterior tibial artery just above the ancle.
- 40.—Anterior Tibial Artery.—To secure the anterior tibial artery upon the tarsus—Rule of practice relating to punctured and penetrating wounds of the foot.
- 41.—Occipital Artery.—To secure the occipital artery after it has passed behind the mastoid process.
- 42.-Superior Thyroid Artery.-To secure the superior thyroid artery.
- 43 .- Lingual Artery .- To secure the lingual artery.
- 44.-Epigastric Artery.-To secure the epigastric artery.

### APPENDIX.

#### FRACTURES.

- 45.—A Fracture to be produced, in private, upon one of the limbs: afterwards each of the operators to examine the body and to satisfy himself, using the stethoscope as an auxiliary, and each to make a written statement, without reference to his fellow-students.
- 46—Operation of Trepanning.—To perform the operation.—(If the skull of a subject be destroyed, by the previous removal of the calvarium, to fracture a cocoa-nut, and to demonstrate the precautions and the mode of performing the operation.)
- 47.—Operations on the Skull.—To remove a triangular portion of bone, without injuring the membranes, by Hey's saw— Ditto by the straight saw—Advantages and disadvantages of these methods.

AMPUTATIONS .--

48	of the fore-finger.
	1. At the extreme joint2. At the junction
	of the first and second phalanges3. At
	the articulation of the first phalanx with the metacarpal bone.
49.— —	of the ring-finger at each of the joints.
	123.
50	of the thumb.
	1. At the extreme joint. $-2$ . At the first
	joint3. Metacarpal of the thumb.
51	of one of the inner metacarpal bones-Ditto of
	the metacarpal bone of the little finger.
52	at the joint of the wrist-To state the advan-
	tages and disadvantages of this operation.
53	at the lower third of the fore-arm.
54	at the upper third of the fore-arm.
55	To state the advantages and disadvantages of
	amputation at the elbow joint-To amputate
	at the lower third of the humerus.
56	To amputate at the upper third of the humerus
	-To shew the mode of securing arteries by

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AMPUT	ATIONS
	the needle-To point out the advantages
	and disadvantages of this mode of securing.
57	To amputate at the shoulder joint.
58	To amputate the little toe at the different joints.
	123.
59	To amputate the middle toe.
	123.
60	To amputate the great toe,
	12.
61	To amputate at the junction of the metatarsal
	with the tarsal bones-The advantages, dis-
	advantages and difficulties of this operation
	-When advisable and when inadmissible.
62	To amputate at the middle of the leg, by the
	flap-To state the cases to which the opera-
	tion at that point is applicable.
63	To amputate the leg at the upper third of the
	fibula-To point out the comparative advan-
	tages and disadvantages of the flap and of
	the circular operations-Secondary hæmorr-
	hage, how to be guarded against, &c.
64	of the thigh at its lower third, by double flaps
	-Advantages and disadvantages of the flap
	operation.
65	of the thigh at its upper third, by the circular
	incision-Advantages and disadvantages of
	the operation by circular incisions-Pre-
	cautions in high amputation of the thigh.
	ne Mechanical Extraction of PoisonsSimplification of
	e means of treatment-To inject and empty the stomach
	a dead subject or of a living animal.
	he treatment of Suspended Animation-(suppose from
dr	owning)-To be carried into effect, upon a small subject.

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Published in the Medical Repository, No. 54, June 1818.

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