

The renewal of life : clinical lectures illustrative of a restorative system of medicine, given at St. Mary's Hospital / by Thomas K. Chambers.

Contributors

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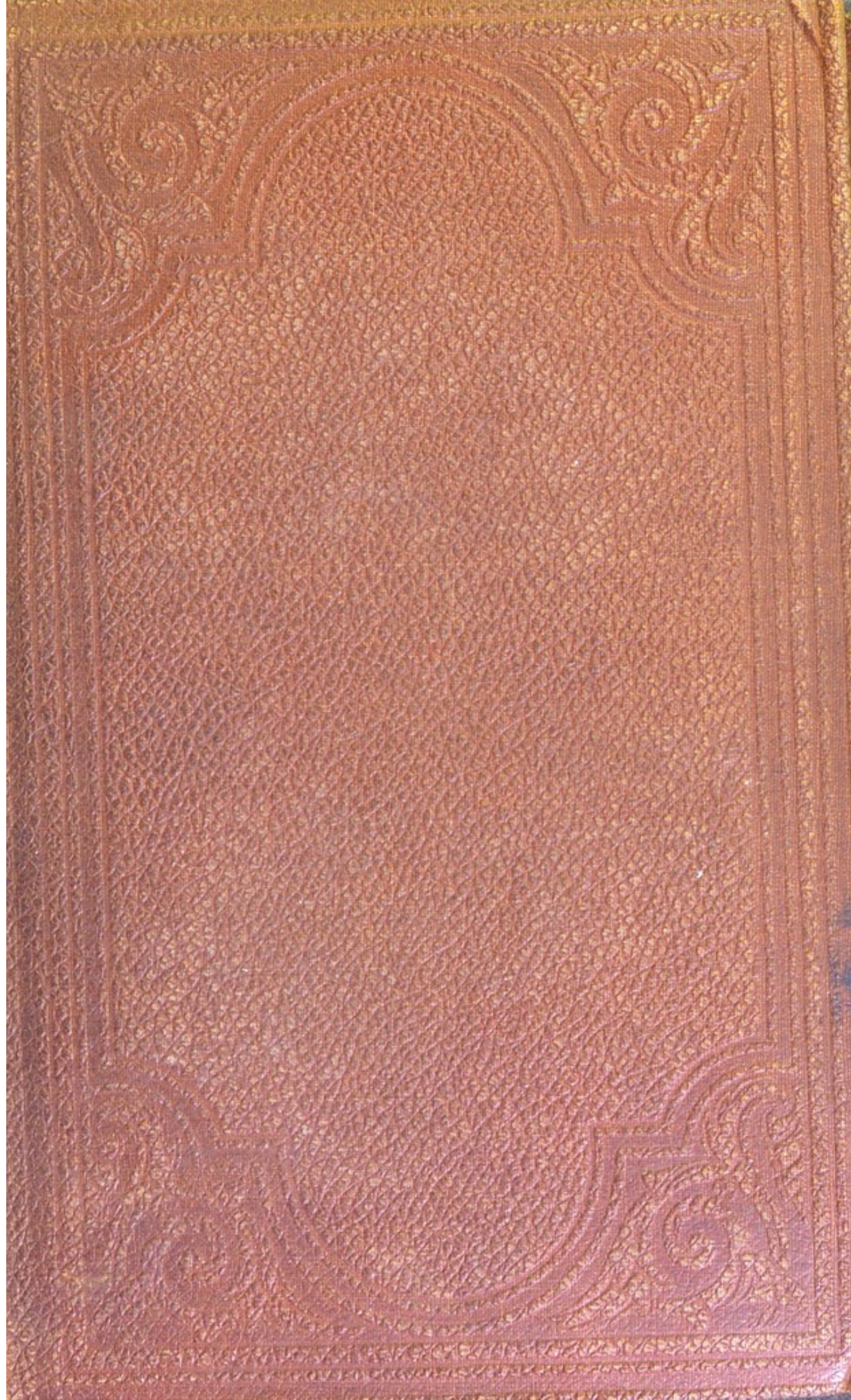
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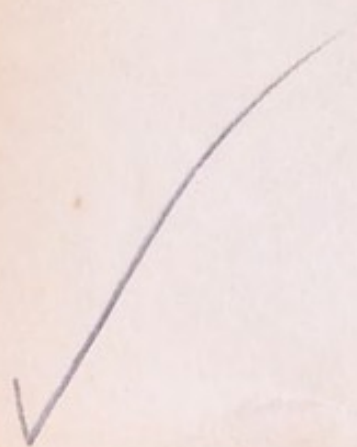


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THE
RENEWAL OF LIFE:
CLINICAL LECTURES

ILLUSTRATIVE OF A
RESTORATIVE SYSTEM OF MEDICINE

GIVEN AT
SAINT MARY'S HOSPITAL

BY
THOMAS K. CHAMBERS, M.D.,

FELLOW OF THE COLLEGE OF PHYSICIANS;

PHYSICIAN TO ST. MARY'S HOSPITAL; LECTURER ON THE PRACTICE OF MEDICINE AND
CLINICAL LECTURER AT ST. MARY'S MEDICAL SCHOOL.

SECOND EDITION.

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P R E F A C E.

I HAVE left out of this selection of clinical lectures all those where points of mere diagnosis or pathology were discussed, as I wished to make the volume illustrative of practice only. I have also set them in a kind of natural order, putting as near as could be those which seemed to have most bearing on one another. This, coupled with the fact that clinical lectures must be given as the cases happen, will be a plea for the utter want of sequence in the dates. The first two lectures ("Introductory" in two following years) show the connecting link meant to run through them — namely, the system of Therapeutics, which must daily become more and more the guide to practice, and which I have made bold to call "Restorative."

THOS. K. CHAMBERS.

October, 1862.

22B, Brook Street,

Grosvenor Square.

THE early call for a Second Edition is a strong encouragement to the hope expressed in the last sentence.

T. K. C.

December, 1862.

MEMORANDUM

I have had the honor to receive from the Hon. Secretary of the Interior a letter of the 10th inst. in relation to the proposed extension of the public lands in the State of California. I have the honor to acknowledge the receipt of the same and to inform you that the same has been forwarded to the proper authorities for their consideration. I have the honor to inform you that the same has been forwarded to the proper authorities for their consideration. I have the honor to inform you that the same has been forwarded to the proper authorities for their consideration.

Very respectfully,
Your obedient servant,
J. M. Smith

For copy of the report of the Hon. Secretary of the Interior in relation to the proposed extension of the public lands in the State of California, see the report of the Hon. Secretary of the Interior in relation to the proposed extension of the public lands in the State of California.

Very respectfully,
Your obedient servant,
J. M. Smith

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THE RENEWAL OF LIFE.

LECTURE I.

THEORIES OF MEDICINE AT THE BEDSIDE.

*Necessity for a consistent theory of Therapeutics—
Examination of prevalent theories—Allopathy—
Homœopathy—Evacuation—Counter-irritation—
Stimulation—with tests of their applicability—Eclectic-
icism and Expectant Medicine mere protests—
The inherent error of these medical theories is the
attributing a positive existence to Disease—Disease
truly a negation or deficiency of life—on this is
grounded a proposal for a system of Restorative
Medicine, and a consistent view of the aims of Me-
dical treatment.*

(October 4th, 1861.)

You know the Baconian proverb, "A cripple on the right road beats a racer on the wrong." Accept this as my apology for giving you an introduction to our clinical course, instead of plunging as usual into mid stream. You come to these lectures to learn, not the sciences of pathology and therapeutics, not even their general application by others, but specially my application of them as shown among my patients in the wards. It will save time in the end if I first state to you the principles on which I act, and where, in my opinion, lies the right road along which to conduct our patients

to health by applying the knowledge we have gained in the observation of disease.

The want of a guiding principle to connect the loose facts of therapeutical experience has at all times been felt. From this practical need have arisen the many theories which have prevailed from time to time in the history of our art. Working men at the bedside have started them, not philosophers in their closets. The adopters of these theories have not necessarily any strong faith in their truth or universal applicability, but they weary for a link to bind together the scattered fragments of medical knowledge; that is, for a principle by which to codify their laws of action.

It would be a waste of time to quote the various systems of therapeutics founded on imperfect data which have numbered adherents in former times, and which have been given up as false and dangerous;—I do not wish twice to slay the slain. I must, however, notice five principles very widely prevalent at the present day—so widely indeed, that some would represent them as the only therapeutical theories of the nineteenth century—but which principles I hold to be essentially misleading. I refer to Allopathy, Homœopathy, Evacuation, Counter-irritation, and Stimulation.

It is true that there are, and always have been, practitioners who declaim against theory altogether, not considering that to have a contempt for theories is as if we should boast of not knowing what we do when we act, or what we say when we talk. To reason at all is to theorize; no one without theorizing can direct a method of cure to a sick person except at hap-hazard. It is better to have a bad theory than none, but happy is the patient whose physician has the best. As a matter of fact, none of these declaimers ever do prescribe without theorizing about

either the individual sufferer or the class to which they refer his sickness; and when they are able to put their theory into words, you will find it takes a form which may be fairly described by one of the names I have used just now. It is worth while, therefore, to describe shortly what these principles are.

ALLOPATHY.—This is a simple and very plausible idea. It supposes that the important point in all diseases is a motive cause affecting the body with a certain derangement, and it suggests that the best mode of combating that is to give remedies whose nature is to affect the body with an opposite counter-vailing derangement. Thus a balance is struck between disease and remedy. If there be constipation, drugs are to be given which, to a healthy person, would cause Diarrhœa; if the urine be scanty, those which normally augment it beyond the average standard; if the skin is too dry, sudorifics; if the heart beats too fast, medicines which arrest its normal motion; in short, all states of excess are to be cured by the opposite excess—the disorder is to be *neutralized* by the temporary presence of contrary disorder.*

But this plausible idea in practice we find to fail.

Allopathy leads us to bad practice in those cases where it is possible to arrest the prominent symptoms, while all the time the essential evil of the disease is untouched; such as was, for example, the old plan of

* Pithily put by Hippocrates, “ὁκόσα πλησμονὴ τίκτει νοσήματα κένωσις ἰῆται· ὁκόσα δὲ ἀπὸ κενώσιος γίνεται νοσήματα πλησμονὴ ἰῆται· . . . δεῖ τὸν ἰητρὸν ἐνάντιον ἵστασθαι τοῖσι καταστεῶσι κ. τ. λ.”—Hippocrates ‘On Human Physiology,’ Kühn’s edit., vol. i, p. 361; and also in his treatise on gaseous bodies as a cause of disease (Περὶ φνσῶν), vol. i, p. 570, “τὰ ἐναντία τῶν ἐναντίων ἔστιν ἰήματα.”

stopping a phthisical cough by opiates and expectorants. I remember some years ago being sent for by an ancient practitioner to see a patient moribund with low fever. He told me the tongue had been so brown the day before that he had bled from the arm to clean it, and as it was equally brown that morning he had bled again. He had a notion that as the tongue gets paler and smoother after loss of blood, so loss of blood was proper treatment in all cases where the contrary states are developed on the organ. I quote this as the very mediævalism of Allopathy, to show what it might lead to, if unchecked by inconsistent theories or a physiological education.

Allopathy is also unworthy of confidence from failing to supply any rule for the treatment of those diseases whose symptoms are either subdued or dormant. A convalescent would leave off medicine entirely, and prevention be neglected. For how can you combat morbid phenomena, when there are none evident to combat?

I forbear to mention those more obvious cases where the symptoms are merely due to the passage from the body of effete, foreign, or noxious matter, and to arrest which passage on strict Allopathic principles is universally condemned. Such are many Diarrhœas, Diureses, and Expectorations, to stop which so much protracts the illness. For the treatment of such cases, a facetious friend of mine is anxious to introduce among the "Diuretica," "Purgantia," &c., of our Pharmacopœia, a select class of "Inertia" with fine-sounding names, and warranted innocent. I should, however, prefer retaining the opportunity of teaching the public the Hippocratic maxim, that "no physic is sometimes the best physic," and always hail with pleasure the chance of doing so, for I hold it is our

business to preach truth as well as to practise truth.

HOMŒOPATHY.—This is a reaction against the former theory. You will observe that the strong argument, and therefore the favorite argument, of its adherents, is an exhibition of the inconsistencies displayed by wise, and of the frequently bad treatment employed by foolish, Allopathists. It is inferred by them, that if Allopathy is wrong, its converse must be right. And being able to show that successful treatment *does not* consist in administering drugs whose phenomena are the *opposite* of those manifested in the disease, they argue therefrom that it *does* consist in administering those whose phenomena are the *same* as those manifested in the disease. If there is Diarrhœa, Colocynth is to be given; if inflammation of the bladder, a drug that inflames the bladder—Cantharides. For hectic fever and emaciation, the treatment is to be Mercury, Arsenic, Phosphoric Acid, Caustic Potash,—whose action in measurable doses is to augment emaciation and so to cause hectic.* To prevent evil results from carrying out the dogma in practice, the doses are commonly reduced to such immeasurable smallness as not to produce any of their usual pathogenetic effects; but still this mode of prescribing is not looked upon as an essential, and the rule that *similia similibus curantur* is quite independent of it.

* The examples are taken *passim* from Yeldham's 'Homœopathy in Acute Diseases,' which represents the current application of the laws made by Hahnemann. An exposition of the arguments and experiments on which the Homœopathic dogmata are founded, may be found put in a very readable and elegant form in the 'History and Heroes of Medicine,' by Dr. Russell. The author is evidently an "almost persuaded" convert to Rational Medicine, so clearly does he expose the fallacies which deceived Hahnemann.

A good deal of time and paper is often wasted in denouncing and deriding the practice of Homœopathy. Denunciation is not argument, and the subject of human life is too serious for ridicule. In my opinion the promulgator of such a doctrine, professing to base it upon experiments, could logically demand that the experiments on which he based it should be tried. When an old road has been found wrong, it is quite rational to try the opposite one in the first instance. Nothing is easier than to do this, by taking an agent whose beneficial effects in cutting short a disease are obvious, and trying whether in excess it will produce that disease artificially. Quinine, for example, is easily proved to stop Ague; it is quite safe to take it in consecutive ten-grain doses till its pathogenetic effects are produced, and to compare those pathogenetic effects with the well-known phenomena of the malady. Again, we frequently have under our care cases of arsenical poisoning with malicious intent; and sometimes over-doses of Fowler's Solution are given therapeutically: the symptoms are very readily observed, noted, and compared with those of Psoriasis, which Arsenic cures. Small quantities of Iron cure Anæmia; we often by accident continue our doses too long, and we sometimes by mistake give Iron to patients who do not require it, and in whom it produces morbid phenomena; nothing is more easy than to note if they at all resemble Anæmia.

The action also of infinitesimal doses may be tried upon malingerers and "hospital birds," who occasionally sneak into our wards, or upon convalescents and many other patients, to whom we should otherwise have administered no medicine. Very minute quantities of Digitalis or Saltpetre ought to diminish the daily secretion of urine, very minute doses of Colo-

cynth diminish the daily weight of fæces, and so on. These experiments, however, are not so easily performed as the others, nor so convincing. And it ought to be established as a rule, that objective phenomena rather than subjective are to be taken as tests, and that all things are to be "delivered in number and weight," according to the sage advice of the Son of Sirach. For instance, when we are examining the action of Quinine the changes of temperature must be estimated by the thermometer, the changes of the urine in the laboratory, the action on the skin by the amount of perspiration. And we must not waste our time in performing as tests experiments which do not admit of physical proof.

Above all things avoid prejudice and scepticism. Consider it your duty *nullius jurare in verba magistri*, to be quite free of all rules, systems, and hero worship, to try for yourselves the experiments (they are very few) on which dogmata have been based, to test the results intelligently, and then to believe in them firmly.

EVACUATION.—This principle is founded on the notion that human reason can know no more of disease than as "an effort of Nature to destroy some noxious matter, and to recover the patient by expelling it from his body."* It would make the chief business of the physician to consist in watching the proper moment for assisting this elimination, in setting it going, or in substituting instead of it an artificial egress for the morbid material.

The *Chemical* and *Antidotal* systems of treatment have the same pathology as the Evacuating; they

* Sydenham, 'Obs. Med.,' cap. i, "Dictat Ratio morbum . . . nihil esse aliud quam Naturæ conamen, materiæ morbificæ exterminationem in ægri salutem omni ope molientis."

look upon disease as an active foreign substance, which only requires to be rendered inert for the patient to be restored to health. A *materies morbi* is presupposed in either case.

That some diseases are the result of the introduction into the body, or of the formation in the body, of a foreign noxious matter, may be fairly conceded; and if we could keep this poison out we should keep the patient well. But even in those special cases it is far from certain that the morbid phenomena are displayed only during the presence of the poison; it is much more analogous to the usual course of nature that they should continue after its expulsion; the wound remains after the sword is withdrawn, the burn is as painful when the fire is out, the chill is felt after our return to warmth and comfort, the stomach is inflamed though the poison may be neutralized.

Besides which, this noxious matter is in some instances not foreign to the body at all, but a necessary part of it, only requiring the addition of a fresh constituent, or renewed function, to render it again efficient. Such is acid in the stomach and colon, super-alkalinity of the blood, anasarcaous serum in the tissues. To expel them is to deprive the body of its substance, and certainly far from good practice in many cases.

It is obvious, too, that to purely mechanical diseases, such as cardiac lesions, dilated or contracted canals, and so on, Evacuation can give no aid.

There is a poetical dreaminess about the theory of these philosophers when they describe morbid phenomena as "efforts of nature" for a beneficent end. What is meant by it? Surely not that the All-wise tries to benefit us by agencies which not only often fail, but usually make matters much worse? The

arbitrary tracing of results to First Causes seems to me as unphilosophical and irreverent as it is barren.

COUNTER-IRRITATION.—The leading principle in the treatment of some practitioners seems to be the substitution of an artificial disease, which is easy of control or merely temporary, for one which is dangerous or which has a tendency to be permanent. The difference between their idea and Allopathy is, that the disease they excite is not opposed in nature to the original disease: usually, indeed, it is of the same nature, but in a different part. They intend to act on this principle when they raise a raw blistered surface on the skin to cure a raw pus-secreting bronchus; when they give purgatives to relieve a cold on the chest; when they substitute excessive diuresis for dropsical swelling. It is assumed, with some show of reason, that two morbid actions do not go on at once, or at all events not with equal intensity, or at their acme of force, in the animal body. While a patient has Scarlatina, the poison of Measles does not seem to affect him; the supervention of Insanity renders Phthisis dormant; the action of one drug excludes in a great measure the action of another, as during the Diarrhoea caused by a purgative, sudorifics and diuretics are given in vain. The idea, then, of counter-irritant practice is for one disease which is dangerous or painful, or which tends to disorganize the body, to substitute another less dangerous, less painful, or whose disorganizing tendencies are but temporary.

The most serious objection to this theory is, that none of the remedies of whose beneficial action we are most sure ever do cause disease of any kind during the process of cure. Cod-liver oil, when given to an emaciated consumptive patient, does not produce morbid phenomena during the fattening. Iron in Anæmia

is innocent of evil; Quinine and Arsenic, the more good they are working, the less likely are they to produce pathogenetic effects. It is probable that future physiologists may be able to explain in another way the instances which seem to favour the system, and in the mean time it appears unwise to adopt as a principle the estimation of the utility of our drugs by the power they possess of making a sound man ill.

STIMULATION.—The great advances made of late years in Morbid Anatomy and Pathology, and the important position they necessarily hold in modern medical education, have a tendency to make the student look upon them as sciences distinct from Physiology. He regards them as exhibiting a phase of nature quite different from, and opposed to, Normal Anatomy and Physiology. Disease is to him an active and intelligent foe, at war with his friend the human body, but with a code of laws of its own, very necessary to be observed and calculated upon. The enemy's tactics seem so good that he is seldom to be driven back by a surprise, but the vital forces must be aided to hold out, so that he may be obliged to retire exhausted. There is a contest between Ormuzd and Ahriman; the agencies under the command of the individual life are arranged against the pathological forces, with certain other external influences also allied to them.* On these grounds, it would seem the main duty of the medical man to weaken all morbid phenomena, and to strengthen those which are normal—to take away all that feeds pathological processes, and to supply whatever nourishes those processes which remain healthy.

* "Krankheit ist der Kampf des egoistischen Princips (des besondern Lebens) mit dem planetarischen, der schädlichen Potenz, die es zu zerstören sucht."—Schönleins 'Allg. Pathologie,' s. 1.

A step seems here made in the right direction, and many unwise traditionary practices have been rooted out in consequence of the adoption of Stimulation by the followers of Brown, Darwin, and Todd. It is a valuable protest against Allopathy, and has taught the present generation already not to think drugs valuable in direct proportion to their power of altering vital processes, and to see that the Greeks were wrong in calling physic and poison by the same name. Yet the idea is rested on a partial truth only, as will be shown shortly when attention is drawn to the common fallacy that underlies all these systems of therapeutics. And the partial truth has led to the practical error of attributing, by deeds perhaps rather than words, life-giving powers to Alcohol, and its consequent abuse in the treatment of the sick. There is a tendency to lean on it alone, and to consider its effects as a pure gain of vital force, a tendency which is dangerous to both patients and science.

These five ideas include, I believe, all the definite aims which are professed at our own time in the treatment of disease. But few are rash enough to reduce to an absurdity their favorite law of action by applying it without compromise in every case. The Allopathist will shrink from checking a morbid process which experience shows him leads towards health; the Homœopathist will cure his patient by Allopathic treatment; the Evacuator or Humoral Pathologist will arrest Diabetes or colliquative sweating, although abnormal material is leaving the system by the kidneys or the skin; the adherent of Counter-irritation finds it inapplicable to many diseases; and the staunchest lover of stimulants will gain his object by evacuant, counter-irritant, and allopathic remedies.

Many openly profess this Eclecticism, and some are

illogical enough to call it a principle of action. But it is obvious that ECLECTICISM is a mere negation, it is a denial of the principles as ends, and an adoption of them as means,—as *possible* means towards an *unknown* end.

A negation of the same sort is EXPECTANT MEDICINE. To some reverent and humble but unpractical minds, Nature appears so perfect that it is presumptuous for Reason to attempt to help her. They are jealous of that

“art which shares
With great creating Nature,”—

forgetting that there

“is an art
Which does mend Nature—change it rather—but
The art itself *is* Nature.”

Expectant Medicine, in short, can only be looked upon as a protest against general error, as Homœopathy is against a particular error.

In fine, all confess, either by words or deeds, that a true guiding principle—a single aim—in the treatment of disease is wanting.

Does not the daily growing hesitation of the conscientious, the louder and louder bluster of those who assert that they alone are the “orthodox,” show a rapidly diminishing faith in our fathers’ *principles* of medical treatment? And does not this diminishing faith in an age of advancing knowledge show those principles to be really unsound? Since the time when they were first enunciated as guides and aims in medical practice, science has taken strides onwards such as never have been seen before, and especially in those departments which explain to us the nature of living beings and their relations to the material world

around them. Surely it is time to expect new light to be thrown on our theory of the art of healing, as well as on the theory of pathology. It is time to expect to see a further and a brighter goal beyond those limited motives of action which confessedly do not satisfy us.

It is of no use to mince the matter—the root of the whole five principles is unsound; they are based on false foundations, and all the results of increased knowledge can only show us more and more their falseness. Examine one after another, and you will see that it rests on the assumption that disease is an entity, a motive cause, a *positive* existence. To the Humoral Pathologist it is a *materies morbi*, a poison to be evacuated. To the Allopathist and Homœopathist equally it is a *potent motive force*, which it is their business to counteract; the one by means as different as possible, the other by means as like as possible. To the adherents of Counter-irritation disease presents itself in a similar, though somewhat less definite, light. With all it is something positive—a separate and peculiar manifestation of life—a property or a substance to be overcome or taken away. All that their art aims at, therefore, is “to weaken life”* as exhibited in the morbid phenomena. Stimulation is a step in the right direction, inasmuch as it is a protest against the foregoing practice; but it, too, fails to provide a rule for all cases, and experience shows it an unsafe guide. One reason is, that its adherents have somewhat mistaken the nature of the tools they employ, and have often misused Alcohol and alcoholic drugs. But the chief error is, that it errs along with its forerunners in mistaking a shadow for a substance,

* “All that art can do is to weaken life.”—Van Swieten’s ‘Commentary on Boerhaave,’ vol. i, § 106.

and sets disease up as a positive evil power at war with life; all the phenomena classified among its appurtenances are viewed as actions to be opposed and checked; and, in short, all the attention is directed to the removal of death, instead of to the replacement of life. Each mode of erring from health is reared up into an entity instead of an abstraction—a separate foe, requiring special weapons for his discomfiture.

I maintain that unprejudiced observation can show this to be an utterly false view—that it has led of old, and cannot but lead in future, to unsafe practice if followed to its logical consequences—that all the good practice which may have sprung up at various times has arisen in opposition to it. I believe that it has had upon Medicine just the effect that would be wrought upon Optics by regarding a shadow as a material object instead of an absence of light, upon Physics in general by accounting cold an active agent. The main hope for bringing Therapeutics up to the level of modern science lies in discarding at once and for ever this traditional notion.

Then will the way be open for those true guiding principles which an advancing knowledge of Nature is forcing upon us,—that DISEASE is in all cases, not a *positive existence*, but a *negation*; not a new *excess* of action, but a DEFICIENCY; not a *manifestation of life*, but PARTIAL DEATH: and therefore that the BUSINESS OF THE PHYSICIAN is, directly or indirectly, not to *take away* material, but to ADD; not to *diminish function*, but TO GIVE IT PLAY; not to *weaken life*, but TO RENEW LIFE.

These are the principles of RESTORATIVE MEDICINE, and to illustrate their application I purpose to devote my Clinical Lectures, and the bedside teaching of our wards.

LECTURE II.

DEATH, LIFE, DISEASE, AND CURE.

Decay of dead bodies—Decay of living bodies—Life is Renewal—Cannot be in excess—Health, Death, and Disease, what?—Illustrations of partial death, exhibited in disease—in Fatty Degenerations—in so-called Hypertrophies—in Malignant Tumours—in Catarrh—in Boil and Abscess—in Fever and Zymotic Diseases—in Anæmia—in mixed Anæmia—in Tuberculosis—Classes of diseases in the hands of the Nosologists—Modern improvements in medicine take a restorative direction—Constructive and destructive life—Restorativist pharmacopœia also constructive and destructive.

(October 2nd, 1862.)

THE human body may be likened to a stately mansion, constructed of beautiful but very perishable materials, all of which need continual repair to keep up the form and usefulness of the structure. But not all in equal degrees; some of the walls may last unaided for years, while other parts may require almost hourly looking after. When the owner leaves the mansion this repair ceases, and then we see how, not all at once, but one after another, the materials fall into ruin. It will serve a useful purpose in my argument to consider for a short time the details of this process.

Already while the soul is withdrawing we know

that changes begin, very obvious to even the most superficial observer. These changes are mostly due to the loss of water by evaporation. The eyeball loses its brilliancy, gets dry and flat, the features shrink, the gloss leaves the hair and skin. All this goes on all the more rapidly after decease, and then we hide our dead out of our sight, and the future fate of the body is less familiar to us; we must search for exceptional cases or special observations if we want to know what happens. These we must cull from various and independent sources. Here is one which old barbarous manners afford us. "Rizpah the daughter of Aiah, the concubine of Saul," watched for six months, from "the beginning of barley-harvest" in April, to the rainy season in October, to guard her murdered kinsmen from the beasts of prey. So long under the sky of Palestine did they hold out a quarry for the wild dogs and birds.

In a moister air decay is quicker, but still not so quick as is often supposed. Here is another observation redolent of the refinements of modern science. The notes made by M. Devergie* on the bodies at the Morgue at Paris, show that for two months and a half after decease the muscular structures still preserve their natural form and colour. Up to three months and a half, the scalp, eyelids, and nose so far retain their ordinary features that the age of the person may be told. It is four months and a half before complete destruction of the face occurs, or the bones become brittle, and the bulky muscles of the neck and thighs are converted into adipocere. So that we may call three months and a half a short time to be occupied by the decomposition of a human

* Devergie, 'Médecine Légale,' t. ii, chap. 5.

body. So long does flesh remain flesh, and tissue tissue, and is not resolved into its mother earth.

Let us come forth quickly from these ghastly scenes of the charnel-house to the joyous bustle of brimming life, and ask how long it takes not a dead but a living body to decay? "*A living body decay?*" Yes, in truth; but whereas in the former case it was a thing to make men shudder, the fading of a long-loved image, the tearing up of a fair garment, the ruin of a darling home, the violation of a worshipped shrine, the forcible divorce from our nearest and dearest—it is all this and more: in the latter it is associated with the fullest fruition of all that is joyous in existence—the bounding pulse, the free-drawn breath, the swelling chest, the thrilling feel of health, the highest uses of mind and body. Decay is more truly a part of life than it is of death; for it continues unstayed through the whole of corporeal being; whereas, after dissolution, it gradually ceases, and ends its work with the re-conversion of the organic particles into eternally unaltering elements. The most truly living body is the most active in decay: the more bodily and mental vigour are displayed, the more quickly do the various tissues melt down into substances which are without delay removed by the excreting organs. The more the blacksmith works his arms and the statesman his brain, the heavier bulk of carbon, nitrogen, oxygen, and hydrogen is thrown out by lungs, liver, skin, and kidneys. Do they then wear them out by this constant use, friction, and drain? No, no—the more the bricks are removed from the old wall, the more new bricks will a good builder put in; and so, provided that the supply is sufficient—that the builder is a good one—the more rapid the drain, the newer and stronger and better will the body become.

But I will leave generalities and try to represent in figures how long it takes by living decay for the living body to drain away, and to have its substance renewed. In the grim details which I recalled to your memory at the beginning of this lecture, the nitrogenous or fleshy parts were most accounted of and especially named as giving shape and the general look of a man to the melting corpse. So of the nitrogenous parts we will now speak—How long are they in being removed by vital decomposition?

We may reckon with Drs. Bidder and Schmidt* that the body of a mammal contains 35.45 grammes of nitrogen per kilogramme; and, therefore, that an animal of 130 lb. (which is the mean weight of a man) contains upwards of 4.6 lb. of nitrogen.

Then again, taking our numbers from an equally sound and independent source, we may reckon with Baron Liebig† that the liquid and solid excreta of a man by kidneys and bowels for a year contain 16.41 lb. of nitrogen, or for three months and a half 4.7 lb. of nitrogen.

That is to say, that in three months and a half a quantity of nitrogen is removed by excretion, or vital decay, equal to that contained in the whole mass of the chief nitrogenous tissue.

What attraction has this term of three months and a half for us?—what memories does it rouse? Why, that was the very time we fixed upon for the fleshy framework of the corpse to melt away in. Here is a pregnant fact, a light thrown on the mysteries of nature from a most unpromising source! Dead flesh and living flesh last as nearly as possible the same

* Die Verdauungssäfte und der Stoffwechsel, p. 400.

† Liebig's 'Chemistry of Agriculture and Physiology,' part i, chap. ix.

time—the former, if anything, rather the longer. As far as we can judge, the albumen, fibrin, gelatin, &c., which make up the live body, differ in nowise from the same matters dead; they are liable to the same changes, affected by the same reagents, and naturally are resolved into their elements in the same time; just as the marble in the Apollo Belvidere is to a mineralogist the same stone as it was in the quarry, liable to the same accidents and possessed of the same properties, though temporarily endowed with a different value, and made god-like by its accidental form.

What, then, raises to the rank of living creatures, and endows with loveliness the masses of organic matter which are growing, moving, breathing, thinking, all around us? It is the power of the individual Life to create and retain its own individual Form. A man has no right of property over the particles of his body, except so long as they remain particles of his body and retain his shape. He hardly calls *his* the snippings of his hair or the parings of his nails, much less the carbonic acid he exhales from his lungs or skin; all that he throws off is by common consent claimed as a perquisite by the public; and the battle-fields which he has fertilised with his blood enrich, not him, but the peaceful farmer. Yet as long as these organic constituents retain the *form* impressed upon them by the individual life, they are more truly his than any portion of his inheritance.

It is, then, the Form, or the individual and indivisible Life, which constitutes the Self; and it is not the changing, decaying matter which “was mine, is his, and may be slave to thousands.” The organic materials are the *property* of the form only so long as it retains them, and no longer—they are a floating capital. Over the innate essential nature of the

material it has no control. Life cannot make the brute materials which it uses live longer than that which it leaves unused, but it has the power of making them anew, and building them up into a certain shape for the time they are made to last. In short, LIFE IS RENEWAL.

To speak, therefore, of "a superabundance of life," or of an "excess of vital action," is a contradiction in terms. There *cannot* be too active a renewal of the tissues, for the fresher their organic constituents, the more serviceable they are, and the longer duration they have before them. There *cannot* be too close an adherence to that typical form which it is the business of renewal to keep up, any more than there can be too exact an obedience to law and order.

The *most active* renewal of the body possible, the highest possible development of life in every part, is HEALTH.

The *complete* cessation of renewal is DEATH.

The *partial* cessation, or arrest, is DISEASE.

In death the flesh goes on being decomposed as during life; but not being renewed, the form is lost entirely. In disease, decomposition goes on, but renewal flags, and the decomposing tissues are not sufficiently pushed out by new-formed substance. They are retained as part of the imperfect body—a sort of "death in life"—and are rightly termed by the pathologist "degenerate." They are generated, but not *re-generated*; they are generated in an inferior mould of form.

Take as an example what happens sometimes to voluntary contractile fibre. We all know that if an animal's limbs are duly employed, the muscles keep up their shape and their vigorous power of contraction; their tissue is of a rich bright red colour

when the animal is fully grown, and is firm and elastic. Examine it under a microscope, and you find it made up of even parallel fibres, each fibre seeming to be engraved over with delicate equidistant cross-markings, like a measuring-tape very minutely divided. The more the muscle has been used in a well-nourished frame, the more closely it conforms to the typical specimen of the physiologist :

“ Use, use is life ; and he most truly lives
Who uses best.”

But suppose this muscular fibre has been unemployed—suppose it is in the biceps of an Indian fakeer, who has fastened his arm upright till it has become immoveable, or the unused gluteus of a one-legged soldier, or the calf of a Chinese belle, or in a paralysed limb—then the flesh is quite different in aspect ; it is flabby and inelastic, of a pale yellowish hue, and makes greasy streaks on the knife that cuts it. Sometimes even all traces of fibres have disappeared, and it is converted into an unhealthy fat. Sometimes you may trace fibres under the microscope, but their outline is bulging and irregular, the cross-markings are wanted, and you see dark, refracting globules of oily matter in them instead. In short, the muscle is degenerating into fat, retaining in a great measure its shape, but losing its substance. Such is, by God’s law, the penal consequence of not using His gifts for four or five months.

Now go back to our first sepulchral illustrations. M. Devergie found that in a period of between four and five months the flesh of a corpse is converted into a substance technically termed “adipocere:” an oleaginous substance between fat and wax—an artificial fat the result of chemical decomposition. What is

this but precisely that which happens to the disused muscles in the cases quoted? At the Morgue, a continuous stream of water washed away the fetid gases from the subject of M. Devergie's observations, and in the living body destructive metamorphosis and excretion remove the more directly noxious particles; in both there remains the same oleaginous residuum.

The instance chosen of diseased structure was purposely an extreme one; but even there, a very advanced degree of partial death was seen not to be inconsistent with life. A less degree is not inconsistent even with active usefulness. Look at many a man whom his physician knows to have a weak or slightly-dilated heart; he goes on with his profession, mixes in society; enjoys his quiet pleasures, and may even insure his life by paying an extra premium. Yet if an accident at any time should cut him off suddenly, the muscular tissue of the heart will be found pale and soft, while under the microscope the fibres are deficient in clear outline and in cross-markings, and exhibit here and there minute specks of that fatty degeneration which was so conspicuous to the naked eye in M. Devergie's subjects and in the completely paralysed limb. The more dilated and the more weak the heart, the more widespread is this degeneration. Yet enough of active structure is left to carry on the work of the heart, and perhaps to prolong life to its allotted three-score years and ten.

A close copy of the pathological process may be made by soaking a piece of muscle, say from a healthy sheep's heart, in a running stream, in weak spirits and water, or in nitric acid and water, for a few weeks, when sections made from time to time will exhibit the several stages of fatty degeneration, from the minute

specks in the scarcely-altered muscle up to complete conversion into adipocere.*

Remark in these cases of fatty degeneration or decay that the substance which replaces the highly-organized animal matter is not utterly inorganic. It is less organized and less organizable, but still capable of being called alive. Of our living bodies fat is a part and a necessary part; but still it is not capable of performing the highly vital duties of muscular tissue, of being *as thoroughly* alive. Degenerated products, therefore, so long as they form part of the body, may still be said to be alive, but *less* alive than the normal tissues they replace; and degenerate growth may be justly described as "diminished life,"—or in the words I lately used, "partial death." Degeneration, in short, is a more or less *relapse* into a lower and lower form of organic life, and exhibits itself therefore in a variety of grades and amounts. Occurring in various parts, it occasions three quarters of the chronic illnesses which give work to the physician.

Let it be well understood that these half-living tissues are by no means necessarily lessened in size. A battered, tinkered vessel is often much bulkier than a strong new one; and in the same way these under-nourished parts are often enlarged, and so have been wrongly supposed to be over-nourished. They often attain a most cumbersome weight and bigness without really containing tissue enough to do their work. They become, in truth, a foreign substance. Sometimes they acquire what seems like a parasitic life, and grow as if independent of the body which they inhabit. Then you justly look upon them with a peculiarly unfavorable eye, and call them by the

* Figured in 'Medico-Chirurgical Transactions,' vol. xxxiii, plate v, in illustration of a paper by Dr. Quain.

epithet "malignant." Cancer is the best-known example to quote ; and you who have watched its fatally rapid increase are perhaps wondering that it should be put forward as an instance of diminished vitality. But watch further with the mind and not the eye only ; you will see that it never acquires the higher characteristics of life ; it never puts on the *form* of the part it is planted in, nor performs its duties. Moreover its half-life, so easily acquired and so easily multiplied, is also easily lost. Its very tendency to die and to ulcerate is one of the chief dangers in which it puts your patient.

But it is not necessary to seek our illustrations among these dreadful sorrows of humanity, when we can find them in less painful scenes. Every one associates cancer and degeneration with fatality ; but perhaps it is not quite such a familiar idea to see partial death in a cold in the head or relaxed throat. However you may smile at the notion, it is a true one ; and I should advise your taking the next opportunity which a Catarrh gives you of seeing the truth and its bearings. It is almost worth while to catch a cold on purpose, so important is the lesson, so much more valuable, probably, than the lecture you miss by nursing it.

Suppose yourself then laid up in dressing-gown and slippers, ready to study pathology on your own person. Look at your throat in a mirror—what do you see ? The surface red, puffy, and with the component parts, such as the uvula, enlarged. There is also poured out a quantity of slimy material, which you well know by the name of mucus. At first you cry, " Surely here is an active business going on ; everything seems much more lively than usual ; life is increased, not diminished." Not so fast—examine in a microscope a little of this mu-

cus, and you will find it made up of minute balls of transparent jelly with a granular aspect, technically called "exudation globules," "mucous globules," and "pus globules," floating quite free, and rolling over and over without any tendency to adhere together. Are these bodies a new creation, something which an inflamed membrane can produce, while a healthy one lacks the power? are they evidences of an additional life-force? By no means; for they have been identified with those elementary forms of nascent life by which all organic matters grow; they are young *cells*.* They are the form assumed by all liquid living material which under the influence of life is being transformed into a solid. They are a baby tissue strangled in its birth. Instead of uniting into a continuous web to clothe with epithelium the surface of the membrane, they float off helpless from deficient vitality. The business of mucous membranes is to be covered with epithelium, not to throw off mucus; and when they are doing the latter, they are so far forth in a state of diminished life.

But you may ask, what is that redness and that throbbing of the inflamed part? do not they show an increased circulation of the vital fluid, and therefore increased life? Quite the contrary, for the membrane is red because its blood-vessels are relaxed and dilated from loss of vital elasticity; the blood sticks in them as water in a bulged pipe; and the arteries, pressed upon from behind by the heart, throb because the obstruction impedes their action.

"But the pain,—does not that show that the vital

* The identification of young epithelium and pus cells, was some years ago amusingly made out by M. Lebert, who, in plate iii, figs. 3 and 6, of the atlas to his 'Physiologie Pathologique,' places them in opposition, with the intent of pointing out their differences, but with the result of showing their identity.

power of sensibility is increased? I cannot, in general, feel that I have got a throat; and now I am reminded most disagreeably of the fact." No; pain does not indicate an increase of proper sensibility; in this case it is associated with a very marked decrease. In your Catarrh the membrane of the fauces loses its delicate power of distinguishing flavours—everything tastes equally nasty, unless there is a pungency too powerful to be agreeable in health. And it is wanting, too, in common sensibility. It does not distinguish the shape or size of morsels swallowed, all of which feel equally large and awkward.

Or you may get a Whitlow on your finger, or a Boil, and study how the nail is stayed in its growth, and the skin is killed; while the materials intended to renew them are arrested in their development, and go to be deposited as pus, a concentrated form of half-vitalised fluid, very similar in every respect to mucus.* And, like your catarrhal throat, your inflamed finger-tip is wanting in sensibility: try it, and you will find for any delicate work, such as feeling the fine lines of a copper-plate, or the flaws in a polished surface, it fails in its duty. Pain, in short, is the brother of death; a painful part is never performing its whole vital functions, it is partially defunct.

The same partial death, which has been hitherto described as constituting the various diseased states of the solid structures of the body, may also attack the fluids; and in them, as in the solids, may be exhibited either as a destructive relapse into a less organic life, or as an arrest of development. The poison of Fever, for example, destroys and renders useless as nutriment some constituents of the blood; the insufficient blood

* On the pus formation in connective tissue, see Virchow's 'Cellular Pathology,' fig. 137, and text adjoining.

is circulated to all parts of the body, causing, not local pain, but general *malaise* by its deficient vitality. The half-poisoned tissues allow the poisoned material to ooze through them, causing Diarrhœas, exhalations of blood, purple blotches on the skin, and a general staining of the whole surface of a dusky hue. If the quantity of blood poisoned is moderate, it can be easily spared; it is carried off gradually by excretions, and its place is filled up in time by new blood. But if the rare case happens of so much being poisoned at once, that too little remains to carry on the business of the body, then death occurs by sudden shock; or if, through ignorance, carelessness, or false theory, there is an insufficient supply of material to take the place of the killed blood, the loss of vitality occurs more slowly. And occurring more slowly, it usually affects some part more than another; there is congestion and inflammation—that is, local death—of the digestive viscera, or of the lungs, or of the brain, and the patient's disease is assigned by name to that last cause. Thus, in Fever, the blood relapses into a less organic form through its vitality being destroyed by a morbid poison.

Let us next look for an instance of imperfect life in the blood, occasioned by arrest of development. You are all practically familiar with the condition, so common among hospital out-patients, which you have learnt to call Anæmia. The word means literally “bloodlessness,” but in reality relates rather to deficient quality than deficient quantity. The circulating fluid cannot well help filling up the hollow vessels which contain it, but it is wanting in the most highly organized, the most truly living of its constituents. It is pale, from the diminished numbers of those floating red globules which give its natural hue. This capital

of red globules is by far the most important portion of the blood ; so much so, indeed, that it may be taken as a direct measure of corporeal and mental vigour ; a man possesses a larger proportion than a woman, a strong man than a weak man, an adult more than a youth or an elder, a patient after recovery more than during his sickness of whatever kind, a horse in high condition more than when brought up from grass. Yet in spite of this importance, we find, to our surprise, that this floating capital may be largely encroached upon without a bankruptcy. For example, Dr. Andral has analysed the blood of a patient with anæmia, where the blood-globules amounted to less than 39 parts in 1000, whereas their natural proportion should be at least 120 parts in 1000. More than two-thirds of this constituent were missing ! And yet the patient was living and moving, and very likely quite recovered in the end if rational treatment was adopted. Now, in pure Anæmia there is not found any degenerated devitalised substance ; the missing globules have not relapsed into a lower life, so that their ruins or débris should constitute a foreign morbid matter ; but they have been used up in the regular way, and have supplied materials for the tissues, as they are moulted off from day to day. At the same time there has been a want of renewal, an arrest of that continuous development of blood, which is necessary to complete life.

Pure Anæmia has been spoken of ; but, as might have been expected, this defective supply of the materials of growth much weakens the vitality of many of the manufacturing and excreting viscera : for their machinery needs continual repair, as much as any part of the voluntary apparatus. Hence, in cases of Anæmia we often find that the liver is not so lively as

it should be, and some of the colour it ought to get rid of stays in the circulation, or exudes and chronically stains the skin of a bilious hue. Or perhaps the kidneys do only half work, and the urea which they ought to drain off is retained, causing very serious derangements of health. Thus there is a mixed pathology in these cases, a combination of arrested life with a relapse into a lower life; the life of the specially affected organ is diminished, and it leaves behind in the system substances of inferior vitality which its proper business is to excrete or separate.

Or again, Anæmia may so depress the creative power of the blood, that instead of the body being built with elastic and highly vitalised fibrin, it has to put up with a cheesy, brittle substance called tubercle. This is just the sort of fraud a rascally contractor commits, when he lays your floors on half-dried timbers. Your house is destroyed by dry-rot; and the lungs in which tubercle has been substituted for healthy connective tissue, gradually soften and break up. The most effectual remedy in both instances is to look after the builders, to preserve the honesty of the one and the vitality of the other as far as possible.

When the various accidental circumstances of our daily habits dispose various parts of the body to even the few elementary forms of disease which I have mentioned here, a great variety of abnormal phenomena may be produced. Our body is a harp of so many strings, that all sorts of discords may arise out of very simple combinations. These discords have received much attention from minds with a taste for order; they have been classified into groups; and if, unfortunately, the orderly mind was afflicted with a theory, sadly have facts sometimes suffered by the Procrustean bed called a Nosology, into which they

have been forced. On the whole, perhaps, the Νοσολογοι (people who talk about diseases) have been a convenience, for their nomenclature often enables us to describe in one word what otherwise would require a parenthesis. But their labours have had this bad result; they have assigned a positive existence to that which, in reality, is a negation. "*A Disease*," under their manipulation, instead of being a mode in which life is deficient, becomes an actual motive power; the giving it a generic and specific name associates it in our minds with the subjects of a naturalist's studies, and we get to attribute to it individual characteristics, and to allot to it individual actions. The consequences in science have been most fatal to true progress. However, less practical harm than might have been feared has been done by these false notions. In the first place, patients are tougher than usually supposed, and will stand a deal of wrong treatment; and, secondly, experience has somewhat checked the bold hand of a relentless logic. Still, it can hardly be doubted that the increased chance of recovery under professional treatment has not been what might have been expected from the advance of knowledge.

Of late, medical art, as far as practice is concerned, has been turning over a new leaf; Nosologists are at a discount, and at last, under the influence of common sense, attention seems directed to the maintenance of life *in* the body more than to the expulsion of death *out* of it. Such is the true preaching to the discerning mind of the new modes of treatment which, without falling in with the dogmas of any particular "*pathy*," have yet been silently adopted by the rational adherents of each within the last few years. I may instance the care bestowed upon the selection of alimentary

substances ; the use of Water, of Oxygen, of Iron, of Animal Oils, of Chlorine, of Soda, in doses more like a food than a drug, of Lactic and other organic acids, of salts of Phosphorus and Lime, of Sulphur, Ammonia, Bile, Pepsin, and several other agents established by common consent without being suggested by any previous theory of therapeutics, or traditional rules of the medical art. These are constituents of the animal frame, and are administered and trusted to as supplying obvious abnormal deficiencies of matter.

If experience has taught us to reform our practice, should it not teach us to reform our theory too? that so the partial advantages which have been gained may become universal, and our doctrines and actions cease to be inharmonious.

I began this lecture by comparing the animal body to a building constructed of perishable materials, which need continuous renewal to maintain the usefulness of the structure. To keep up the simile, the permanent Architect is the indwelling life, and he best performs his duty, not by fits and starts of work, but by continuous vigilant industry. He should be every moment removing decaying materials from the walls and working machinery, to be carted away at convenient periods, and every moment supplying their place by fresh. Thus there are two departments carried on simultaneously—the Destructive and Constructive business ; and upon their harmony and completeness depends the perfection of life which we call health. Both are necessary ; but the deficiency of both or either, or of the preponderance of one over the other in various parts, or their deficiency in one part while others remain active, constitutes a deficiency of life—a disease.

The restorativist physician should look at his phar-

macopœia with an eye to the ultimate benefit of the patient before him, to a goal beyond that of the immediate effects. He should make his chief thought how each of the reagents employed will finally touch life.

The tools with which he has to work, and which he knows best as trustworthy, may fairly be divided into CONSTRUCTIVES, ARRESTERS, and DESTRUCTIVES, according as the end they accomplish affects metamorphosis, and on this division he rests his practice.

Among CONSTRUCTIVES he classes, first, *the materials of which the body is built*,—Albumen, Fibrin, Gelatin, Oil, Water, Iron, Lime, Phosphatic salts, Sulphur, &c. :—

Aids to the assimilation of these materials,—such as Bitter and Astringent drugs, which prevent the absorbing membranes from being obstructed by mucus; Excitants of the involuntary muscles which subserve absorption, such as Strychnia, Aloes, &c. :—

Direct supply of wanting digestive solvents,—Water, Carbonic acid, Bile, Pepsin, Lactic acid, &c.

Direct aid to defective vital functions,—such as of Artificial Heat by baths, poultices, and clothes; Electricity, Artificial Motion, and Mechanical Aids to sight and hearing.

The temporary stimulation of deficient function,—as the deepening of sluggish breathing by Ammonia, Valerian, Ethers and Essential oils; which stimulation, though it may be only temporary upon the organ directly influenced, and is therefore followed by a reaction of collapse, yet indirectly it contributes to life by the influence of the function of the organ upon other parts; as, for example, the deepening of the breathing, instanced just now, aërates the blood and strengthens the circulation, and so makes to the capital

of life an addition which remains permanent after the temporary stimulus has lapsed into a corresponding degree of deficiency.

By ARRESTERS are meant those agents which stop for a time vital acts, such as Alcohol, Theine, Opium, Tobacco, and perhaps all Anæsthetics, which check notably destructive metamorphosis, and in various degrees probably also reconstruction at the same moment.

With DESTRUCTIVES our forefathers have left us best acquainted. Time out of mind we have had long lists of drugs, which are classified according to the organ through whose gates they disgorge the products of destructive metamorphosis. Sudorifics, Purgatives, Diuretics, Expectorants, &c., are familiar to doctors and unlearned; while others, as Mercury for example, are known as general Liquefacients, which promote destructive metamorphosis generally, and a consequent increase of solid evacuation from all quarters. And others again, such as Bleeding, are a direct mechanical removal of a part of the living body.

But, unlike the allopathist, the restoratist does not use these agents merely as such. By the interference rationally interposed, our aim is to assist the architect in one half of his duty, and thus contribute in an indirect way towards making him more active in the other half. Or, by the judicious use of Destructives and Arresters of metamorphosis, we in some cases make room for, and in others allow time for, the normal growth of the tissues, and thus act up to our principle of making our prime object the Renewal of Life.

APPENDIX TO LECTURE II.

OBJECTIONS ANSWERED.

A STUDENT who hears for the first time that "*Morbid phenomena are always an indication of deficient vitality,*" may probably find a stumbling-block in the following observations which he will not fail to make on the patients before him:—

First. Morbid excretions and secretions are often more copious than natural.

Second. Morbid solid products may add to the size of the parts they are attached to.

Third. Morbid muscular motions may be excessive.

Fourth. Morbid mental phenomena may be apparently excessive.

Fifth. Morbid temperature is often higher than the normal average.

Sixth. Sensibility is sometimes increased by disease.

First objection.—*The copiousness of morbid excreta* will be observed to depend not on the addition to them of such organized products as are useful in assisting vital processes, but of such as are the result of the physical decomposition of the body, or of its deficient resistance to external cosmical agents. In Diarrhœa there is not an extra formation of pepsin or other digestive juices in the alimentary canal, but a flood of liquid resulting from the diminished Endosmosis compared with Exosmosis—just as you have a flow of water down the waste-pipe of a cistern when you do not use so much in the house as usual. Thus, also,

medicines and diseases which increase the amount of hepatic secretion found in the stools, do so by poisoning either the secretion itself or the intestinal absorbents; so that not the quantity made but the quantity wasted is in excess. Waste is no proof of life. Again, in urine abnormally augmented there is found no excess of its essential part, urea, but in almost all cases a deficiency; those instances of apparent excess formerly classed as Azoturia, Baruria, &c., really resolving themselves into irregular retention and consequent evacuation. The urea is first retained, then thrown out for two days in one. Again, in the bronchi, how can we call excessive mucus an excess of life, when even popular observation takes its superabundance (the "death rattle") as a proof of imminent death? It is not the business of healthy mucous membranes to be covered with mucus at all, and when they are so it is a sign of deficient life, local or general. Mucous globules consist of young epithelium, that is, of epithelium which ought to have lived, remained adherent to the basement membrane, and performed the local duties, but which has died in its youth and become a tenacious fluid instead of a continuous solid.

Second objection,—viz. That morbid products may add to the size of the parts they are attached to. The fact that diseased parts are often increased in solid bulk is of serious import, and suggests two questions, both of very practical bearing:—

Firstly, does augmented bulk imply augmented *general* life in the individual?

Secondly, does it imply augmented *local* life in the part affected?

To the first question a sufficient answer may be found, which a few visits with the eyes open to either medical or surgical wards of a hospital may show you

is true ; namely, that it is not the burly, full-pulsed, red-blooded man of large appetite and great muscular power that is most liable to exhibit a specimen of solid morbid matter, but the starved anæmic, quivering at a breeze or a blow.

In what corpse do you find the largest weight of fibrin thrown out in the peritoneum in the shortest possible time? In one dead of Puerperal Fever—that is, in the weakest sex at the period of its greatest weakness.

In whom is Rheumatic Fever most likely to cause Pericarditis, with its great masses of morbid matter? In the young overgrown person, especially if a female, and more especially if an overworked, under-fed needlewoman or maid-of-all-work.

In whose heart do the consequences of this Pericarditis most rapidly induce hypertrophy? Not in the well-fed and well-clothed idle or professional man or woman ; but at the same weakly time, in the same weakly sex, and under the same debilitating circumstances as the original disease came on. Cancers and other tumours are found most frequently and of quickest growth in the least lively bodies, in the least lively parts, and in those which are half killed by wounds, injuries, or previous disease.

It is perhaps not impossible, that while the general vitality of the individual is lessened, some part might exhibit an extra amount. But morbid processes are not evidences of it : they rather resemble developments of a lower form of life : their products, though abundant, are less vital than the normal growth whose place they take ; their existence is temporary, and “they are not capable of becoming permanent constituents of the body, or of lasting as long as the individual.”* Examine a patient with thickened heart

* Virchow's ‘Cellular Pathology,’ p. 456.

during life, and the pulse does not strike your finger vigorously, the apex of the organ does not beat sharply against the ribs ; indeed, the thicker it gets, the less powerful is both pulse and beat, and the less actively does the blood course through the vessels. Examine it after death, and you will seldom fail to find a pale tissue with microscopical evidences of commencing fatty degeneration. Still more evident is the same degenerative tendency in Cancer. The tissue of malignant tumours, directly it ceases to grow rapidly, begins to decay, to shrink and be converted into fat. It is difficult to imagine local strength or local excess of life producing such a weakling crop.

In Cancer, truly, there is a continuous reproduction of new foci of growth, a new progeny of prolific cells, which certainly does look like an extension of local life over a larger space, if not of the production of fresh local life. But then we should reflect that the highest and most vital function of nutritive growth is the retention of the form of the body or its separate parts ; that in morbid augmentations of size this is lost ; the controlling power is absent, and the more so the more morbid and the larger the augmentation is. The *formlessness* of cancerous and of the so-called hypertrophic tissues seems to refer them to a lower grade of organic life than normal growth.

Third objection.—That morbid muscular motions are often excessive.

Doubtless it is the function of muscular tissue to contract, and therefore when it contracts oftenest and most it might naturally seem to be fullest of life. But, on the other hand, its function is to contract in obedience to antecedent animal acts ; the voluntary muscles in obedience to the will, the involuntary in

obedience to other demands. And moreover it does not seem certain that relaxation is not an active state as well as contraction, for reflex muscular actions, such as winking, yawning, sneezing, laughing, &c., can often be prevented by an effort of the will keeping the muscles relaxed. The highest development of life is the fullest submission of the muscle to its natural master.

Observe, in excessive Hæmorrhage, which I suppose all will allow is not an exaltation of vitality, there is Spasm, Convulsion, sometimes Epilepsy. In diseases universally acknowledged to be debilitating you find that irregular constant motion called *subsultus tendinum*, and the nearer death, the more marked it is. When the limbs are wearied by violent exercise, they start and quiver, and keep us awake after a hard day's walking by cramp. The weaker the will, the more frequent and more violent are hysteric paroxysms. In short the rule in the more obvious cases appears to be, that as the debility is greater and so the easier excited, the more frequent and more uncontrollable are the muscular contractions.

Fourth objection.—*That morbid mental phenomena may be excessive.* If you examine carefully the minds of those in whom one or more mental faculty appears excessive, you will find that such apparent excess is due to the deficiency of another, which in the normal state balanced or controlled it. Thus, for instance, the drawings and handwriting of incipient lunatics sometimes exhibit a delicacy and minuteness almost supernatural. This appears to arise from want of imagination and taste. The extraordinary memory for little things which these people exhibit is seemingly dependent on the emptiness of their minds of other sensations. That intellect, judgment, poetical or artistic power are ever

really developed by insanity, seems to be merely a popular delusion.

Fifth objection.—Life and warmth are so closely connected in men's minds, that the heightened temperature in inflammation and fever has contributed more than anything else to encourage the idea of the phenomena of disease being derived from excess of vital action.

Doubtless the heat of the body is greater in fever; but that is no positive proof that more is produced, only that more is retained, than in health. Indeed, in many cases you can show clearly enough that the quantity produced is *not* augmented. Chill an inflamed part and a healthy part to the same point at the same time, and you will find that the healthy part the soonest arrives at the normal temperature. Leave a patient with the burning skin of low fever exposed, and he will often get much colder than a healthy person under the same circumstances. Probably a great deal of the heat of fever is due to deficient evaporation by the skin and lungs, and under that aspect would present itself as the direct physical result of deficient function.

Sixth.—When people speak of Hyperæsthesia, and of sensibility being morbidly increased, they mean that more pain than ordinary is felt in certain parts. I cannot hear that they ever find agreeable sensations augmented. No patient ever speaks of enjoying his morbid feelings; his capacities in this respect are not raised.

Nor have I ever found the organs of special sense made really more perceptive by disease. No sounds absolutely inaudible to the attentive ear ever impinge on the auditory nerve, nor are objects beyond the range of vision portrayed on the retina of the sick. It is

true, that the pains they feel often make them attentive to slight sounds and distant sights, which the bystanders have passed over; but these latter never fail also to hear and see them by a voluntary direction of the attention.

Nor is common sensation rendered more accurate or delicate. I have tried several times, by the test of its appreciation of the distance between the two points of a pair of compasses, whether a spot inflamed with gout had the perceptive faculties of its nerves heightened in comparison with the corresponding part of the opposite side. I have never found it to be so. I have tried the same experiment on parts affected with hysterical so-called Hyperæsthesia, namely, the brow and the left hypochondrium, and the delicacy of touch seemed, if anywise altered, to be lessened.

The increase of painful sensation in disease is of two kinds: first, the exaltation of it in parts which are naturally sensitive; and secondly, its establishment in parts which normally have no feeling. Can either be viewed as an augmentation of life? Test the first by the gradual production of indubitable local death in a part. Burn a portion of skin with fire or a caustic, or produce a slough by pressure;—the entire death or mortification is always preceded by pain. And this pain goes on getting worse and worse the nearer to death the spot approaches, till its sudden cessation at the period of the virtual disconnexion of the part with the individual. It seems unreasonable to suppose that the nearer death a part is, the higher should be its life; and we cannot therefore accept heightened capacity for pain as proof of heightened life.

The occurrence of pain during the inflammation of tissues destitute of nerves and insensible under ordinary circumstances, such as the alimentary canal, car-

tilages, &c., is a very puzzling circumstance. How is it that the power of transmitting impressions to the mind is then extended to them? I confess I do not see how this is to be explained as due to a deprivation of life; but at the same time the analogous phenomena of mortification just noticed prevent it from being an argument to the contrary.

A reviewer in the 'Lancet' has brought it forward as an objection to the principles suggested in this volume, that they involve no new practice, but simply that which is adopted by several of the most earnest and liberal-minded hospital physicians, who still suppose themselves to be Allopathists or Eclectics. I hail this criticism as true praise, for my ambition is not to be an innovating inventor of novel expedients and unheard-of drugs. I wish rather first to bind together in a golden chain that which is good and received, though scattered and diluted with the dregs of inferior practice; and I would wait patiently to see if haply some vigorous new birth may result from the union of truth and time.

LECTURE III.

CONTINUED LOW FEVER.

Case of Continued low Fever—Cause of Fever—Why it affects some and not all—Poison acts slowly—enters probably by the alimentary canal—Case of progress of Fever-poison arrested by emetics—Action of Fever-poison on living organism—Devitalizing power on Blood—First symptom of partial death, a Rigor—Next symptom, Pain—Loss of appetite—Not arising from defective metamorphosis—Diarrhœa—Hæmorrhage—Increased heat—All are evidences that disease is something less than life—Cold affusion removes but does not check the formation of heat—Object of treatment not the mere typh poison, but the interstitial death of the tissues—Touchstone of Restorative Medicine—Application—Use of Emetics—Tepid sponging—Supply of Food—Hydrochloric Acid—Alcohol—Local Bloodletting—Principal difference between patients lies in the stomach—Two instances—Deduction.

(October 18th, 1861.)

You saw a case of Continued Fever admitted into Albert Ward four days ago, which presents a good many points valuable for instruction.

Charles P., aged 15, a shop-messenger, who has grown rapidly lately, and has been worked perhaps rather beyond his strength, stated on admission that

he had felt ill, languid, and unequal to exertion for six weeks. During the past fortnight he had come home every evening entirely without appetite for his supper, and had sat cowering over the fire in a shiver. For three days he had vomiting of all food taken, Diarrhœa, and pain in the belly. Cough also had come on with pain in the right side during respiration. He had expectorated transparent mucus with sooty specks in it.

On examination there were found on the surface of the abdomen and chest upwards of a dozen dingy fever-spots in several stages, some entirely disappearing on pressure, some not. There was no pain or gurgling on pressure of the bowels, and the Diarrhœa was stated to have ceased. There was great muscular languor and inability to stand, and a very weary, dull look in the eyes. The right cheek was flushed. The lower part of the right lung was dull on percussion, and there were moist cracklings in it not very fine, and dry whistling râles scattered about the rest of the lungs. The tongue was thickly coated with yellow; the skin was hot and dry; the pulse 104, small and sharp. The urine was high-coloured, and deposited a copious yellow sediment, soluble by heat. The quantity passed during the next twenty-four hours after admission was fifteen ounces, of the specific gravity 1.020.

The boy's mother stated that they lived in a healthy attic, dry and free from foul odours, and could in no wise account for the illness.

This is a sporadic case of the ordinary Continued Fever, common during the autumn in this metropolis, complicated by an intercurrent Pneumonia. It has presented all the most important symptoms without the patient being so ill as to be unable to tell his story, or to make the repetition of it and the examination by

pupils dangerous to him. I will call your attention to what you may learn from it.

There is every reason to believe that the exciting cause of these Fevers is a poison generated by decomposing organic matter and received into the body from without. It appears to be widely diffused through the air, especially in the neighbourhood of its origin in the air of sewers, putrid marshes, and crowded human habitations. If you are readers of popular sanitary literature, you are probably satiated with the accumulated and *decies repetita* evidence of this fact. You are inclined to ask how it is, if the poison is spread so broadcast, that everybody does not get poisoned? You will wonder why it should get into the body of this boy, whilst you, really much more exposed to it, escape. But remember there are two things necessary to poisoning; not only the poison, but a person apt to be affected by it. And, in point of fact, the latter is the most important element in the transaction. It is only on a predisposed body that a morbid poison acts. It is most likely that we are all constantly taking in minute doses of typh, (the exciting cause of these continued fevers), and that we can digest, oxidize it, or otherwise render it innocuous under ordinary circumstances. But should some epidemic influence or exceptional deficiency of vitality deprive us of the powers of doing so, then we suffer the effects and have typhus fever or typhoid fever, as the case may be. There was sufficient reason for this boy being the victim, while others escaped, shown in his recent rapid growth and in his strength being overtaken by his work. The exhaustion of vitality allowed the poison to do its work.

Observe how slowly the poison acts in some cases. Our patient is upwards of five weeks ailing before

any of the distinctive features of his Fever show themselves, and then they appear one by one. The time is not usually so long, especially during epidemics, but you may detect it in the history of almost every case. And you ought to notice it, because from some systematic works you might be led to suppose that a continued fever was easily to be measured by days and hours from the exact minute of invasion. This is impossible in practice, and would be of little use were it possible.

I am inclined to think that the usual path by which the poison enters is the digestive canal. It is mixed with the saliva and carried down to the stomach, where it possibly may accumulate and be multiplied in the gastric mucus. During severe epidemics it has been observed that those who smoke or chew, especially if they spit out the saliva instead of swallowing it, are less liable to be attacked. And at an early stage, even after the poison has begun to act upon the system, the Fever may be arrested by emptying the stomach; and thus apparently preventing the whole dose being taken up. Those who have watched my practice will have seen several instances of the success of this treatment; the Fever cut short, and convalescence entered upon immediately, with its painless debility and emaciation gradually passing away.

One case last autumn gave me the opportunity of recording that the influence of the remedy is not merely apparent or accidental, but that it really removes an essential part of the disease. W. S., a robust lad, aged 15, came into the hospital September 5th, 1860, with hot skin, rigors, excessive muscular languor, pain in the back, limbs, and head, of four days' duration, gurgling in the right iliac fossa, and rose spots. For the first twenty-four hours he had no

medicine, and the urine was kept and analysed. The result exhibited the following quantities of its various constituents daily excreted :—

Date.	Quantity in cubic centimètres.	Specific gravity.	Urea (grammes).	Uric Acid.	Chloride of Sodium.	Sulphuric Acid.	Phosphoric Acid.
Sept. 6, 1860	1000	1·027	50·63	·43	·25	3·48	3·24

Then an emetic was administered, and coincident with a universal remission of all the symptoms, the urine exhibited the following remarkable change in the amount passed during the next five periods of twenty-four hours :—

Date.	Quantity in cubic centimètres.	Specific gravity.	Urea (grammes).	Uric Acid.	Chloride of Sodium.	Sulphuric Acid.	Phosphoric Acid.
Sept. 7 . . .	530	1·028	29·37	a trace	0·79	1·97	1·14
Sept. 8 and 9; mean of two days' urine mixed	770	1·016	14·79	0·037	2·68	1·008	0·72
Sept. 10 . . .	1200	1·011	18·42	0·090	4·20	1·34	0·32
Sept. 11 . . .	1320	1·006	16·71	a trace	4·62	0·96	0·71

Now, the contrast between these specimens of urine is exactly that which is found between the urine during Fever and the urine during convalescence. In the first there is evidence of destructive metamorphosis going on with extreme rapidity; in the latter the destruction is overcome by renewal. And this change into convalescence was most strikingly marked as due to the operation of the emetic. When we see so often the immediate consequence of one dose of so simple a

remedy, it is difficult to avoid the conclusion that its benefit is purely mechanical, and that it acts by removing from the mucous membrane of the stomach a poison only partially absorbed and still adherent to it. Another reason for suspecting that the gastric mucous membrane is an early if not a primary recipient of the poison, is that it early exhibits such special phenomena as usually accompany the ingestion of an unwholesome material. Spontaneous vomiting is very generally found in the first stage of Fever (as you have observed in the patient under consideration), and seems to offer a presumption that the part which is then most feeling the effects of the poison is that organ which most resents it—the gastric mucous membrane. Such is the evidence by which I have been led to believe that the exciting cause of Continued Fever enters usually by the digestive canal—*valeat quantum*.

When the poison has once gained admission and is diffused by means of the circulation through the system, its effect is to destroy the vitality of a considerable amount of the organic living matter with which it comes in contact. The destruction is interstitial, not local—I mean, it does not kill absolutely a certain spot which it touches, like sulphuric acid, but it kills only certain constituents of the tissues. The destruction is partial, not entire—the organic matter is not utterly disorganized, but only reduced to a less vital, less organic condition. It may be traced easiest in the alterations found in the medium by which it is diffused. The blood, the common thoroughfare for distribution of good and evil to the tissues, exhibits a serious change. If you examine it under the microscope you will find that the normally-shaped red discs are diminished in numbers as compared with what pathologists call

“melanosed” corpuscles, that is to say, dying or dead discs, shrivelled and small, of a dark colour, with black specks in them, and with gimped edges. In bad cases these are unable to range themselves in rolls, as healthy blood does when it coagulates; they seem to have scarce any attraction for one another and lie in amorphous heaps. They dissolve easily in the serum and form with it a red fluid. You may trace this dissolution in the dusky stain which the blood communicates to the skin in Low Fever.

This poisoning goes on very gradually in some cases, and apparently quicker in others. You heard from this boy that he was five weeks ailing before he gave up work. There was an imperfect renewal of the body, evidenced in the languor after exertion and in the loss of appetite or deficient demand for new material by the formative processes. But destructive assimilation is not arrested, there is no stop to the removal of the effete tissues by excretion. I think it is possible that in a great many cases the disease, the partial death, may stop here, the destroyed tissues and their destroyer together be disorganized, be reduced to their elements and pass away. The idea is incapable of proof, but it would account for a vast number of those mysterious languors, unclassified, unnamed, and often unpitied, which distress patients and puzzle doctors. However, when the poisoning has reached a certain pitch, the nervous system cannot but take notice thereof, and express itself in the most common mode of taking notice of partial death, namely, by a shivering fit. Any severe injury to the body, a stretching of fibrous tissues, an operation, the fear of an operation, the absorption of destructive drugs, such as Antimony, for example, will cause more or less of a

rigor in proportion to the sensitiveness of the individual. And thus also when an interstitial death of some constituents of the body arrives at a certain point, there is a rigor. This rigor recurs from time to time at uncertain intervals, but generally about once a day.

Then commences another symptom of partial death—pain. This boy described his head, his limbs, and his back as aching all at once. That is to say, wherever there was most tissue with sensitive nerves in it, there was pain, indicating the diseased state of that tissue. Now all this aching is a symptom of the earlier, rather than of the more advanced stages of Fever; not because there is in the latter less death, but because the nervous system becomes partially dead too, and does not feel so acutely; while in the former it retains most of its normal sensibility.

Observe that this patient tells us of Nausea and loss of appetite, which diminished the food eaten—of vomiting, which rejected the greater part of that diminished food—and of Diarrhœa, which carried off the remainder scarce digested at all. Yet in spite of this, the amount of solid matter passed from the kidneys is fair; the specific gravity of the fifteen ounces of urine passed in the twenty-four hours is 1.020, which is a good deal for a person not in robust health. The metamorphosis, therefore, of the effete tissues into urea and salts is active; there is a continuous destruction of them in spite of the defective supply. This goes on so long as the Fever poison lasts in the body; but when it is got rid of, the destruction ceases; no more of the tissue is metamorphosed than is required to make room for new material, and the specific gravity of the urine falls during convalescence. This may take place very

suddenly, as in the instance I gave you of a Fever cut short by an emetic; but in general the alteration is more gradual.

I have mentioned the large amount of urea in proportion to the nutrition contained in the urine of Continued Fever, which is rendered evident by its high specific gravity. There is also an increase very evident to the naked eye in another constituent of some importance, the coloured organic material, which gives the secretion its ordinary hue. You saw how dark this boy's water was, and how deeply it stained the vessel from which I poured it on a piece of white linen. There is great reason to suppose there is a close alliance between this substance and whatever gives the red tint to the blood-discs, and that its excess depends on excessive destruction of those important little living particles.

The sulphuric acid and phosphoric acid, combined with bases, which form a necessary part of urine, do not, in Continued Fever, follow the lead of the urea; their amount is less than in health. Whether this is due to the destructive metamorphosis taking less effect on the chief tissues containing sulphur and phosphorus, than it does on the blood and muscles, is uncertain. Dr. Parkes suggests that perhaps a third of the normal sulphates and phosphates of the urine are derived directly from the food, and not from the metamorphosis of tissue; and therefore that their diminution in Continued (or Typh) Fever may be owing to the starvation, while the amount which still remains represents a fair proportion of destruction.*

The chlorine, in the shape of chloride of sodium, is also in small quantity, but not so deficient as to lead us to suppose that the metamorphosis of the chlori-

* Parkes 'On the Urine,' B. ii, chap. iii, sect. 4.

nated materials of the body does not go on, or that there is retention of it in the fluids. The great quantity of chloride of sodium taken as food, and directly mixing with all the fluids, again introduces a difficulty of observation. And another is offered by the frequency of intercurrent Pneumonia, which itself causes a retention of chlorides from the kidneys. This patient, for example, has a little Pneumonia, and we could not, therefore, say if absence of chlorides in his case were due to that inflammation or to Typh Fever. Other frequent impediments to knowledge are Diarrhœa or colliquative sweats.

The Diarrhœa so frequently accompanying Continued Fever is a further evidence of death in the blood. Let the fluid fever stools be set to stand in a tall glass, and you will see them separate into two parts; the higher a semi-transparent serum, in which float epithelium scales and crystals of ammonio-magnesian phosphate; the lower stratum a greenish-black flocculent precipitate. This last has no smell of bile, nor is bile to be found in it by chemical tests; but it contains broken-up blood-discs and a great quantity of dark, granular colouring matter—it is just like blood altered by the secretions of the bowels. And very often, when you let the stools separate in this way, and look at them by transmitted light, you will see a visible sanguineous tinge in them; very often blood mixed with mucus is passed from the bowels. Blood, too, is not infrequently spit up with the mucus from the lungs, and drips from the nose; and in bad cases the dried-up mucous membrane of the mouth cracks, and exudes the sanguineous serum on the surface of the tongue, producing the “dry, brown tongue” of severe Fever. All these prominent symptoms call

your attention to the interstitial death, the lessened life of the body.

The increased heat in Fever is, to the superficial observer, rather adverse to the doctrine which I have advanced, of all disease being an evidence of diminished vitality. And, in truth, it requires some thought to see why it is not really so. But a complete answer to the idea of an augmentation of heat being necessarily an augmentation of life, is afforded by the fact of many recorded instances of the increase of corporeal warmth having taken place in corpses actually after death; so that, discarding at once the notion of its being a proof of vitality, we may try and trace what causes, really rather to be associated with death, may give rise to it in the cases under our eye. In the first place, in Fever you have a diminution of the evaporation which takes place from a healthy skin, and which acts as such a powerful refrigerator, as any physiologist who has perspired knows full well. The dormant dry skin does not do its cooling office. Then, in the second place, there is a much larger quantity of dead matter to be evacuated, and the destructive metamorphosis of this dead matter, the semi-vital chemical destruction, raises the temperature, as all chemical solutions do. Wherever metamorphosis is rapid, the temperature is raised. But this metamorphosis alone, this passage of living into inorganic matter, cannot be called an increase of life, inasmuch as it indicates an advance of death. It is necessary, indeed, to the removal from the body of poisoned ingredients, and is so far an advantage, but still it is an indication of the quantity that is poisoned.

Cold affusion is sometimes spoken of, both by opponents and advocates, as "checking" or "arrest-

ing" the febrile heat. This is apt to give you a wrong notion. If it really arrested the metamorphosis which is the cause of that heat, it would be obnoxious to all that could be said against it. But, in fact, it no more "arrests" or "checks" the heat than emptying the bladder "arrests" the secretion of urine. A moment's thought will show you that what it does is to *remove* the heat from the external surface; and if it affects the cause of heat at all, it would rather encourage it by making room for more.

Such are some of the most prominent consequences of the Typh poison in the human body.

You may remember that, in the first lecture, I warned you against the Evacuator's or Humoral Pathologist's doctrine of a *materies morbi*, which he looks upon as *the* disease, and which he thinks he has done his duty by endeavouring to eliminate. "Surely," you will say, "this which you have been describing is a most typical *materies morbi*; if I eliminate this, I cure the disease." Not so fast—the bullet which enters the soldier's ribs is a *materies morbi*,—have you cured the disease when you have extracted it? Nay, more—suppose the bullet passed right through the chest and went out on the other side, would you consider the disease gone? No, the Typh poison is not the disease, any more than a bullet, or sulphuric acid, or opium is a disease, though each may be a material cause of disease. The partial death which these agents cause is the disease—is that which requires to be treated, and must be the chief point for the Physician's consideration.

Here, then, we bring our doctrine of RESTORATIVE MEDICINE to its touchstone—bedside application. The Restorativist asks himself, What vitalities are wanting, and where? And, How shall I easiest supply them?

In the first place, if he sees the case early, almost the only thing he notices is the lowered vitality of the stomach—how badly it digests its food, and how it loathes its usual work. He conjectures that its function is arrested by the presence of some poison, and he empties it with an emetic. In many cases brought under treatment early in the disease, this cuts it short at once, as I told you in a former part of the lecture, and as you have many opportunities of observing in the wards.

Secondly, supposing he is too late for this *coup de main*, he remarks that the skin is hot and dry, in a great measure from deficient perspiration and evaporation on the surface of the body. He undertakes to supply this want by an artificial moisture. He sponges the whole person over three or four times a day with tepid water, to which the nurses here generally add some distilled vinegar to make it more agreeable. The relief given is most sensible and immediate; but of course it soon passes away, as changes of temperature are in their very nature temporary. It must therefore be frequently repeated.

If the attendants have sufficient leisure to attend to an operation which consumes a good deal of time, it adds very much to the comfort derived from the sponging to anoint the body with some softly scented olive oil. This supplies the place of the arrested sebaceous follicles, and softens the skin for the absorption and exhalation of water. It is a mistake to suppose that oil and water are at all inconsistent or incapable of mixing in the substance of living tissues.

Where there is Pneumonia in Fever, I confess I am somewhat cautious about the employment of aqueous affusion. It sometimes chills the chest and causes an attack of Pleurisy on the inflamed side. Besides

which, it interferes with a plan I have of keeping a large poultice outside the affected part, and which I find so beneficial in Pneumonia that I do not like to omit it. For this reason it was not done in the case of the present patient.

Thirdly, the physician sees that a large supply of nitrogenous material must be wanting. The nitrogenous tissues are devitalized, are running away in a disproportionately large excretion of urea and other organic compounds, and nothing is taking their place. Shall he act allopathically, and give some drug whose tendency is to stop the passage of urea by the kidneys? I do not know exactly how he would set about it; but I know that if he succeeded, he would do positive harm; for the very worst cases of fever are those in which metamorphosis is active (as shown by the heat), while the excretion of urea is arrested (as shown by the lightness of the urine); they resemble cases of uræmic poisoning from diseased kidneys. The other principles of treatment which I noticed in my introductory lecture* would not perhaps be so directly injurious, but common sense would still assign the palm to Restoration here. Let it be your chief aim to supply that which you so clearly see is passing away—nitrogenous food.

But how will you supply it? Solid meat would in all probability be vomited, from the intolerable loathing it excites. If not vomited, it would lie for some time a mere foreign matter outside the mucous membrane of the digestive canal, and then pass away by Diarrhœa, with much flatus and fetor and much disengagement of gas during putrefaction. Your beef-steak might as well have been originally thrown down its final destination, the water-closet; to which it

* See Lecture I.

passes putrid though undigested. Neither is it wise to fill the stomach with large quantities of victuals, for the same result follows. No "meals" must, therefore, be taken. The prudent plan is to give very small doses of liquid nitrogenous aliment very frequently. These pass over the irritated stomach unconsciously, and are taken up gradually by the intestines, requiring but very little to make them fit for absorption. The best adapted food is that which is naturally supplied to the weakest stomach. The feeble digestive organs of babies can assimilate milk, and milk forms the most appropriate nourishment for the debilitated viscera of the fever patient. By giving two or three ounces every hour you may get down about a quart and a half per diem. But in ordinary instances every two hours is often enough, and that period is adopted for the boy before us. If there is sufficient acid left in the stomach to coagulate the casein into clots, and cheesy lumps are rejected by vomiting, as happens sometimes in milder cases, you may guard against this by adding *Liquor Calcis*, or Soda-water to the milk, or you may supply its place by beef-tea. But it is the lumping of the cheese into solid masses that it is desirable to avoid, not the acidification, which is beneficial. If the patient takes thus a good supply of milk and beef-tea, not only is the immediate danger of death by starvation avoided, but the emaciation which follows during convalescence is much less extreme, and the dangers in its wake less formidable.

Eggs are a highly nutritious food; and, if taken raw, diluted with milk or water, they are quickly absorbed. But should they be delayed and putrefy, the products of their decomposition are peculiarly injurious: the sulphuretted hydrogen and ammonia

evolved are poisons to the intestines. I should recommend you to avoid them till convalescence has restored the gastric powers. The same objection does not lie against milk, the lactic acid arising from whose decomposition assists in the solution of the casein. Sour buttermilk is by no means to be despised as a food.

Fourthly, the Restoratist turns his attention to the *Materia Medica*, and considers what he can cull from thence which will be of service.

You have been taught in the systematic course on Medical Pathology, that ammonia, which is always being formed and given off from the animal body, is found much more abundant in certain conditions than in others, and that these conditions are those in which nutritive metamorphosis or growth was deficient as compared with destructive metamorphosis, or those in which there is retention in the blood of the products of that destructive metamorphosis. Thus, more ammonia is found in the breath after exertion than after rest; more than usual in those who injure their digestion by smoking tobacco; a great deal in *Uræmia*, where the urea cannot escape by the kidneys; but above all, in Typh Fever is this exhalation of decay noticeable, as you will find in Dr. Richardson's valuable work on the "*Coagulation of the Blood*,"* where the phrase "*super-alkalinity of the blood*" is applied to this condition. Dr. Richardson goes so far as to attribute to this super-alkalinity the special typhoid symptoms, and to suggest that the absorption of ammonia in excess may intensify Fever in those who contract it from exposure to decaying organic matter, or human exhalations. He supports his hypo-

* Richardson on the '*Cause of the Coagulation of the Blood*,' Appendix I. (Edit. 1858.)

thesis on the experiment of inducing the symptoms, or something resembling them, by the injection of ammonia into the veins of an animal. The word "super-alkalinity" is expressive, and quite unobjectionable, so long as it is understood that the superabundance is not absolute, but comparative. For it is not shown that there is more alkali in the body than there ought to be, but more than there is acid to neutralize. "Sub-acidity" would be a synonymous term, and, perhaps, would be more suggestive of the means we have at our disposal for remedying the defect.

Very difficult indeed would it be for the Eliminator to get this alkali out, but it is easy for the Restorativist to get acid in. The acid I have always given is Hydrochloric, and you consequently see on this lad's card—
"R. Acidi Hydrochlorici diluti ℥xx., Syrupi ʒj., Aquæ ʒj., alternâ quâque horâ sumat."

Rich patients like a little more sugar, and the draught is usually approved of even for its taste. But it is still more approved of for its beneficial effects. This boy said to-day of his own accord, he hoped I should continue the draughts, they made him "feel so much stronger," meaning to express the sensation of relief to the depressing, wearying languor of Fever. In mild cases the tongue begins to clean immediately, the thirst and Diarrhœa much abate, and the repugnance to food is diminished.

In a clinical lecture at this Hospital in January, 1858,* I gave the details of the first dozen cases treated on this plan, and as you are a different audience from that which heard me at that time, perhaps I may be allowed to repeat the sentences in which I then tried to interpret the beneficial conse-

* Published in the 'Lancet,' January 30 and February 6, 1858, and partly republished as the next lecture in this volume.

quences: — “What blood, when analysed, comes nearest in its altered proportions to the blood in Low Fever? Is it not that of Scurvy and Purpura? There is the same excess of blackened (melanosed) blood-discs, the same deficiency of neutral salts and organizable (coagulable) lymph. Everybody treats these chronic affections with acids, and why not also an acute affection which corresponds with them in one point at any rate? As to the particular acid employed, Muriatic certainly deserves to be tried before others—first, because it is such a large constituent of the body that it might almost be called a food instead of a medicine; and secondly, because it is such a powerful arrester of the decomposition of animal matters. Pour it into a sewer, and you destroy the miasma. May it not in the body stop that miasma from poisoning the tissues?”

The allusion in the last sentence is of course to Chlorine as a disinfectant. But I do not know that there is any evidence of the benefit derived from the Hydrochloric Acid treatment being due to this property. About sixteen years ago, I employed Chlorine water as a medicine in Fever at the Chelsea Dispensary; but I was not encouraged to carry on the treatment by tracing any benefit to it. Whether the Chlorine which can be introduced in this way is not sufficient in amount (for it must be dilute, or else it will induce choking), or whether it is really useless, I do not know; but I left it off for years, and adopted the Acid from the description which Mr. Ash gave me of the advantageous use of it by Dr. Mackenzie.

Dr. Pereira in his “*Materia Medica*” speaks slightly of the use of Hydrochloric Acid in putrid fevers, and implies that it rests solely on exploded theoretical propositions. He should have noticed that

Boerhaave and Van Swieten recommend it, and that Sydenham used Sulphuric Acid in these forms of disease as an antiseptic drug. And these were men not easily led into erroneous practice by a prevalent theory. To their experience I can add my testimony, for I have employed the plan above described in every case of Low Fever since the summer of 1857, and have now, in October, 1861, not lost one of those patients who had been thus treated for thirty-six hours.*

But Dr. Pereira, in afterwards speaking of its use in Dyspepsia, gives as a reason for its employment therein, that first, "it is a constituent of the healthy gastric juice; and, secondly, when mixed with mucus, it has a solvent or digestive power in the case of various articles of diet." Is not this as much a reason for giving it in acute cases as in chronic?

Whether, then, as Sydenham seems to have thought, any other acid would do as well as the Hydrochloric, I cannot say, but it forms so large a constituent of the body combined with alkali in the blood and tissues, and free in the solvent juices, that it appears peculiarly suited to the purpose on Restorative principles.

As to the use of Alcohol in Continued Fever, I am guided almost entirely by the condition of the nervous

* *Note added, Dec., 1862.* In the register of St. Mary's Hospital for the current year, will appear two deaths of my patients from Continued Fever. One child, from an error in diagnosis, was treated for inflammation of the brain in consequence of a blow, and the ulcerated bowels not known of till after death. The other, a young woman, was however fully treated, I believe, on the plan described above. I was out of town at the time, from her constant delirium but scanty notes were taken by the clerk, and the friends refused an autopsy; but, as far as I can judge by the report of the sister of the ward, she appears to have died suddenly one night, of congestive Pneumonia.

system. If there is very complete prostration and delirium of a low muttering character, it is required. A tremulous state of the muscles, marked especially by a quivering of the hands and fingers, is a good test of the necessity for it; and so is a sharp, weak, unequal beat of the heart. All these indicate that the nervous system is feeling very sensitively the destructive metamorphosis going on, and has its power reduced by its sensitiveness. Then is the opportunity for the powerful anæsthetic Alcohol, which in severe cases you see me order without scruple, but which I do not rank as part of the necessary *methodus medendi* of Continued Fever, and have not yet ordered for the lad we have been prescribing for. Above all, I would caution you against employing wine as a substitute for the true restorative treatment which I have been describing. It may be useful as an adjunct, or to assist it, but never in its place.

There is, though, another of the adjunctive methods of treatment—exceptional, but often required—which has been employed with utility in this case—the local abstraction of blood. The boy had congestive Pneumonia of the lower lobe of one lung, and I did not hesitate to cup him beneath the scapula on that side. And not unfrequently when there is pain in the right iliac fossa, with Diarrhœa and Tenesmus, I put Leeches on the belly at the seat of pain. You saw the dulness on percussion rapidly pass away from the lower lobe in our patient here; and you will often see an equal relief to the abdominal congestion by a corresponding agency.

But you will cry out that I am sadly inconsistent. I am feeding up the patient with one hand and taking his *pabulum vitæ* with another. The reproach is just in a sense, but that a very limited one; and, in fact,

may be levelled against half the operations of daily life. We are constantly suffering a small loss for the sake of greater gain. And I think the loss of a little blood is insignificant compared with the advantage of securing a freer circulation through the lungs or a diminution of congestion in the intestinal canal. Do not be led away by the superficial notion that blood is blood, and blood is life. That is not true, for the blood varies immensely in its composition, some being very valuable, and other worthless. To lose some of the half-dead circulating fluid of Fever is but little loss, and that little loss is amply compensated for by the additional nutriment which a small bloodletting will enable to be absorbed. The deficiency is soon made up again under the restorative system.

In the sequelæ of Low Fever, more than in any other disease, the great difference between one patient and another as respects their power of recovery, lies in their stomach. There is a little girl of four years old now in Victoria Ward, who was admitted on the 2nd of September for Rose-spotted Fever, which had come out during the concluding week of August. She got through the Fever pretty favorably, but for the last seven weeks has had a succession of most formidable Abscesses in the back, the cervical glands, the internal ears, and the parotid glands; yet, in spite of the exhausting effect of the large discharge of pus from these spots, she has continued advancing in convalescence, she has gained flesh and muscular power, so that now she can sit up. For this favorable result she has to thank a most wonderful appetite, which never seems satisfied, even with an amount of food which is large for an adult, and which she delights to wash down with wine and porter. No

tonics seem of so much use to her as an extra snack at physic time.

The most extraordinary recovery from these pyæmic Abscesses after Fever you witnessed last year in a girl of sixteen (E. A., admitted September 28, 1860). She had very putrid Fever, accompanied by Hæmoptysis, Epistaxis, and bloody discharge *per vaginam*. She got well through her fever by the help of Hydrochloric Acid and wine. But as she became convalescent in the third week of October, she began to have large boils in the head; these were followed by abscesses running on into sloughing sores on the back. During the first week in November inflammation and swelling of the left leg began. This quickly became purulent infiltration of the whole of the left thigh, which on November 28 discharged two pints of pus in twenty-four hours, and smaller quantities daily for several successive weeks. On December 12, there was a large abscess in the axilla, which was opened and discharged several ounces. Her state of debility was such that she could not in the least help to feed herself. Yet all this time her stomach was in a state that a gourmand would look on as a seventh heaven. She was literally always hungry. As she swallowed her last bit of beef-steak she would feebly ask when she was to have some more, and what would be her next meal; and the way her eager eyes followed any article of food that passed her bed was quite affecting. We allowed her wolfish appetite its full liberty, and fed the puny maid like a gigantic gladiator. The consequence was, that she recovered from an amount of purulent disease which it would have seemed impossible for the human frame to support—and recovered perfectly, for I saw her in the April of the succeeding

year, looking as healthy and walking as briskly as if she had never been ill.

The moral of these cases is, *do all you can to increase the appetite, and strengthen the digestive powers.* Judge of the value of this drug and that drug, one tonic and another tonic, solely by the effect they have on the desire for food. If any remedy lessen this desire, insist upon leaving it off, whatever authorities may have recommended it; and form your judgment, not from tradition or prescription, but from its effect in the particular case before you.

LECTURE IV.

CONTINUED LOW FEVER.

*Cases, with running commentary—Relapse of rose-spots
—Contagion from patients to a nurse—Leeches and
Mercury—Mulberry-rash—Intermittent pulse—
Rose-spots or Mulberry-spots, which most dangerous?
—Wine in Fevers—Retarded emaciation—Subcuti-
cular eruption—Contagion—Artificial cuticle in bed-
sores—Sudamina—Low condition in convalescence,
its symptoms.*

[It may be remarked that the date attached to the ensuing matter is earlier by nearly four years than that which precedes it in this volume. It is the latter half of a clinical lecture, first published in the 'Lancet,' of February 6th, 1858, which, after nine cases otherwise managed, details the particulars of the first twelve cases treated by the restorative method described a few pages back. It was not, therefore, necessary again to allude to these cases, nor to the fact of the patients having passed favourably through the attack. But some of them illustrating points of pathological interest, and some of them, in addition to the general treatment of the disease, having required that which was specially suited to each individual case, they are here reproduced.]

(January 20th, 1858.)

* * * *

CASE 10. — William W. (Case Book 103, p. 52). This was the deputy coachman from the infected house I spoke of in Case 8. He had equal muscular prostration, but not nearly so much mental affection, as the housemaid. On the skin there were rosy

spots, coming out slowly and in consecutive crops. One peculiarity in this case is, that during convalescence, when walking about and eating meat, he had a relapse, and the rosy spots came out again, with delirium, prostration, &c., nearly as bad as at first. It is very rare to have a relapse of rosy petechiæ, but you see it is not impossible.

CASE 11.—Mary Ann B. (C. B. 103, p. 64), a nurse in the hospital, had mild delirious Fever without any eruption. I am afraid we must allow that she caught it from the patients, for certainly there is no bad drainage here to generate it. There occurs *one* case now and then, to show you that Low Fever is contagious, and *but one* to show you that it is very slightly so.

CASE 12.—Fanny A. (C. B. 103, p. 66). This girl complained a good deal of pain in the right iliac fossa, several times recurring, which at last was treated by Leeches and Mercury, with immediate relief. You may often hesitate about these remedies, for fear of lowering the patient's strength by depletion; but if the pain is made a subject of complaint, you may feel safe; for the very fact of the sensitiveness of the body shows that it is not too low to bear them. Those who are so much prostrated as to make a few Leeches dangerous, are insensible to slight pain, and do not complain unless pressed.

CASE 13.—Emma B. (C. B. 103, p. 82). I never saw a skin more thickly covered with a mulberry-rash than in this fine stout brunette of eighteen; yet few have recovered so quickly. She came in on October 5th, having been ill eight days, with a pulse of 120 and great prostration; on the 6th, her pulse was "80, and intermittent;" on the 7th, "70, and intermittent;" on the 8th, "natural;" after which

medicines were left off, as she was convalescent. I am inclined to think that the natural tendency to develop colouring matter exhibited in the skin of dark persons, causes them also to develop more freely than others the coloured eruptions.

You will read in many old books (and sound books too) statements to the effect that dark, livid spots in Fevers are an evidence of more danger than rose spots, and that the danger is greatest when this dark rash is most abundant. You will have ample opportunities during your student life of seeing that neither of these rules is applicable to facts as they come before you. There are most deaths amongst the rose-spotted, and you will see many cases of unusually rapid recovery amongst those with a very copious eruption. Yet, for all that, I believe the ancients reported right. I believe that the difference is made by our more rational mode of treating our patients—successful in both sorts of cases, but most especially in those where the livid rash shows the chief force of the poison to have fallen on the blood. *Without* wine, the most fatal cases would be amongst the livid-spotted; *with* wine, the most are amongst the rosy.*

Emaciation did not commence in this patient till she was so far convalescent as to be up and dressed, and then with great rapidity she lost flesh. From the way in which she withstood and passed through the disease at its height, you would not have supposed her

* Let me not be supposed to say that the use of wine in Fever is a modern discovery. All good authorities, of all ages, allow it in exceptional cases; but till the present generation, modes of diagnosis have not been accurate enough to separate entirely idiopathic Fever and acute inflammations; and therefore an adherence to Galen's condemnation of wine was really prudent in them, as a rule.

to have been so severely ill as she really was. But the quick destruction of all the tissues, and their necessary renewal before the full functions of life can be performed, show how profoundly the typhous poison affects them. Emaciation may be rather called part of the cure than part of the disease; it is Nature's mode of getting rid of injured tissue.

CASE 14.—William W. (C. B. 103, p. 112). Pink spots; abdominal pain relieved by leeches; quite *en règle*.

CASE 15.—Edward P. (C. B. 103, p. 114). This robust man was again one of a set where the Fever was traceable to a poisonous locality. You may remember that he made so much noise by yelling "Dust-ho!" that he was obliged to be removed to the noisy ward. He turned out to be a workman at a neighbouring dust-contractor's, and the foreman of the yard was brought in a few days afterwards, in Dr. Alderson's week; and a third dustman came from close by, and will appear as Case 19. All these were very muscular men and very noisy. The first and second had rosy raised spots, which were peculiarly distinct and characteristic in Dr. Alderson's patient; but the third had a livid rash; and in the first, who is at present under review, there were livid mixed with rose spots.

Remark the nature of this man's occupation. Typhous miasmata are perhaps *generated* more rapidly when the substances whence they arise are wet, because moisture aids decomposition. But when once they are produced, there is much greater danger of their *diffusion* in poisonous amount from dry matters. Workers in sewers sometimes get poisoned by sulphuretted hydrogen, but they do not catch Fever: nor do the men who cart night-soil into the country for manure. But when this is spread out on the fields,

and exposed to the sun and air, it often causes a limited epidemic of Typhus. So, too, when drains are dried up by the summer heat, the disease is more rife than in seasons when they are full. A dried marsh, and the banks of tidal rivers exposed at low water, are made more pestiferous. So you see sanitary improvements require judgment as well as zeal. I believe the safest mode of treating dust would be to wet it.

You will observe that hearty people, when they do get Low Fever, generally have it very badly, as was the case here. I suppose their system is able to resist small doses of the poison, and when it absorbs large doses they are the more completely prostrated. Be careful not to give a favourable prognosis because your patient is a strong man: the muscular and the corpulent are of all the population those who run most risk.

CASE 16.—Caroline H. (C. B. 103, p. 214). This woman had great pain on pressing the abdomen, and fever stools. So she ought, by rule, to have exhibited a rosy rash; but, instead of that, there was a dusky subcuticular eruption, which is generally held to be of the mulberry sort. Van Swieten describes it as "lying very deep under the skin, as if Nature, overpowered by the violence of the disease, could not complete the critical translation which she had begun."* He considers it a dangerous sign, and I think he is right, as a general rule; for, though this woman recovered, she was very ill.

CASE 17.—Charles N. (C. B. 103, p. 228). This boy, again, had livid spots accompanying abdominal complications, which were relieved by leeches.

CASE 18.—Mary D. (C. B. 103, p. 228). A washerwoman, who became affected immediately after receiving the dirty linen from a house where there

* 'Commentaries on Boerhaave,' vol. vi, sect. 723.

had been Fever patients. It seems to me difficult to avoid a conclusion, that Low Fever may become contagious when the poison is concentrated. It is certainly wise to act upon this opinion.

Here again I made you remark the intermittence of the pulse from debility during Fever; and I also called your attention to the natural appearance of the stools during the height of the disease, and to their becoming liquid and fetid as the febrile symptoms declined and she began to emaciate. A Diarrhœa of such a sort at such a time is a very favourable occurrence; it is a critical discharge of the peccant humours.

CASE 19.—John G. (C. B. 103, p. 232). This was the third dustman. His pulse was also intermittent, as in the three former cases, but not till he was getting better. At first it was not above 80, though he was very noisily delirious, and had a brown tongue. You may observe this abnormal slowness of Fever pulses to be particularly prevalent in certain seasons. They have been slower than is quite consistent with the severity of other symptoms this winter.

CASE 20.—Stephen F. (C. B. 103, p. 246). I hear from Mr. Sanders, of Chigwell, who attends this boy's family, that they had Fever with "mulberry-rash" in the house, and that a brother had died of it. Stephen was sent to London to be out of the way, but sickened on the day of his arrival, and had rose spots in several crops. It is difficult to imagine the probability of two brothers contracting different miasmatic diseases in the same house, at the same time, and from the same cause; and the rational conclusion would seem to be, that both were of the same nature. It could only be the most overwhelming evidence which should lead us to think otherwise.

This lad nearly followed his brother. The more propitious hygienic circumstances under which he was placed, in a warm, airy hospital, instead of an ill-drained cottage, weighted the scale in his favour. I do not see anything fresh to remark in the pathology of this case, except that the patient got a superficial sore on the back by obstinately saturating his sheets with urine and fæces, and continuously rubbing the sacrum against them. You must distinguish these superficial sores from sloughs, because the same treatment will not prevent them. They will be produced by friction in spite of a water-pillow and all possible cleanliness, as in this lad's case. The best way of managing them is to paint the parts directly they get red with gutta percha, softened in chloroform. Take care and keep the solution thick enough by letting lumps of the gum remain undissolved in the bottle; it should be of the consistence of paint, so as to dry immediately on application. You thus obtain an artificial new cuticle, and can renew it as many times a day as you like.

CASE 21.—Henry G. (C. B. 103, p. 292). Instead of coloured petechiæ, the eruption in this very low case consisted of miliary vesicles, scattered like fine seeds all over the chest and abdomen. They are called in the Case-book "Sudamina." The word is derived from their often accompanying excessive perspiration; but remember that the association is not a necessary one; this man's skin was quite dry till he became convalescent.

CASE 22.—John B. (C. B. 103, p. 106). I have taken him out of chronological order, because he was not treated by Muriatic Acid. In fact, the Fever had passed away, and he might be called convalescent; yet you saw him very ill, unable to raise himself in

bed, and with a brown crust in the centre of his tongue. On inquiry, I found that this low condition, remaining after the special symptoms of the Fever had passed away, arose from inanition. Beef-tea, Wine, and Bark, set him up directly. You will see a good many such cases in dispensary practice; they die, though convalescent, from sheer starvation. It is of some importance to recognise this fact, and you will find the most pathognomonic sign is the coincidence of the brown tongue with a perfectly clear mind and cool skin. These latter show that the Typh poison has passed away, and that the condition of the mouth is the result of want of nutriment.

These twenty-two* are all the cases of Low Fever I have had in hospital since last summer. I hope the abrupt and discursive style of the notes I have made upon them will not prevent their being of some use to you.

* The first nine are omitted in this edition, as having no especial bearing on Restorative Medicine.

LECTURE V.

ANÆMIA AND BLOODLETTING.

Case of Anæmia—History—Nomenclature of the Disease—Pathology of Anæmia—Deficiency of life in blood-making organs—Application to this case—Defective morbid anatomy of Anæmia does not impede our treatment thereof—Anæmia a very curable condition—Transitory curable states dependent on mucous membranes, which have little post-mortal anatomy—Sketch of active life in mucous membranes—Importance in Disease—Business of mucous membranes not to secrete mucus—That secretion an evidence of diminished vitality—Effect of it on health—Application of this pathology to treatment—Intention of treatment to introduce (1) Nitrogenous Food, (2) Iron, (3) Chlorine—Mode of doing this—Effect of treatment, and deductions therefrom—Power of renewal in animal body—Deductions applied to Bloodletting—Bleeding a question of hydrostatics—Benefit mechanical, harm physiological—Estimate of arguments, pro and con.

(November 15th and 29th, 1861.)

You will all remember the corpse-like pallor, made more conspicuous by red hair, of a girl admitted this day fortnight into Victoria Ward. She smiled cour-

teously, but was quite unable to raise herself from the bed. Her history is as follows:—

Margaret C., now aged 20, seems to have had very good health in general, as is shown by her remembering that she had such an unimportant ailment as a pain in the right side when she was a school girl of seven years old. She seems to have been carefully brought up by a step-father in a higher class of life; but three years ago she lost him, and had to go into service as a housemaid. For that work she was scarcely strong enough, and had been too tenderly nurtured; so after eighteen months' trial she gave it up, and was apprenticed to a Berlin-wool shop. In this place her mental superiority was recognised, for she quickly became forewoman, with three girls under her, in a shop at Maidstone. She felt the responsibility a good deal, and also thought the closeness of the shop did not suit her, although it did not seem to make others ill. However she retained a high colour in her face, for which she seems to have been somewhat admired, till nine months ago, when she began to lose it, and in a few weeks became as wax-like in hue as she is now. In the first stage of her ailment her appetite was large, and she always seemed in want of food; but after three months it failed, then ceased entirely, and she took a disgust to all nutritious articles of diet. She had a good deal of pain in the epigastrium and to the left side of it, and also suffered from palpitations and pain of the heart. Three months ago she spat up some blood, and had a little cough, which frightened her sadly. Thrice during the nine months she has had attacks of low spirits with crying, but does not appear at all hysterical now. The catamenia had always been quite regular and sufficient till the commencement of the Anæmia nine months ago, when they began to get scantier and

scantier, and at last ceased entirely. The urine is pale and watery, the stools are scanty and steadily rare; but there is never any sudden gush of bulky stools, no Diarrhœa alternating with constipation, or other indications of accumulation of fæces in the intestines.

She expands her chest perfectly, and there are no signs to give rise to a suspicion of Pulmonary Tubercle, at all events of tubercle in such a quantity as to account for the Anæmia. There was a soft systolic murmur in the heart when she was agitated at first admission; but it went away after she had rested in bed five days.

First, for the name by which I have already designated this patient's disease. Anæmia, or "bloodlessness," means in scientific language a deficiency of the red discs in the blood. The word has been objected to, because it has been supposed to imply etymologically that there is a deficiency in the actual quantity of circulating fluid, of which deficiency in quantity there is truly no proof. And "Spanæmia," or "thinness of blood," has been proposed in its stead. Such accuracy would be highly commendable, if it were only accurate; but really the mere fact of *thinness* does not describe the essential nature of the disease; for the specific gravity of the blood might be raised as high as you like, but if you did not restore red blood-discs, nothing would be gained; the morbid state would still exist. In truth there is no occasion for fault-finding. "Anæmia" by the analogy of Greek etymology does not mean deficient *quantity* of blood, but deficient *quality*, just as is in Aristophanes ἀπροσῶπος does not mean a man "without a face," but "with an ugly face," ἀναρίθμος means "difficult to count," and so on. I shall therefore contentedly use the term Anæmia to include all cases in which the blood-discs are below the normal proportion.

Anæmia is found during life in a great number of the organic changes of tissue which you see preserved in museums and exhibited in lectures on morbid anatomy, and which may also be discovered by diagnosis. In other cases of equal importance and prominence Anæmia is wanting. Again very frequently you find it in an extremely high degree in cases where you can discover no organic changes of the solids at all, and where from the transitory nature of the bloodlessness there is reason to conclude that such organic changes do not exist. Under this last category comes the patient who is the occasion of my present lecture.

To understand how it is that so many causes are followed by the same effect, and by an effect not at all proportioned to the general importance or want of importance of the cause, you must reflect upon the true relation which the blood bears to the rest of the organism. It may be compared to a great thoroughfare in an important town. Very little trade, still less of manufacture, is carried on out of doors or in the street itself, yet from the nature, the number, the pace, and other characteristics of the passing vehicles and people, a pretty shrewd notion of the commercial prosperity of the population may be formed. A foreigner standing in Cornhill and viewing the quick steady pace, and active, careful, yet healthy faces of the many-classed wayfarers, the well-packed loads of the vehicles, and their varied nature, could not fail to see that he was in the centre of an industrious well-to-do nation. On last Saturday he would have seen a greater crush than usual at the same place, but on inquiry he would have found that was only in consequence of all trade being suspended for Lord-Mayor's day. And at Naples, the lazzaroni and pickpockets who block up the

pavements of the main thoroughfare are evidences that trade is not only suspended there, but rendered impossible by a horde of villains. So that it is not the fact of crowding which should connect the idea of wealth with what is seen.

Now in the blood the physician traces proof of constructive metamorphosis (the city's manufacturing industry), destructive metamorphosis (its consumption), and effective life (its social happiness) being carried on. But as our intelligent traveller must not be deceived by an idle crowd at one spot, in estimating the wealth of a community, so the medical philosopher must not set down mere local congestion as proof of wealthy blood. In both cases, experience finds strong presumptive evidence of something amiss.

Neither must a mere bustling throng be reckoned as industrious citizens. There are cases where a large amount of solid matter, even where a large amount of red discs in active motion, adds no more to the usefulness of the circulating fluid than the lazzaroni to Naples, and which, therefore, as far as treatment is concerned, are really in the same category as cases of obvious Anæmia. Of these cases I shall take a future opportunity of speaking.

But though crowds are no evidence of sound political health, yet it is certain that deserted streets prove political disease. So Anæmia, or deficient redness in the blood, shows a deficiency of life in the ministers to that redness; either the supply of food is too small, or its assimilation is defective; in either case the supply of red discs, either absolutely or relatively, is not commensurate to the existing demand.

In many instances of Anæmia it is easy enough to lay the finger upon the instrument of life which is to blame. We detect without difficulty causes at work to produce

it—starvation, which anybody can understand leads to an absence of the organic matters made out of food; disease of stomach, in which the aliments are not prepared for assimilation; disease of liver and duodenum, producing the same result; disease of intestines or their glands refusing to take up adipose matter, and so preventing cell growth; disease of the spleen or lungs—which physiological experiments, independent even of our observations of morbid phenomena, show to be answerable for the formation of new blood-discs in a way yet unknown; mental derangement, care, disappointment—which so readily arrest the activity of the assimilating viscera; these agencies, and many more, are readily comprehended as causes of Anæmia. But there are a considerable number of cases where nothing obvious of this sort is to be made out, yet where the paleness of the blood seen in the face, lips, tongue, or in a drop taken from a pricked finger, and where evidences of it in faintness, weakness, palpitation, Anasarca, Amenorrhœa, &c., are even more marked than where demonstrable lesion is to be found. So it is in the present instance. The young woman's history gives no reason to suspect any organic disease of the lungs or other organs, and the functions of life were fairly performed till she began to get pale and languid nine months ago. The want of red blood, which we look upon as the important feature in her case, also attracted her own attention particularly, as she had previously had an ornamental fresh colour. Then, after an interval amply sufficient to enable us to separate cause and effect, come the symptoms which I wish to notice as the consequences of Anæmia. Causes, no doubt, they are in some instances, but here consequences. I mean the loss of appetite, impeded circulation, Amenorrhœa, Hæmorrhage from the respi-

ratory organs and Hysteria in a person previously unaffected in that way, which are noticed in the Case-book.

The only explanation she can give of her loss of health is her having been employed in a shop less perfectly ventilated than she had been used to, and having the main responsibility of the concern thrown upon her. Alone neither would have been sufficient, as the shopwomen under her do not appear to have suffered from the air; while, on the other hand, women engaged in retail business are not as a rule anæmic. But still I think that both together may perhaps be fairly charged with the blame, for while the increased mental labour was increasing metamorphosis, the greater demand was not responded to by greater supply, but on the contrary assimilation was checked by the comparative unwholesomeness of the respired air.

The not being able to trace deeper the anatomical cause arises from the imperfection of our knowledge, but it does not arise from neglecting to apply such knowledge as we possess to practical Medicine. If we were to make an autopsy of this patient instead of curing her, we should in all probability see no more solid lesions capable of accounting for her disease than we already know of. A fortnight ago Mr. Malton and I examined the body and made separately microscopical investigations of the several viscera of a gentleman who had died at forty-six years of age, from protracted Anæmia. Nothing abnormal could we find in any part. The typical healthiness of all the tissues was very remarkable in a man of that age. There was not even a single adhesion of the pleura. I mention this in order that you may not lament the opacity of your patients' bodies, or suppose yourselves likely to learn how to treat them better if you could see their insides.

Anæmia without obvious organic lesion, when properly managed, is a very curable condition, and this should still further reassure you that you miss nothing by not being able to study its post-mortal pathology. For transitory and remediable states leave but faint footprints behind them for anatomists. In a great majority of cases they depend upon morbid changes of the mucous membrane, of all the tissues in the body the one most speedily affected by decomposition after death, and then presenting the worst possible picture of its condition during life.

The intestines, as the anatomist sees them, are about as much like the intestines in health as the crumpled folds of dank parchment which surround the mouth of a corpse resemble the same lips swelling with joy and expression. One sketch drawn from the life is worth ten from the museum.

Let the picture which is painted on our minds be taken, not from bottles, but from the familiar view of our own mouths in a looking-glass. Turn down the lower lip, and observe the infinite life going on. There is evidently as much blood as vessel. And as blood, from the quantity of solid matter visible in it, has a right to be called a semi-solid, this membrane has an equal right to be thought of as a semi-fluid. And when we think of it as semi-fluid, let not the idea of a stagnant marsh be presented to us, but of a headlong rapid. It is a useful way of keeping lively our feelings about the circulation, to examine through the microscope occasionally the toe-web of the slow-blooded frog. The action and ceaseless whirl of the living stream we see there quite drives us dizzy. What then must it be in our own warm selves! If in a membrane so little animated as the frog's toe, or the bat's wing, which by the naked eye we should judge to be entirely

devoid of blood, we still are enabled by our microscopes to see such a network of tubes conveying it—if, in a creature, the greater part of whose blood is driven from the extremities to the centre by the temporary fright we cause in putting him under a microscope, we find such a busy scene of circulation—what must be going on in a tissue glowing with red life and health!

To the mucous membranes I am disposed to attribute the condition in which we find our present patient. The two circumstances to which I have traced the illness both act directly or indirectly on this tissue. The mental exertion involved in an unusual responsibility thrown on a conscientious person would arrest the action of the involuntary muscles which carry along the mass of food through the alimentary canal. You know well the time your food is in leaving the stomach if you are called to an important midwifery case just after a hearty meal; and several commercial and literary men have complained to me of attacks of vomiting (that is, temporary paralysis of the stomach) when they took dinner alone, and so were apt to let the mind dwell deeply on some interesting subject; and they have told me in wonder that they could dine out and eat and drink all sorts of rich things with impunity. They did not seem aware of the preservative value of frivolous conversation. At the same time that the moral causes thus impeded digestion, the unwholesomeness of the air in the close shop poisoned the mucous membranes, diminishing their vitality and causing them to be abnormally covered with a thick layer of mucus.

Remember that, in spite of their name, it is not the business of mucous membranes to secrete mucus; the more perfect their condition and the more favourable the surrounding circumstances, the less they do so.

From many persons' lungs not a drachm of expectoration is thrown up in a month, and the vast surface of the intestines and bladder are equally innocent of even microscopic traces of mucus in the typical health we desire to experience. It is only when the presence of some material agent diminishes their vitality that the internal surface membranes exhibit that peculiar substance whence they take their appellation. And the greater the diminution of life, the greater is the secretion; a slight cold in the head will be accompanied by slight Catarrh, a severe one by excessive Catarrh; and the nearer the approach to death, the severer it is, so that the death-rattle, or overpowering collection of mucus in the bronchi, is a popular warning that all will soon be over. Be careful not to look upon mucous secretion as augmented life; it is, in fact, a partial death.

Well, the poisoning air having covered these slowly moving mucous membranes with a thick tenacious coat, the entrance of alimentary substances into the veins and absorbents was impeded, and our patient starved in the midst of plenty. So all the usual signs of starvation followed. First, hunger,—by no means a constant accompaniment of chronic deprivation of food, yet sometimes present as here; then loss of appetite, a much more frequent phenomenon; then paleness, languor, weariness, and pain in the stomach; then Anasarca, and, in short, the other more marked symptoms of Anæmia.

You may observe that the loss in those constituents of the body which are of a nitrogenous chemical composition, is more marked than that in the hydrocarbonaceous fat. The reason is, partly that the destruction of adipose vesicles is somewhat concealed by the saturation of the tissue with serum, which

gives it a false plumpness—partly, that fat, being absorbable without much (if any) alteration, is easier taken up into the system than fibrin or albumen, which require a chemical solution before they can be absorbed. So that though starved, our patient looks but little emaciated.

All that I have now said has of course for its end the treatment. My aim in Anæmia is to introduce as quickly as I can the largest possible amount of (1.) Nitrogenous food; (2.) Iron; (3.) Chlorine. When I say “introduce,” I do not mean “throw in,” or get swallowed, but cause to be assimilated in the system.

As regards the first, it is obvious that if I had written down ever so many “Ordinary diets,” a patient to whom the very sight of food was an abomination, would have gained nothing by it; she would simply have gone without. I directed, therefore, no meals at all to be taken, and no solid food, but a cup of milk with some lime-water in it to be given as medicine every two hours, and a pint of beef-tea in small, divided doses during the day. After two days she managed an egg also daily, and after twelve days of gradual additions of this sort, you will find her on full allowance of mutton chops, porter, beef-tea, and milk.

Iron is required to supply the anticipated new growth of red discs, with their metallic constituent. You cannot get it into the system in any way so quickly as by the “*Mistura Ferri composita*” of the London Pharmacopœia. Large doses of the more soluble Salts of Iron have an action on the mucous membranes which not only prevents their being taken up, but only arrests the digestion of other food. Evidence of the last-named effect is found in loss of appetite and feverishness, and in their own rejection among the blackened stools much sooner than when

given in the form I have approved of. So in spite of the elegant preparations which are constantly put before us, and recommended for their solubility, such as the Chloride, Acetate, Citrate, Phosphate, and other salts of Iron, I prefer the unchemical mixture. It seems as if the Carbonate which is preserved from decomposition by the sugar, and the finely divided Oxides diffused through the thick liquid, were peculiarly easy of solution in the water saturated with salts and Carbonic acid, which (and not pure water) we must remember is the solvent with which we have to do, not only in the stomach, but throughout the whole system.*

I have found that some cases which did not improve so quickly as I could wish under the above treatment, made a sudden start of improvement when to it there was added the administration of Chlorine in the form of warm Hydrochloric acid baths. More Iron is taken up,—the blackening of the *fæces* ceases, and therefore it may be, perhaps, that the presence of more acid in the system retains more of the metal. In a few cases I tried for experiment's sake the Hydrochloric acid baths alone, and even then it was beneficial, seeming to confer muscular strength in the same way as the drugs which are commonly called tonic. I cannot but think, therefore, that Hydrochloric acid supplies a distinct want in the system, that it is a directly restorative medicine in Anæmia.

Nor is it difficult to make this empirical observation accord with rational pathology. In Anæmia the blood is more watery than natural; the proportion not only

* In reckoning the solubility of medicines, chemists and physiologists are too apt to assume that the fluids of the body are distilled water, and because a substance is not soluble in that medium, to call it insoluble altogether.

of organic matters but of salts is deficient. Chloride of Sodium is the most important of these salts, and the supply of one of the constituents of this material may be reasonably imagined to be an aid to the renewal of life, which is the end of all medication.

Besides the above-named medicines, you will see, I have prescribed *Pil. Aloës cum Myrrhâ, gr. iv, omni nocte sumenda*. Do not suppose that this is ordered merely as a purgative, and that any other purgative would do as well. On the contrary, most purgatives do harm in Anæmia. Gamboge, Castor-oil, Sulphate of Magnesia, Colocynth, Mercury, and several others, which produce serous elimination and augment secretion generally, would do harm just in proportion to their activity. It seems established by the experiment of making them act as purgatives, when injected into the circulation, that their soluble principles have a destructive agency upon the blood; whereas the soluble alkaloid in Aloes (aloine) is, in fact, a bitter tonic, and the purgative power of the drug resides in its insoluble resin.* Its action is very slightly eliminative—in moderate doses it only slightly augments the solid brown excreta of the colonic glands, and produces fæces feculent in smell and of consistent form; whilst at the same time it restrains, by its bracing bitter, the formation of mucus. See its action on moist piles, how it dries them up and makes them smart! And judge from this what its action on the gastro-intestinal mucous membrane is likely to be. At the same time, by the more vigorous peristaltic action and by the solid mass passed along the gut, the already existing mucus is cleared away. Aloes, therefore, is employed strictly as a clearer of the intestinal, especially of the

* Headland on the 'Action of Medicines,' p. 331; and Robiquet, in 'Journal de Pharmacie,' April, 1856, there quoted.

colonic, membrane. It is joined with Myrrh, partly to divide it minutely and make a small dose go farther, and partly to get the advantage of the extra resin.

(November 29, 1861.)—A fortnight ago I lectured about an anæmic patient. She was then showing a tendency to lose her title to the name, and now she certainly cannot claim it, and has earned our confidence in the statement that her natural hue is rosy. She leaves the hospital to-day, having manufactured enough red discs to colour her blood throughout very sufficiently.

Let us take stock of what we may have learned from her change of appearance.

What amount of manufacturing industry does this new treasure of Hæmatine show? Let us reckon. She weighs 8 stone, or 1792 ounces: of this weight $\frac{2}{7}$ ths, or 512 ounces, is blood, and of this blood $\frac{133}{1000}$, that is to say, 60 ounces, should be red globules. Now the analyses of MM. Andral and Gavarret show that in cases of Anæmia of at all a marked character (as this was), we may expect at least three-quarters of the red discs to disappear, so that when she came into the hospital it may be fairly assumed that she did not possess above 15 ounces; and now I think with equal fairness she may be assumed to have got up to 45, which is conceding that she still wants a quarter of perfect health. By this reckoning she must have made 20 ounces of red blood-discs,—that is, of the most important organic constituent of upwards of 150 ounces of blood,—in a month!

Mark the power of renewal which the human body has under favourable circumstances. Learn from this

not only the curability of Anæmia when it is a disease, but also the facility of repairing artificial loss of blood when it is employed as a remedy. It has been the fashion lately among certain declaimers to paint the physician who draws ten or twelve ounces of blood from the arm as a deadly villain, who necessarily *ex vi termini* takes away "the life," or that which cannot be replaced. Not only pill-dealers and quacks have raised this outcry, but it has been joined in by some whose knowledge of physiology ought to have taught them better. It ought to have taught them the fallacy of the popular notion and the scientific argument by which to refute it. You will clearly perceive from the calculations through which I have taken you that by proper management no loss is so easily repaired, and that if it saves a patient two nights' sleeplessness or pain, the price of a Venæsection is well paid.

Only note this, that *if the loss is to be repaired, the means of repair must be given*. When I bleed, you will observe that I take down the diet card and accommodate it to the circumstances, being very careful that the patient has the wherewithal to replace the globules I am abstracting. I supply with one hand what I am taking away with the other. I begin to cure the artificial Anæmia, which I feel myself called upon to produce, at the same time that I am producing it. "Blowing hot and cold," you will say. Precisely so—that is what I intend. I blow cold with my bleeding, not for the sake of blowing cold, but because it is the inevitable accompaniment of the remedy. I employ the remedy not to produce Anæmia, but for other quite different purposes which I think are worth the cost. And I blow hot to compensate as well as I

can for the evil I think it desirable to do, on the principle—

“Necesse est facere sumptum, qui quærit lucrum.”

I do believe that the sad effects of the excessive Venæsection of our fathers, which with justice have been thrown in the teeth of the medical profession, were due quite as much to the starvation as to the bleeding. I have a most vivid and painful recollection of seeing, when I was a student in Paris, M. Chomel and others treating Pneumonia. I could not at first understand why in France so much more marked, and, in my opinion, so much more deleterious, effects were produced by Venæsection than in England. At that period we had at home ample opportunities of seeing bloodletting practised; but I never saw such prostration produced by it at St. George's as I did at the Hôtel Dieu. I was puzzled for several weeks, till at last I noticed that the order for “*Saignée*” was accompanied by “*Diète absolue.*” I almost doubted my knowledge of French, and was obliged to ask several of the bystanders before I could believe that this meant an *utter deprivation of all food!* There was an instantaneous explanation of the comparative toughness of my countrymen; for never in our worst days did we carry the Sangrado practice so far as that. We did not give food enough, perhaps, but we never commanded that it should be deliberately kept out of our patients' way.

The bad practice of starving and bleeding at the same time, took its rise from the errors of Allopathy. In this system a Disease is an enemy to be overcome—a something *to be combated by* an agent which is as opposite to it as possible. Bleeding was found by ex-

perience to be useful in certain morbid states; it was, therefore, held useful in virtue of effects opposite to these. Anæmia and depression of life are the most constant effects of bleeding; therefore Anæmia and depression are the benefactors to be sought for, and whatever aids bloodletting in producing Anæmia and depression is a good companion to it. It is unnecessary to say, that of course starvation was the first agent thought of, adopted *à l'outrance* by the logical French, and with more hesitation by our fortunately illogical countrymen. The abuse has brought about a reaction; and that treatment which was considered at one time so specific that its gravest faults were viewed as virtues, now runs a risk of being denied *all* virtue because of its avoidable faults.

Against this illogical practice I feel bound to raise my voice. It is time now to have done with reactions for and against bleeding, which have been going on throughout the period of the Christian era;* the wave, which has swelled backwards and forwards to a dangerous height, ought to settle down into a steady stream. We ought to know clearly *why* we bleed, and then we shall know *when* to bleed.

The question seems to me rather one of hydrostatics than of vital statics. The primary and most important effect of bleeding is mechanical; the blood-vessels of some parts of the body have lost their tone and become dilated, and the more pressure of fluid there is inside them, the more will their vital elasticity be impeded, and the more dilated must they become. Taking blood in such a case is like emptying the urinary bladder with a catheter when paralysed by its

* A short sketch of the reaction in favour of bloodletting started by Galen, is given by the author in the 'Medico-Chirurgical Quarterly Review,' for October, 1858.

retained contents; and the more locally the remedy can be applied, the closer it resembles that approved surgical operation. Relieved of the burden which oppresses their life, the vessels are enabled to resume their function of regulating the stream of the circulation. So that from this point of view, and so far, the treatment is directly restorative and reconstructive. Here bloodletting is a remedy for local congestion.

The fault of our forefathers was that they went beyond this. They imagined a condition of universal Plethora, which has no existence in nature.* Where experimentally they found good results to follow Venæsection, they pronounced the special disease before them to be an evidence of this condition, and of course, therefore, that the loss of blood was directly beneficial to the system at large.

We know now that a destructive agency accompanies and follows the reconstructive one—that our gain entails an after loss. By bloodletting is brought about, temporarily or permanently, a decrease in those red blood-discs which are the characteristic of health, and an increased proportion of fibrin which marks disease. So that an injury is done to the mass of the body for the sake of a part.

The questions, then, which we have to decide in each individual case are—first, whether the part in question is of sufficient importance to the whole to justify the sacrifice; and, secondly, whether we can by our art certainly repair the injury we have done for an immediate good.

* By “plethoric” old writers do not mean “fat”—as vulgar people, who delight in high-polite words, commonly do now—but a state in which too much blood and flesh were supposed to be made by too much nutriment being absorbed. It is the latter, the original meaning of the expression, which I refer to in the text.

As to the first question, the answer must be given by a careful weighing of the physiological value of the injured functions, and the time proposed to be gained by interference in each individual instance—we must prescribe, not for classes, but for the patient before us. As to the second, the evidence of such cases as those of which one forms the subject of the present lecture, is surely enough to give us faith in the means of renewal which we have at our command.

LECTURE VI.

RHEUMATIC FEVER.

Relations of the Practitioner and Lecturer to Rheumatic Fever—Description of treatment—(1) Bedding—(2) Fomentations—(3) Remedial agents—Bicarbonate of Potash, Iodide of Potassium—(4) Opium—(5) Leeches—(6) Poultices in Pericarditis—(7) Diet—Commentaries on the restorative agencies of the afore-said treatment.

(May 24th, 1862.)

RHEUMATIC Fever is a pleasant disease—I mean for the doctor to treat, though not for the patient to bear. It is pleasant for him to treat it, because he then feels himself strong and useful. In the first place he can, by the judicious exercise of his art, ensure the sufferers against several perils to which the nature of their complaint exposes them. Again, he can save them much pain. Thirdly, he can shorten the otherwise long duration both of the illness and of the convalescence. Truly in most diseases he can effect one or other of these objects, but in none I think so many of them, so surely and so simply as in Rheumatic Fever.

Rheumatic Fever is also a pleasant disease to lecture about. It presents a simple uniform type, so that the short descriptions you have had in the systematic course of lectures on the Practice of Medicine are found

really applicable at the bedside, without the necessity for guarding them with all sorts of exceptions and variations, which clinical teachers are so often obliged to resort to in other cases. And a very simple uniform treatment may be recommended, which hardly ever (if ever) requires modification. So that if your authority with your patient is sufficient, and you are certain of your diagnosis, you never need to call in the assistance of a physician.

You see taken into the wards, almost weekly, specimens of the mode of treatment I adopt. My present business is to tell you my reasons for the plan pursued. But first let us speak of the plan itself.

1. The patients are bedded in a peculiar fashion. All linen is strictly forbidden to touch the skin. A slight calico shirt or shift may be allowed, but if they possess underclothing only of the prohibited sort, they are better naked. Sheets are removed, and the body is carefully wrapped up in blankets, which are so arranged as to shut off all accidental draughts from the head. The newest and fluffiest blankets that can be got are used.

The bedclothes being put so, are kept so, and students are warned that when they listen to the sounds of the heart, they must not throw open the blankets, but insert their stethoscope (first warmed) between the folds.

2. Those joints or limbs which are swollen, red, or painful, are wrapped up in flannels soaked with a hot fomentation consisting of Decoction of Poppy heads with half an ounce of Carbonate of Soda to each pint.

3. The following drugs are prescribed with a curative intention :—

(a) If the skin is red, swollen, and painful about the joints—if the cellular tissue around the muscles is

infiltrated and sensitive, so that motion is impossible or exquisitely painful—more especially if these phenomena are metastatic, leaving one part free and attacking another;—patients have then the “alkaline treatment” pure and simple: they have a scruple of Bicarbonate of Potash in Camphor-water every other hour, night and day, when awake.

(b) If the above-named symptoms are insignificant, and the pain is felt more in the bones—if it is intensified rather by pressure than by motion—if it is fixed in one spot and not metastatic;—then I add two grains of Iodide of Potassium to each dose; and directly the symptoms have taken a turn towards alleviation, I leave off the alkali altogether, and give only the Iodide.

4. Opium as a palliative is given in exact proportion to the degree of subjective sensation of pain. If one grain be not enough to entice sleep, a grain and a half is administered; if that do not avail, two grains. Directly the pain is relieved, the quantity of the drug is diminished. Nothing effects the desired object so well as pure opium.

5. If the pain remains fixed in one joint, instead of leaving it as it leaves other places, leeches are applied there, and the part is kept poulticed. When we can get them, young laurel leaves, bruised, are mixed with the poultice.

6. The treatment last named is also applied to the cardiac region, if the heart has become inflamed either inside or out. The pain felt is taken as an indication of the extent to which the leeching is to be pushed, so soon as it is proved by auscultation that such pain arises from inflammation of the heart, and not from Rheumatism of the pectoral muscles. The constant application of the poultice is made imperative.

7. The diet is varied in some degree according to

the social and personal state of the patients. If they have been hearty, well-to-do persons before the attack, they will bear a good deal of starvation, and are accordingly put on our "Simple diet;" to wit, bread-and-butter, gruel, and tea. If previously they have been ill-nourished, by reason of either ill-health or poverty, a pint of broth or beef-tea is added.

I will now proceed to comment on the several items of treatment in the order in which I have numbered them.

1. *Bedding*.—It is impossible to exaggerate the importance of extreme repose and an even high temperature to the skin in Rheumatic Fever. They are worth all the other means of relief put together. Since I have instructed nurses to adopt them in every instance during the last eight or nine years, I have had Pericarditis come on in only one patient previously sound; and that was a girl who was taking Mercury and Opium, and I suspect had exposed her chest a good deal to the air.

The rationale of the action of warmth is very simple. Rheumatic inflammation is an injury to nutrition which is entirely compensated for by the restored function. It passes away and leaves no after sign, no wound, no scar. This only happens, however, if the part affected is kept perfectly still. But should duties be required of it which it is unequal to perform in its imperfect condition—should necessity or ignorance lead the patient to keep moving a swollen joint, for example—then common inflammation is superadded. Then the pain and swelling become fixed, and no metastasis can take place. You see this frequently in the poor working people who, through necessity or ignorance of consequences, strive to go on with their employments to the latest minute. Labourers come into the hospital

with the disorder fixed in their knees, carpenters in their elbows, laundresses in their wrists; so that you may make a shrewd guess at their trade from the part where the disorganizing inflammation is situated. Pain may be called *par excellence* the proof of beneficent design in God's laws as shown in disease, as a warning to abstain from that which excites it. The pain of Rheumatism is a call to voluntary absolute rest. Now in the joints this is easily obtained, and under any treatment you never see disorganizing inflammation begin in a joint after a patient has once taken to his bed. But there is one organ whose business admits of no rest;—the Heart *must* keep beating at whatever cost;—and the Heart accordingly is well known to be fatally apt to be struck with common fibrinous inflammation at all stages of Rheumatic fever. Taking a lesson from what I have noticed in the joints, I try and assist the heart to gain, not of course the Utopia of absolute rest, but the nearest approach that is possible.

Perhaps you may think that object would be attained by simple confinement in bed and the horizontal posture. But it is not so. Next to jumping and running there is nothing gives the heart so much work to do as change of temperature. Let the physiologist observe the healthy organ, and the physician examine it in a state of disease, and they will find that the addition or subtraction of heat to the surface of the body is accompanied by a longer and stronger stroke as felt by the finger, by a longer and stronger sound as heard by the ear in the cardiac region. What is technically called "the interval" is shortened; and thus is encroached upon the only wink of sleep the industrious muscle ever indulges in. What does the accoucheur do who wishes to apply the strongest vivifier to the dor-

mant circulation of a still-born baby? He dashes cold water and cold air on the skin,—he rubs the chest dry and applies hot cloths,—again he dashes it with cold,—making as many changes of temperature as he can. What the accoucheur is so anxious to accomplish, we are most anxious to avoid; and I feel sure that it is in consequence of guarding patients with Rheumatic Fever from the influence which variations of temperature have over the dependencies of the pneumogastric nerve that the treatment now advised is so successful. I never have Pericarditis come on when it is once fairly begun.

I scarcely need to say that the most important part as respects the attainment of the accoucheur's object, and our opposite object, is the chest and neck. He applies his "stimulus" especially there, and there we must as carefully watch against it. As a student I used to see many and many a case of Pericarditis brought on by the careless way in which the chest was exposed in the daily stethoscopic examination. It is necessary, of course, to listen to the heart thus frequently, in order to convince ourselves of the absence of morbid sounds under the plan I am advising: but by warming the stethoscope in our pocket or under the axilla, and making the blanket into a tube by which to insert it, we put the patient to a minimum degree of danger.

You saw a fortnight ago an instance of the danger of the exposure I have been deprecating. Margaret K., aged 23, was admitted March 28th for Rheumatic Fever, with swellings in the arms and legs; from this she recovered perfectly without any affection of the heart, and was transferred to the Convalescent Ward. On April 17th she had a relapse, principally affecting the legs, and on the 19th I found her in bed again.

By an oversight she had not been blanketed, and when I felt the cold sheets damp with the patient's perspiration I was not surprised that she complained of constriction across the chest. You heard me rebuke the nurse in no measured terms, and prognosticate evil. With justice; for before two days were over there was a melancholy systolic murmur distinctly audible. I trust this case has been a warning to you.

2. *Fomentations*.—By comparing in occasional cases one limb wrapped in fomentations of simple hot water, with another where Decoction of Poppy-heads was used, I have come to the conclusion that either the viscid vegetable matter, or the small quantity of opium in the poppy-heads, contributed towards alleviating the pain a little. And a similar experiment has led me to the same opinion as respects an alkaline carbonate.

3. *Curative Drugs (a)*.—With unimportant exceptions, I have treated every patient on the alkaline plan for the last seven years, being convinced of its power to shorten and alleviate the disease by daily experience as well as by the statistical deductions of Dr. Garrod. In a great majority of the cases very rapid relief commences with the commencement of the treatment, and continues permanent. But in a certain number no effect appears to be produced, sometimes even after the urine has been made alkaline. In a few of these there has been committed a pardonable error of diagnosis,—the patient is gouty. In a few, also, we are deceived by Gonorrhœal Rheumatism, a disease allied to Pyæmia, and requiring quite different management. Still there are a certain number of instances where true Rheumatic inflammation is very obstinate and does not yield to the alkaline method. And in these you will find the periosteum and peri-

condrium affected. When the patient, then, after five or six days of the alkaline treatment is no better, or but little better, I add, as I told you, Iodide of Potassium to the Potash, and in a few days more continue the Iodide alone during the convalescence. Of course, if I am enabled to make this condition of the periosteum out at the first visit, I begin such treatment straightway.

I mentioned just now that I had, in a few instances, for exceptional reasons, not given the alkaline treatment for Rheumatic Fever. Among those are included a middle-aged labourer and his wife, both attacked together and just recovered, in which cases you saw no drugs given during the acute stage. The object of this omission was partly to disabuse my own mind of a suspicion that the alkalies administered might cause or augment the Anæmia and weakness so general in the convalescence of Rheumatic Fever, or perhaps might give rise to relapses by interrupting the course of the disease. You saw that the loss of flesh and strength was in these two cases as great as usual, if not greater than in the majority of examples exhibited to you in the wards—satisfying us that it is the disease, not the remedy, which is to blame for the emaciation and weakness. You saw, also, that one of the patients (the man) had a relapse, showing that to nature and not to art is to be attributed this unfortunate occurrence so frequent in Rheumatic cases.

I omitted drugs in these two cases partly also to remind you that you do not carry in your medicine chests any absolute or indispensable powers—that Rheumatic Fever is a state in which the forces of life move in a circle, in a road which leads of itself back towards health—and is not a chronic disorganizing process, whose path may be described as a straight

line, approaching nearer and nearer to death the farther it goes. It ends of its own accord, or at all events without the aid of drugs, often in a few days, often (as you saw here) in a time quite as short as could have been expected had medicines been administered. This consideration is needful to enable you to estimate properly the value of numerical arguments, and to understand that a very large collection of cases, much larger than your experience probably will ever supply to you, is required to prove the ability of a drug to shorten Rheumatic Fever. If you forget this, you risk being misled by a fallacy, with an instance of which applied to experience of this very disease I was amused a few years ago. I had an interview with an irregular practitioner (*very* irregular indeed), who told me that he gave no medicines, but followed "the method of St. James," he "anointed with oil them that were sick, and the Lord raised them up." As evidence of the success of his plan he gave me the history of two attacks he had undergone of Rheumatic Fever. In the first he was treated *secundum artem*, and was laid up for more than three weeks; in the second he obeyed the perversion of Scripture above quoted, and was out of bed in five days. Of course he was perfectly impervious to argument.

Do not misunderstand my words, or interpret them as if I intended to be sceptical of the proof adduced by Dr. Garrod of the success of the alkaline treatment in shortening the average duration of our patients' pains. I think he fairly proves his point by the numerical method. But besides that, the use of such drugs is quite in harmony with the principles of restorative medicine. The deficiency of alkali in the body is shown in all quarters by the appearance of free acids. In indubitable cases of Rheumatic Fever left

without treatment the sweat is acid, the saliva is acid, the urine, instead of being moderately acid, is intensely acid, the breath even smells acid. The blood, indeed, remains alkaline, fortunately for the life of the patient, but that is only done at the expense of becoming exceedingly watery, and producing the Anæmia which is so characteristic of the convalescence of Rheumatic Fever. If the blood is aqueous, and contains less solids than normal, at the same time that the salts bear their usual proportion to the rest of the solids, it is obvious that there must be a great deficiency of those salts in the body. Though the blood, therefore, be not acid, it is easy to understand that it carries less alkali than it ought to do.

A real deficiency then is attempted to be restored by the alkaline treatment. And when we think what a great mass of living matter it is over the whole of which this great deficiency exists, then is explained the necessity found for large and repeated doses of the alkalies, which all good observers insist upon. To give a few grains three times a day is mere playing at healing, and cannot be reckoned as treatment at all. I do not think anything less than half an ounce of the Bicarbonate of Potash in the twenty-four hours is of real use. If this runs off straight by the kidneys, making the urine alkaline too rapidly, it is of little avail; but if it mixes with the mass of the corporeal fluids, and is some time before it is discovered by its alkaline reaction in the renal secretion, the advantage is sensibly appreciated by both the patient and his attendants.

(b) The employment of Iodide of Potassium is purely empirical. By none can the fact be explained that this remarkable substance restores their normal functions to several tissues—most notably to those sparingly sup-

plied with blood-vessels, such as cartilaginous and white, hard, fibrous parts, the periosteum, the sheaths of tendons and of nerves, and even influences the hair, the nails, and the outer layers of skin. Iodide of Potassium is of signal service when Rheumatism and even when Gout attacks the tendinous and internal tegumentary parts of the joints and limbs. And I think we cannot doubt the assurances of the sufferers that they feel the better for it, however inexplicable the fact may be.

4. *Opium*. — This is administered purely as an anæsthetic. There is no reason to think it either shortens or lengthens the duration of the disease. Curiously enough, it does not usually produce constipation, so long as the painful condition which it is given to alleviate remains. Should, however, that result follow, the inconvenience is easily obviated by adding two or three grains of good extract of Colocynth to the Opium pill.

5. *Bloodletting*. — The treatment by leeches and poultices of the common inflammation which has supervened on the Rheumatic in joints over-exerted during their weak state, has nothing special about it. It will usually prevent disorganization, because, in point of fact, the inflammation is very slight and diffused.

6. *Carditis*. — I have told you inflammation of the Heart does not come on in patients who have once been placed and kept under the treatment detailed to you. But in a good many the exposure they have been subject to previously, and sometimes, perhaps, the necessary time spent in the waiting-room before admission, gives you, unfortunately, the opportunity of seeing this complication treated. I feel satisfied that it need make no difference in the applicability of the alkaline

method ; indeed, it rather determines me to insist on this being fully carried out. It determines me, also, to be more than usually careful about the maintenance of temperature by blankets, and to direct attention to the chest in special, by the retention of continuous poultices on the cardiac region. When cardiac symptoms are detected, from six to twelve leeches are applied immediately ; these usually relieve the pain somewhat ; but if it returns again next day, they are to be repeated, and this may be done again and again. The pain is the best indication of the acuteness of inflammation in serous membranes ; and as long as acute inflammation lasts, leeches and poultices are the best remedies for it. To Mercury I have never been able to trace any advantage at this stage ; indeed, I am not sure that it does not dispose to Pericarditis by increasing the proportion of fibrin to the other constituents of the blood. Perhaps after effusion has taken place it may be useful, but I am not quite satisfied that it is desirable in all cases even then. Opium may be given in full doses, and far from being contra-indicated in cardiac inflammation, it is all the more urgently demanded. For it certainly does control and lower the hurry of circulation which is so dangerous. Under its use the pulse is diminished in frequency, sometimes even below the proper standard ; and this must surely be an important object in a diseased state induced by the continuous motion of the heart.

The treatment of Pericarditis admits of no delay. Lost minutes are more hurtful here than in any disease I know of. Send for leeches and have them applied immediately that your suspicions are aroused by an abnormal murmur, and if they are not at hand, cup the cardiac region. It is better even to anticipate evil than to be too late. On this principle you saw me a fortnight ago leech and poultice the heart of the young

woman before mentioned (case of Margaret K.), where you could detect no friction in the pericardium, and you wondered at my "sharp practice." But the fact is, this was a case of relapse during convalescence; and as the patient was in the Convalescent Ward, the nurse negligently omitted to put her in blankets: the cold damp linen was beginning to do its work, and the lengthened heavy systole of the left ventricle, accompanied by a sense of constriction and pain on pressure, warned me to try and prevent the threatened inflammation. I was only partially successful; for the anticipated evil did come as predicted, and in two days' time an exo-cardial murmur was distinct enough, though I am convinced it was in a much milder form than it would have been without the leeches.

7. *Diet.*—In Rheumatic Fever there is a painful necessity for restricting the supply of nutriment. If animal food be given, it seems to turn into lactic acid, or at all events to add to the quantity of animal acid in the body. Even when the pains are gone and there is such an urgent call for replacing the lost flesh, animal food will sometimes bring on a relapse. Hence in Rheumatic Fever, alone perhaps of all diseases, I give patients less food than their feelings prompt them to take. Meat especially seems to disagree, and you must very cautiously get back to "Ordinary Diet" after Rheumatic Fever, or you run the risk of losing more by a second attack of the disease than is gained by haste. Vegetable food does not expose patients to the same danger, and thus by dint of rice pudding, porridge, gruel, bread, mashed potatoes, and so on, you can generally succeed in stopping the mouths which often so loudly complain of starvation. If you cannot succeed in staying the appetite by such persuasion, I fear it is your duty to be cruel, for observation will soon convince you of the dangerous effects of animal food.

LECTURE VII.

PERICARDITIS.

Case of Pericarditis coming on in the Hospital—A rare circumstance—Explanation of its occurrence in this instance—Diagnosis of old and recent disease by the physical signs—Practical value of diagnosis—Treatment — Leeches — Blisters—Poultices—Prevention better than cure—Case illustrative of the use of Mercury in similar circumstances, and the reason why it is no longer employed by the author.

(June 21st, 1862.)

You may see an example of Pericarditis which has come on in the Hospital in the case of a little girl in Victoria Ward.

Fanny R., aged 17, but looking much younger, was admitted May 31. She has always been delicate, and for the last three months of 1860 was in the Consumption Hospital.

She has never spit blood, but often had cough. Eight years ago she had Rheumatic Fever. On admission, she said she had been ill four days with her present ailment. She said she had been taken with rigors and with pains and swellings in the knees and wrists. However, there was nothing of the sort to be found on examination; but dulness on percussion, with ægophony and absence of breath sounds, exhibited the presence of pleuritic effusion, though there was but the slightest

possible evidence of any acute inflammation of the serous membrane in the presence of stitch on inspiration. Though an intelligent girl, she seems peculiarly insensitive to pain. She was treated with a poultice first, and then a blister on the side, and "teacup" diet of beef-tea and milk. It was on the night of the 4th that the blister was put on. She was going on very well, improving in strength and power of inspiration, till the morning of the 7th, when she complained of pains in the hands and wrists, which on inquiry were found swollen, seemingly from Rheumatic inflammation.

She strongly denied having any pain in the cardiac region, even on firm pressure; yet on listening with the stethoscope, a loud murmur was heard with the first sound of the heart, loudest indeed at the centre of the organ, but propagated over the upper part of the chest. Now with regard to this murmur, there arose a serious question of diagnosis, very important as regarded treatment. Did it denote an old incurable injury derived from the former attack of Rheumatism, or was it an acute state admitting of restoration? In the first place there was in favour of its being an old valvular murmur the fact of the previous Rheumatism, and the peculiar liability of children to have the heart affected by that disease: then there was its single character (pericardial murmurs being usually double) and the entire absence of pain. To weigh against the latter argument might be urged the generally insensitive character of the patient; and in favour of the recent nature of the injury there was stated the fact that nobody had heard it before, though the chest had been examined in reference to the lungs. But on the other hand, it should be remembered how very apt the ear is not to take notice of even an audible sound when its

attention is directed elsewhere. So you see there was an awkwardly even balance of arguments.

In this dilemma I found the advantage of what I can recommend to you as by far the best extant means of distinguishing single pericardial and valvular murmurs—sounds strictly identical in their effect on the ear, and occurring often at the same period of the cardiac movements, and therefore undistinguishable unless particular manipulation be used. The plan is, first to fit the stethoscope firmly and steadily on the place where the murmur is loudest, and get impressed on the auditory nerve clearly the special character of the murmur. Then, keeping the instrument still steadily applied to the chest in the same position, remove your head very gradually, and try to attain a point at which you can hear the normal heart sounds without the murmur. If you *can* do this, the murmur is pericardial. If you cannot, but the murmur is heard as far off as the heart sounds, it is endocardial. In all cases where the disease is endocardial only, or pericardial only, the knowledge thus obtained may be safely acted upon.

I acted upon it in this instance, in spite of my prepossession, from the history and from the absence of pain, that it was an old valvular injury which gave rise to the symptom. And sure enough in three days' time the conclusion was proved correct by the murmur becoming a double rubbing with the well-known ordinary characters of Pericarditis.

I had enough faith in the test to put immediately four leeches over the cardiac region, followed by a continuous poultice, and to attend to the more important serous membrane now inflamed instead of the pleura. The patient was also put upon the usual treatment for Rheumatic Fever which I have detailed

in a previous lecture. After four days the double rubbing got shorter in duration and more limited in the extent over which it was heard, and then I ordered a small blister over the base of the heart. The rheumatic swelling had left the hands, so the alkaline treatment was then omitted, but the poultice continued.

I have given these details to impress upon you the plan to be pursued in Rheumatic Pericarditis, which has unfortunately come on in this poor broken-down child. Had the painful swelling of the hands preceded by a sufficient interval the inflammation of the heart, we should have had a timely warning, and possibly the usual careful treatment here pursued would have prevented the misfortune. But both occurring at once, and the unlucky neighbourhood of the already diseased lung, combined to inflict upon us the sad spectacle of an irremediable mischief in process of formation. I say an irremediable mischief, because it cannot be doubted that this adherent pericardium will cause her to have diseased heart in future years.

One part of the treatment which particularly requires remark is the application of Blisters. At the commencement of acute serous inflammation they unquestionably do much harm. They increase its heat and violence, and all the more the nearer they are to the part affected. The action of the Cantharides is to cause a fibrinous serum instead of a plain serum to be thrown out, which is a result decidedly to be deprecated at the beginning. But at a later stage, when pus is our chief dread, and not fibrin—and when indeed we hope for the supervention of fibrinous inflammation with its adhesive healing powers, then the qualities of Cantharides come to our aid. At this conjuncture apply your Blister, and apply it as close

as you can to the affected part; the healing process which follows its action on the healthy tissue spreads by continuity of tissue to the diseased, and you feel yourself powerfully aiding the forces of life.

You should keep a poultice on the cardiac region during the whole time that Pericarditis lasts. Nothing is of more importance in the treatment. Neither leeches nor blisters need stand in the way of its application; it is of at least equal importance to either of them in restorative action, and is suitable for all stages of the disease.

(July 5th, 1862.)

Fanny R., whose case I lectured about a fortnight ago, has very nearly got into a state justifying her discharge from the hospital. The pulmonary regions have become resonant on percussion, though some crackling (*râle de retour*) accompanies the air returning to the scarce restored tissue of the left lower lobe. The pericardium may be adherent at some points, and the adhesions impede the contraction of the heart, I much fear; for there is a soft initial murmur with the systole heard as far off as the first sound can be heard, caused probably by the valve not closing completely and allowing of regurgitation.

The pericardium can hardly escape becoming adherent after its inflammation, and the moral I would draw from this case is to think the prevention of the injury a thousandfold more important than its treatment when established. I told you in a lecture on Rheumatic Fever six weeks ago, how this prevention is to be aimed at, and how it may generally be accomplished.

Since it is right that I should make my practice

useful to you as a warning as well as an encouragement, I will tell you a tale of what happened to me ten years ago. A robust and excitable girl of 16 had Rheumatic Fever; from her constitution I feared she was likely to have her heart affected, for young persons of a nervous temperament are much the most liable. I had then an impression that Mercury would prevent the occurrence of inflammation in serous sacs. I put her under the influence of Mercury—the Pericarditis came on, and in its most virulent form—and *the patient died in the height of it*. This terrible result made a deep impression on my memory; her fair young face always rises before me when the idea is mooted of preventing Pericarditis with Mercury, and I need not tell you I do not now employ it.

LECTURE VIII.

PLEURISY.

*First case—Pleurisy not common in hospital practice—
A slight disease—Capable of being made much more
severe by bad management—Remark on Blisters—
Local blood-letting—Its final intention restorative—
Poultices—Aid to development in continuous warmth
—Second case—Chronic effect of acute Pleurisy—
Treatment—Diuretics—Blisters—Third case—Py-
æmic Pleurisy.*

(July 5th, 1862.)

THOMAS G., a day labourer, aged 29, was admitted June 19th, with Anasarca of legs and belly of a fortnight's duration, and albuminous urine, which he attributed to exposure to the weather. The house-surgeon gave him a vapour-bath, a Jalap purge, and some draughts of Nitric Ether and Digitalis. When I saw him next day (June 20th), he complained of sharp pain on both sides of the waist, which he said had been coming on for two days and was getting worse. On examination I found a pleuritic friction sound beneath both scapulæ and in the lateral regions, but the normal respiratory murmur was still to be heard in spite of it. The friction sound was a leathery creak, lasting through the whole of inspiration and the latter part of expiration. The tongue was furred, and there was thirst.

He was ordered to be cupped, but as the instruments had unfortunately gone to be mended and would

not be returned for an hour or two, a dozen leeches were applied along the lower edges of the ribs, in the infrascapular region. Immediately they came off a large poultice was placed all over the back of the chest.

The next day (June 21st) the pain and Fever were quite gone, the friction sound was heard over only a limited space, and on the 22nd had departed altogether. The poultice was continued one more day, as the patient remained in hospital to be treated for Albuminuria.

Pure fibrinous inflammation of the pleura, usually called Pleurisy, without any affection of the pulmonary tissue, you have not often an opportunity of seeing in the hospital wards. But you know from your experience of *post-mortem* examinations how common it must be. There are few even of the most healthy chests in which you do not see old adhesions of the pleuritic surfaces, the relics of Pleurisy, sometimes in one part, sometimes in another, sometimes partial, sometimes universal, but so common, that they were supposed to be the normal condition of the parts when morbid anatomy began first to be studied. What is the reason, then, that you have but few opportunities of learning how to treat this very common disease while you are *in statu pupillari*? Simply because it is scarcely ever so severe as to bring the patient into our hospital wards, so that your only chance of observing it is when it is joined with some more alarming disorder. The man who is the occasion of these remarks would never have been admitted here had he not been taken dropsical at the same time as he caught his Pleurisy.

Ninety-nine times out of a hundred pure Pleurisy begins and ends with a catching pain in the side on inspiration, and a slight inflammatory Fever, making

the patient coddle at home and take slops, but not employ a doctor. It would be, however, much better for him if he did, for sometimes the illness may turn out a more serious affair, and always the pain in the side and the Fever may be shortened by good management and lengthened by bad.

For example—Blisters at the commencement of Pleurisy invariably protract the duration of the inflammation and make it more severe. The property of Cantharides is to cause and augment that very fibrinous state from which the membrane is already suffering. Exposure to cold and to changes of temperature, by baths and the like, make it worse, as do strained postures of the body and exercise. Opiates, also, cover up the evil with an anæsthetic mask, and prevent the patient knowing how he really is. Mercury, again, is an unnecessary call upon the whole system to make destructive sacrifices for the sake of a very small and not important member. Purgatives do no good, and expose the patient to catch cold at the water-closet.

On the other hand, the treatment you saw applied gives decided and immediate relief, and prevents the danger of the disease continuing.

It is necessary, however, to remark, that the whole of it was not directed to the pleura: the vapour baths, the diaphoretic draughts, and the Jalap were intended to relieve the Anasarca of the skin, and were successful in so doing; while the treatment to which I specially design to call your attention as that appropriate for Pleurisy is the application of leeches and the poultice. The object of leeching and all local blood-letting is to relieve that inflammatory congestion, which is not only itself an evidence of loss of vital power in the local blood-vessels, but is also the cause of further loss

of vital power by leading to the other stages of the inflammatory state. The blood-vessels are unable to empty themselves with their usual elasticity, so you roughly take the place of vital power and empty them artificially. You may perhaps say, that is all very well in external inflammation, when you can directly draw off the blood which is causing the "*rubor*" and "*tumor*" visible to the naked eye; but you may doubt how the pleura, especially the pulmonary pleura, is to be affected by depleting the capillaries of the skin. It is such a long way round before you can find any vascular connexion between the parts, that you may suggest that local blood-letting is only beneficial by detracting so much blood, and that a small venæsection would be more convenient and equally effectual. Now it is not at all necessary to have a vascular connexion between separate parts for altered states and conditions of life to be propagated from one to another. I have seen in the dead body a round circumscribed spot of costal pleura affected with fibrinous inflammation, and this had spread, not to the adjoining surface of serous membrane, not to that tissue intimately one with it in vascular connexion, but to the opposite surface on the lung, between which and its substance lay the great gulf of the pleural cavity. The great gulf, anatomically speaking, but not physiologically, as proved by this instance. Now if this gulf can be spanned by disease, the negation, the deficiency of life, shall it not be yet easier stepped across by the remedy, the renewer of life? I do not myself feel any hesitation in believing firmly what experience seems to teach, that in inflammations of serous sacs, depletion applied to the external surface has a power proportionate, not to the quantity of blood taken, but to the locality from which it is taken.

I have called the local detraction of blood a "renewer of life," and I think it is but fair to explain in what sense I so speak of it. Doubtless the taking away the vital fluid is taking away part of the body, and so is directly a destructive agent. But then blood thus lost from an inflamed part is not all loss; it is black, "melanosed," partially dead and unfitted for the purposes of life, and only a portion of it can really be called living. Then again, granting that loss of blood is a direct loss to a living body, still the indirect gain is a full compensation in cases where it is rightly applied. The blood-vessels resume their elastic force, the blood-stream is restored, and loss of substance is a regaining of function. So that a destructive becomes in the end a constructive remedy.

In the action of poultices there is no even seeming paradox to stumble at. Continuous steady warmth is the most direct agent we possess of vital development. It not merely encourages vital growth, but makes that growth take a higher form of life. Mr. Higginbottom found that different detachments of tadpoles kept in the dark and treated with different degrees of temperature, threw off their tails and branchiæ and developed lungs and became frogs, with a quickness exactly proportioned to the warmth they were subjected to.* Warmth, especially when kept steady and even by moisture joined with it, has the same effect on the failing life of tissues in the higher animals; it raises and restores it to its normal force of development. It renews the injured membrane,

* 20 tadpoles placed in a dark cellar at—

56° produced in 89 days 10 frogs,

53° " 103 " 10 "

51° " 131 " 8 "

—*Proceedings of the Royal Society* (1862). Vol. xi, No. 48, p. 532.

which had been lowered to that condition we call congestion or inflammation, into the higher life of warm-blooded circulation. As it developed the tadpole into the frog, so it develops the half-killed diseased part into full life.

But you must take care not to follow up the application of invigorating warmth by the depressing influence of cold, or it becomes doubly depressing by contrast. Your poultice must be kept on hot and hot till all pain has gone and the breath can be drawn quite freely and easily. And it will do no harm to induce your patient to retain it even a little longer, as was done in the case we are considering.

Such means will not fail to cut short an attack of pure Pleurisy.

But you will say there are cases of Pleurisy which are *not* cut short, and notably just now there is one a few beds off from the last patient, whose case I will extract from the Case-book.

John C., aged 34, navigator, always enjoyed good health till six months ago, when, on the third day after lying in a damp bed, he was seized with a violent sudden pain on the right side which obliged him to take to his bed. He was in bed a fortnight, and was treated with mustard plasters. He coughed up a good deal of frothy sputa, and was a little delirious several nights. The pain then left the right side and settled in the left, but did not prevent his getting to work again, a month after first attack. His work has not been hard, and he has continued at it, with an occasional day's exception, till he was admitted, June 25th. The principal trouble he has had and the cause of his being off work sometimes, has been Dyspnœa. He has pain on bending forward and on drawing a deep breath.

On examination of the chest in a sitting posture,

there is very absolute dulness of the lower half of the lateral and scapular, and of the whole infra-scapular region on the left side. The rest of the thorax is resonant. When he lies on his belly and puts the shoulders below the level of the chest, hanging his arms and head down, this infra-scapular region becomes more, but not quite, resonant, showing that the cause of the dulness is in part at least due to fluid which moves about by the force of gravity. Still some dulness remains, and there is a whiffling sound with inspiration and expiration. And in the lateral region the dulness remains unaltered by any position.

The pathological history of the case appears to me to be this—that the man was attacked with double Pleurisy, worse apparently on the right side than the left—that the treatment relieved it—but that the left side being the least attended to, the inflammation spread to the pulmonary tissue, and caused its insidious condensation. The cause of the dulness on percussion is partly fluid which is affected by gravitation, partly solidified lung which is not so altered in its position. The fluid in the pleura and the condensed pulmonary tissue have mutually kept one another from being restored to perfect life.

Such is the most ordinary cause of cases of Pleurisy being made chronic.

The longer they have lasted, the more obstinate usually are they in yielding. As respects treatment, you will find on the card the following, which may be considered the "*Processus integer*," as Sydenham calls it, of such cases:—

June 25th. *Empl. Cantharidis* (6² pollices) *lateri*.

R *Misturæ Potassæ Nitratis* ℥j,
Tinctæ Ferri Sesquichloridi ℥xv.

ter die.

R *Pilulæ Hydrargyri,*
Scillæ,
Pulveris Digitalis aa. gr. jss.
omni nocte et mane.

You will observe that the medicinal treatment is a union of destruction and construction, so as to try and alter, as far as possible, the whole habit of the system—to cause by destruction a demand for new material, the supply of which is guaranteed by the Iron. The Mercury causes a general increase of metamorphosis, the waste from which is directed to the kidneys by the Squill and Nitre. The Digitalis tends to relieve congestion by increasing the activity and tone of the blood-stream. So that, by a union of virtues, the combination prescribed in the pills will rarely fail to prove a powerful diuretic.

The Blister which has been put on the side will probably have to be repeated once, and perhaps again. You will observe, however, that I shall leave a considerable interval of time between each blister. I shall not apply first one on the side, then one on the scapula, then one beneath the collar-bone, stroke upon stroke, one on as fast as the other comes off. This is not an uncommon practice, and the object of it is to save time, to get the two or three blisters which have to be put on, over as soon as possible. I do not myself adopt it; and I will tell you why; as the reasons give a very good example of the restorative system of medicine which is intended to be taught in this course of lectures.

The action of vesicants is first to destroy the epidermis and to cause the exudation of a fibrinous serum beneath it. Very probably a similar but more remote effect is produced on the neighbouring tissue of the pleural sac. But it is not at this stage of the process

that the chief benefit occurs. If you watch carefully the line of dulness marking the upper margin of the collection of fluid in the chest, you will find that it falls—not when the blistered skin is full of liquid and is discharging serum—not when the counter-irritation may be concluded to be at its height—but after it is all over. As the sore heals, then the level goes down with the greatest quickness. That is to say, that the true use of blisters in such cases is to start a healing process, a renewed life on the outside skin, in order that it may be propagated to the neighbouring viscus inside. As long as this healing influence continues to be exerted, you would gain no time by a recommencement of the process, and your too hurried repetition of blisters would add to the patient's distress, without conducting to his cure. Wait, then, till the effect of one blister has quite gone off, before you order another.

Another case of Pleurisy which has occurred this week, I do not cite as possessing any interest in a therapeutical point of view, for it was rather an instance of the weakness of our art.

Charles D., aged 8, was admitted on June 24th, with Pyæmia after Scarlet Fever, affecting the principal joints, and an incipient slough on the sacrum. On July 1st he died. At the request of the parents the Curator cut into one only of the joints, which was tense with creamy pus. On opening the chest, serum filled with flakes of fibrin gushed out from the right pleura. Bands of soft, elastic, straw-coloured fibrin of an inch in length, united the opposite sides of the whole pleura, and coated the surfaces with an honey-combed layer. The lung was pressed back against the spine, was non-crepitant, inelastic, and tough. Now the front of this boy's chest had been examined on the day of his admission by myself, the house-surgeon, and clinical clerk, and

I cannot but feel sure that had Pleurisy existed at that period we should have found it out. Afterwards, the wailings of the poor child at the idea of being touched became so piteous, and the torture of moving the arms would probably have been so great, that an examination to discover the cause of the pain he complained of in the side was out of the question. The day, then, when the Pleurisy came on is unknown, but it must have been less than a week before decease.

What an amount of disorganization to have happened in such a short time! What a quantity of serum and fibrin to be formed! What a destruction of the pulmonary tissue in consequence! Pyæmia is certainly the most furiously destructive of idiopathic poisons, but yet, before seeing such a case as that of this child, we should scarcely believe the swiftness of its action to be so great.

The moral is, if the march of death be so hasty, let there be no delay in your remedies. Apply your cupping, or leeching (or *faute de mieux* venæsection), your bedding and your poultices, your slops and your diuretics, without losing a minute. Do not trust patients to Nature in any disease; least of all in acute Pleurisy.

LECTURE IX.

IDIOPATHIC HYDROTHORAX.

Two cases—Term Idiopathic Hydrothorax justified—Forms of Pleuritic disease—Which form is here intended—Hydrothorax, a collection of fluid in the pleura—Difference between Collection and Effusion—Source of the fluid—Action of physical agents in the production of the disease—Treatment founded upon the pathology—Blisters—Poultices—Mercury—Food—Digitalis—Squill—Nitre—Scoparium—Sequel of the second case, seven months afterwards—State of Chest, and explanation thereof—Another case of displaced Heart—Treatment by Paracentesis—Large quantity drawn off without return of Heart—Comparison of these two cases as to treatment—Results inferred from them, and from an analogous case of Empyema, opening externally.

(November 22nd, 1861.)

Two cases of Idiopathic Hydrothorax shall supply us with instruction to-day.

CASE 1.—Maria G., a housemaid, aged 20, has always enjoyed sufficiently good health to continue her employment as a servant, though occasionally subject to "bilious headaches," pain in hepatic region, sties in the eye, and irregularities of the catamenia. She easily catches cold, and has a dry cough, but never expectorated blood or indeed any sputa at all. Her father died at forty, of some pectoral complaint, but

her mother is alive and well, and she has not lost any collateral relations in adult age. In short, though she is well grown and hearty looking, her constitution, probably inherited from the paternal side, possesses little power of resistance to external influences. She is just the sort of person who might, through force of untoward circumstances, develope tubercle; though I feel convinced she has not done so as yet. She has not done so as yet, I say, because such a constitution gives way very rapidly when once disease begins; and she is also very sensitive, so that she would be sure to show it, did any internal organic disease exist.

She was in her usual health up to October 27th last, and had menstruated regularly the week before. On that day and on the 28th, without any assignable cause, she felt "giddy, nervous, and ill;" and in the evening of the 28th she felt a difficulty in breathing, accompanied by a stabbing pain in the right side. The sharpness of the pain lasted three hours, when it declined, and was succeeded by what she describes as an "aching." On the 29th, she went to a neighbouring surgeon, who examined her chest, gave her some pills and medicine, and desired her to call again in a week. From that time up to her entry into the Hospital she was unable to work; the Dyspnœa kept on increasing, as did also a sensation of tightness round her waist; she lost her appetite, and was thirsty; she had also frequent shiverings during the week, but cannot fix the date of the first. She was admitted into Victoria Ward on November 5th.

I saw her on November 6th. She was obliged to be propped up in bed from the Orthopnœa and Dyspnœa under which she laboured. There was complete dulness of the whole of the right side of the chest, except a small piece beneath the clavicle, which

was resonant as compared with the lower part, but still dull as compared with the other side. In this part alone were three breath sounds to be heard; and these were of a bronchial character, like the noise produced by blowing in and out through a stethoscope. The pulse was small, 120. The tongue was quite clean. She was ordered *R Pilulæ Hydrargyri, Scillæ, āā. gr. jss., Pulveris Digitalis, gr. ij., in pilulâ ter die cum haustu sequenti. R Potassæ Nitratis, gr. xx., Spiritûs Ætheris Nitrici, ℥xx., Mist. Camphoræ, ℥j., and a Poultice to be continually applied to the right side of the chest. Diet: two pints of Beef-tea, one pint of Milk with Bread, etc., ad libitum.*

8th.—The breathing is more laboured; the dulness on percussion extends higher; the pain has returned to the right side of the waist. *Applic. Cuc. Cruentæ ad ℥viij. lateri dextro; perstet in usu pilulæ et haustus ter die.*

9th.—The sense of tightness and pain around waist much relieved since the cupping. Otherwise no change in symptoms. *Add to diet another pint of milk.*

10th.—The same report. *Emplastrum Cantharidis lateri.*

15th.—The gums feel, but do not look sore. The breathing is decidedly easier, but I can remark no diminution in the extent of dulness on percussion. *Omitte pilulam in unam diem. Add to diet an egg and rice pudding.*

16th. There is a decided improvemont in the breathing. She can lie down with the addition of only an ordinary pillow to the bolster. There is breathing of a mixed bronchial and vesicular character over the whole infra-clavicular and over part of the mammary region, and more resonance on percussion. No râles. *Resumat pilulam bis die. R Decocti Sco-*

parii ʒiss. *ter die, vice haustus Nitri prioris; repet. Empl. Cantharidis.*

18th.—Chest quite resonant in front. Beneath the scapula behind, there is dulness on percussion, and ægophony. Gums not sore, but a mercurial taste in the mouth. *Perstet in usu pilulæ et haustus.* Diet “simple,”—mutton chop, two pints of milk.

CASE 2.—Annie M., wife of a builder’s clerk, aged 27, of a healthy, long-lived family, has never been ill since the age of 15, when she had influenza for a fortnight. She has once borne twins, who died, but she has two other living children, the last of whom was born May 23rd. She suckled him up to October 14th, when she was forced to desist by her present illness. This she accounts for by the following history:—

During the first week of October her baby had an arm very sore after vaccination; and so, to avoid rubbing the tender place, she fed him from the left breast exclusively. To soothe the natural crossness of the infant, she used to do this even out of doors, and once when so engaged under a tree in Kensington Gardens, she felt much chilled.

During the second and third weeks of October, Dyspnœa gradually came on, accompanied by an uncomfortable feeling, by degrees amounting to pain in the cardiac region, so that she told her husband she felt sure something was the matter with the heart. She positively denies having felt any stitch in breathing, or other pain in the side; she did not lose appetite, experience any thirst, or other signs of fever. Her complaint was of Dyspnœa, pain in the heart on exertion, and a dread that she was going into a Consumption. This dread was increased by the coming on of a cough, accompanied by a good deal of glairy expectoration.

She was admitted into St. Mary's Hospital on November 1st. On examination, the whole left side of the thorax was absolutely dull, was nearly two inches by measurement larger than the right round the lower part of the waist, and there was entire absence of breath-sounds. The heart was dislocated from its usual place; the apex could not be distinctly found to impinge anywhere, but the general pulsation was felt partly in the epigastrium, partly behind the cartilages of the right ribs—not at all in the cardiac region. She could not breathe lying down, and the inspirations were irregular, shallow, and frequent. On the right side there was excessive motion and puerile breathing. The expectoration consisted of transparent mucus with but little froth. The pulse was upwards of 120, sometimes irregular and intermittent. The appetite was natural; there was no thirst, and the tongue was clean.

She was ordered "half ordinary diet," a pint of beef-tea, and a pint of milk daily. A blister six inches square was put on the left side, and the following drugs prescribed:—*R Pulv. Digitalis, Scillæ, Pil. Hydrargyri, aa. gr. jss.; omni nocte et mané. R Potassæ Nitratis, gr. xx.; Spiritus Ætheris Nitrici, ℥xx., Mist. Camphoræ ʒi. ter die.*

November 4th.—Breathing equally laborious. Cough increased, and sputa more copious, probably by a draught from the window upon her bed. Pulse 100, weak. No change in medicine. *Blister to be repeated. Add an egg to diet.*

9th.—The breathing is easier since last report, and the measurement of the thorax three-quarters of an inch less. *Add a bottle of stout to diet.*

11th.—Says she coughs only in the day-time (when there are windows and doors unavoidably open in the

ward). Lies on the affected side without pain or inconvenience to the heart, though it still remains dislocated.
Diet "simple," one chop, one egg, one bottle of stout.

14th.—Soft and distant breath-sounds with inspiration and expiration under left clavicle.

15th to 18th.—Medicine omitted and effervescing draughts with prussic acid given on account of nausea and vomiting, which does not come on after eating, but the first thing in the morning, and when the stomach is empty.

18th.—Resumed medicine as before prescribed.

20th.—There is very little, if any, diminution of dulness on percussion since admission, although air now enters the upper lobe. The fluid does not seem to have been continued to be absorbed since the 14th. Perhaps this arises from the partial return of the heart to its place occupying the space, as the organ can now be felt pulsating behind the cartilages of the left ribs as well as on the wrong side of the chest. Pulse 100, of good power. The stout caused her face to flush after dinner, so it is left off. Other diet as before.
R Pil. Hydrargyri, gr. iij. ; Scillæ, Pulv. Digitalis, aa. j½., ter die ; Potassæ Nitratis, gr. xx. ; Spiritus Ætheris Nitrici, ℥xx. ; Misturæ Camphoræ, ʒj. ter die ; repetatur Emplastrum Cantharidis.

Idiopathic Hydrothorax, or Hydropleurisy, is an expression, which I find requires a defence. In the 'Cyclopædia of Practical Medicine,' and in the 'Library of Practical Medicine' (whose good indices render them the most frequent books of reference for busy men), the existence of such an idiopathic state is denied altogether. Effusions of fluid into the pleural sac are stated always to depend either on some visceral cause

of Dropsy, such as organic changes in the lungs, heart, liver, and kidneys, or to consist of pus, when the case acquires a title to be classed as Empyema. An acute collection of serum in the pleural sac from causes depending on the pleura itself, is either ignored altogether, or merged in the common description of "Pleurisy." This I hold to be bad pathology, likely to lead to bad practice. That a quantity of fluid sufficient to fill one side of the chest to complete dulness, that is to say between four and five pints, should disappear in ten days or a fortnight, is surely conclusive against that fluid being pus. Pus is absorbed, if at all, with extreme slowness.

Then as to the undifferentiated classification of these cases as "Pleurisy,"—is that practical? Let us examine. Half of our pleuritic patients have no fluid collected at all; there is pain in the side, and rubbing sounds on auscultation of the roughened surfaces, but no dulness on percussion. This is "*Pleurisy pure*," and gets well fast enough when treated as such. Then, again, there are very severe inflammations where the dulness is unfortunately dependent on pus. This is "*Pleurisy with Empyema*," and requires the Empyema to be treated as well as the Pleurisy, if it is to be cured. Then there is a third class where all the general symptoms, such as pain on inspiration, fever, and so on, are accompanied by stethoscopic signs of a moderate collection of fluid, but whose rapid absorption shows it to be serum. This is "*Pleurisy with serous effusion*." But the serum is not a matter of importance; it causes no increase of Dyspnœa beyond what is due to the Pleurisy, and it disappears without any special treatment when the Pleurisy is cured. The Medical attendant is wise to think much about the Pleurisy and little about the serum.

But there is a fourth class, to two examples of which I call your attention to-day, where this condition is reversed, where the Pleurisy is absent, or of small moment, and the amount of serum is great; and where the nomenclature, if it is to be of use, must indicate this. Here the practical Physician feels that what he has to attend to is primarily the serum, and secondarily only (if at all) the Pleurisy, and he requires a word to express this state of things. With Laennec, I would advise adherence to the name IDIOPATHIC HYDRO-THORAX, meaning *a collection of serum in the pleural sac injurious to health from its quantity, and arising from an abnormal state of the pleura itself.*

In the first of the cases I have narrated (that of Maria G.) there is every reason to believe that the abnormal state of the pleura was of an inflammatory character. The pain in the side, the stitch on inspiration, the rigor, the loss of appetite and feverishness, all support the opinion that there was inflammation of the serous membrane. And probably enough there was fibrous exudation too, as there usually is in even slight Pleurisy. But this attack seemed to have been of a very unimportant character in itself; she was not confined to bed, and the excellent practitioner whom she consulted in the first instance "gave her some physic and pills, and told her to call again in a week," so little did he think of it after examination of the chest. It was of an unimportant character in itself, but it led to results which might have been very serious, perhaps fatal.

In the second case there is nothing that you can set down as evidence of Pleuritis. The patient is of a nervous, sensitive temperament, very susceptible of physical or moral pain and pleasure, so that had there been anything disagreeable to feel she is not likely to

have forgotten it; yet she most positively avers that there never has been since she was taken ill any stitch in the side or catching of the breath in inspiration; the only pain in the chest at all being that arising from the forcible dislocation of the heart, and closely connected with its struggling palpitations. There was no rigor, no thirst, furred tongue, or loss of appetite, such as accompanies Pyrexia. Yet the Hydrothorax is greater in extent, and is rather more obstinate against remedies than in the former instance.

We have, then, got so far on with the pathology of Idiopathic Hydrothorax as to be able to say that—1st. It does not follow severe Pleurisy;—for that produces pus and fibrin in quantity proportioned to its intensity, and not serum:—

2nd. It sometimes follows slight Pleurisy;—

3rd. The Pleurisy is sometimes so slight, that it may come under the rule *de non apparentibus*.

Yet that the cause of the Hydrothorax is the pleura itself, we can hardly doubt when we find all the other viscera painless, apparently normal, and performing their functions in the usual manner. Moreover, it is *absorption*, a function of the pleura, whose arrest truly constitutes the disease. You must not let the commonly used but deceptive word “Effusion,” mislead you into viewing dropsical fluids as products of extra exertion on the part of the sacs which contain them. Like all morbid phenomena, dropsical fluids are proofs of sluggishness, of deficient vitality. In full vigour of health, the pleura, pericardium, and other similar membranes probably pour out a much greater quantity of fluid than they do in disease; which fluid, however, in the normal state, is taken up again by absorption as soon as exhaled, so that on opening the serous sacs we find them damp,

indeed, and dripping, but empty. By disease absorption is destroyed or at least impeded, and the natural transudation still continuing, a collection of its products remains ensacked. Think of Dropsy as a *Collection*, not as an *Effusion*, and your pathology will be right.

Do you ever, while looking in a dead body at these thin apparently unimportant membranes—seemingly only the sacs they are called—do you ever reflect on the business they transact when alive? The experimental observations of physiologists tend to assign to them an activity almost incredible, and pathologists will do well not to neglect the hint. Professor Lehmann* opened the pericardium of a healthy criminal, and collected the fluid which ran from it in three minutes and a half. It amounted to 33·8 grammes ($9\frac{1}{2}$ fluid-drachms). If always exhaled at that pace, the quantity in twenty-four hours would be a gallon and a half from the pericardium alone!—equal to about one-sixth of the whole weight of an average man. This in a state of nature would be immediately re-absorbed; and lest we might hesitate to credit the serous membranes with such an enormous power of Endosmosis as well as Exosmosis we can refer to Dr. Richardson's† experiments, which exhibit this power in action. This physiologist injected into the peritoneum of a dog weighing 23 lbs. water to the extent of 4 lbs., or more than one-sixth of his weight. Twelve hours afterwards the animal gradually sank, and was examined an hour after death. Not a trace of fluid was found in the peritoneum. It had all got into the veins, and caused death by dilu-

* Lehmann's 'Physiol. Chemie,' ii, 309.

† Dr. Richardson on the 'Coagulation of the Blood,' Exp. 36, 37, 38, 39.

tion of the blood. Three repetitions of the same experiment produced results essentially the same, the injection of a quantity of water equal, or nearly equal to one-fifth of the weight proving fatal by artificial Anæmia—not by retention of the fluid in the serous sac, but by its being taken into the circulation. When a less quantity is injected, the animal recovers in about three days; but even in the fatal cases, the serous membrane does its duty in taking up with an almost incredible activity the water presented to it.

When you reflect upon the activity of the serous membranes in a normal state, you will have no difficulty in understanding where the great mass of fluid comes from in Dropsies of the serous sacs. Nor will you fail to see whither it ought to go. And then you will clearly perceive that the disease to be treated is no excess of life, no exaggerated transudation, but a defect of life, an arrested absorption.

How do the physical agents to which illness is traceable originate the varieties of pleural disease which I have noticed? When by the impression of cold, or by direct mechanical injury, an inflammation of the pleura is produced, with great congestion of the veins at first, and afterwards with a copious formation of fibrin, the absorption indeed is interfered with most forcibly; but yet it is not these severe Pleurisies in which you have the largest collection of fluid. The reason of which is that the normal exhalation is then arrested at the same time. But by a less severe impression, either only a *local* obstruction of the absorbents may take place by a local formation of fibrin or congestion, or a *partial* arrest of it through the whole area by a force unequal to the production of actual inflammation. In each case, the exsudation re-

maintaining nearly normal causes a rapid and copious collection of fluid. The reason why Hydrothorax is not more common, is, I suppose, that as a general rule, the arrest of the exsudation is contemporaneous with, and proportionate to, that of the absorption.

On this pathology is founded the treatment. The object is to restore the function of absorption, and to that end our remedies are directed. I will remark upon them severally.

Blisters.—I will not insult pupils who have gone through a course of physiology by supposing that they would do anything but smile at the idea that Blisters do good by “drawing” to the outside the fluid from the inside, for it must be obvious to the most superficial watcher of a case, that the quantity thus elicited is too small to be of any service. But still, perhaps, you may not have clear notions as to their real action: and, therefore, there is danger of your sometimes applying them wrongly. The true benefit to be got out of Cantharides is, in the first instance, the encouragement of absorption, a power which is exercised over fluids and solids equally, and, therefore, quite independently of the evacuation of serum by the cutis. The apparent steps of this process most reconcilable to physiology, are the attraction of blood to the capillaries of the skin in the first place; secondly, its dispersion, and the consequent quickening of the capillary circulation in the adjacent parts. With the quickened capillary circulation follows increased Endosmosis, according to the well-known law, that the attraction of fluids through membranes is in the direction of the fluid set in motion and proportioned to the rapidity of the motion. A further advantage is derived from the renewal of growth which is entailed by the renewing skin. The process seems to be pro-

pagated to surrounding parts even independently of similarity of tissue.

The practical knowledge to be derived from this physiological view of the action of a Blister, should teach you patience in waiting for the advantages to be derived from it, for they are obviously by no means confined to the period of its application, but rather begin after it is removed, and continue even after the sore place is healed. You may also learn by this view of its action not to torture your patients unnecessarily by keeping the Blister on too long, under the false idea that you cannot have too much of a good thing.

In some cases I do not even permit a blister to raise the scarf skin, so that I may have an opportunity of repeating it in the same place. But as a general rule, I think the detachment of the epidermis desirable, for it appears to me that absorption is particularly active during the growth of the new skin. Perhaps the capillary circulation is quickened by the demand for new material entailed by new growth, and perhaps the industry of increased life may spread to the neighbouring absorbents and solid tissues. Whatever the explanation may be, the fact is that during the healing of a blistered surface its chief benefits are discernible.

Next in power to Blisters come *Poultices*. Their action in a great measure depends on the continued moist warmth acting on osmotic processes according to the law of their augmentation by heat. But it is also partly, in a more special manner, vital ; for the skin is reddened, tumified, and rendered more delicately sensitive by their application. They are useful in Pleurisies and moderate collections of fluid, when their size needs to be moderate only ; but it is awkward to keep the whole side covered up with a poultice, and if they are not constantly applied, the surface is apt to be chilled.

Mercury distances all the contents of our Pharmacopœia in the power of hastening destructive metamorphosis. Under its influence all the excretions are increased at the expense of the tissues. Now it is quite true that by such a process nothing is directly gained in cases like those before us; there is no poison to evacuate, and the debility which follows is so much ground lost. Harm, therefore, certainly is done by it, but with the harm there is joined a good which I think is worth the loss. No drug so consistently and steadily promotes absorption as Mercury, and in no case can you trace its effects so easily as in Hydrothorax. In the history of both these cases you may observe that no immediate improvement follows the ingestion of the remedy; but that immediately on its pathogenetic effects being produced, immediately on the gums becoming tender, the dispersion of the fluid can be tested by a relief to the breathing and a commencing resonance on percussion. And from this point a steadily advancing progress is made to recovery.

I should wish you to remark that the relief to the Dyspnœa precedes by a short period the return of resonance, especially in the woman whose Hydrothorax is on the left side. The reason is that when a certain quantity of fluid is removed, the vacated space is filled up in both instances by the re-expanding lung, and in the left side case by the return also of the dislocated heart. It is necessary to note this in order to trace correctly the period when the remedy begins to work.

When absorption is once set a-going, it is not necessary to continue the full doses of Mercury; indeed, if any evil accrues from it, you may leave it off altogether; for its beneficial effects, like those of Blisters, may be calculated upon as likely to continue after its intermission.

And you may also avoid the injury liable to accrue from the destructive drug by largely supplying the materials to take the place of the loss. Be very careful that your patient has food in the most frequent doses possible, in the largest doses that will not produce nausea, and in the forms most easily digested. You have seen this aimed at in the dietaries of the cases under your notice, on principles which I need not again recapitulate.

Digitalis, *Squill*, and *Nitre* were ordered for their diuretic qualities only. That they each, separately, and all combined, increase the quantity of the urine, is established by observation; and that such action is beneficial in Dropsies, is a traditional belief. For my part I see no reason to doubt it, for I remember as a student to have seen patients recover in whose treatment the Diuresis was the only therapeutic agent that I could at all reconcile with rational physiology. Diuretics do not, however, promote absorption in the same manner as Mercury, by the hastening of destructive metamorphosis; for the experiments collected by Dr Parkes* show that though the water of the urine is increased, yet that the daily excretion of urea is either diminished or unaffected, thus proving that the nitrogenous constituents of the body at least are not destroyed,—an important consideration, for it allows us freely to administer these reagents without fearing that we shall thereby add to the unavoidable evils of Mercury.

Scoparium.—The most memorable example to my own mind of the good effects of Broom-tops, is that of a case in which I differed in opinion with a patient, and in which he was right and I was wrong. A poor fellow with slowly growing Malignant Disease of liver and peritoneum, was taking under my orders this remedy for the Ascites caused by the abdominal tumours.

* Parkes on Urine, pp. 158, 170, 173.

It still increased, and pressed upwards the diaphragm so much that I wished the peritoneum to be tapped. He flatly refused, and so of course ceased to be patient of mine. About six months afterwards I saw him again for an extension of Cancer to the costal periosteum (of which he shortly afterwards died), and to my surprise I saw his Ascites was all gone. "Who has cured your dropsy?"—"Oh, I have taken the Broom-tea ever since, and my belly went down in a couple of months, and has kept so." Now a course of treatment under which Ascites, dependent upon increasing Malignant Tumours can get well, must have something in it.

Besides acting as a diuretic, Broom has the additional advantage of increasing the appetite by the bitter which it contains.

(June 21st, 1862.)

A young married woman came to show herself during my visit a few days back, whom you doubtless recognised as Annie M., who was in the hospital before Christmas last, and about whom I gave a clinical lecture on Hydrothorax at the end of November. You may remember then that her chest was filled with fluid and the heart pushed over to the right side. She did not come now for advice, but to thank me and exhibit her chest, which I was curious to know the state of. We found that the heart had returned wholly to its natural site, and that there was to be heard good vesicular respiration, mixed with a few occasional crackles, throughout the pulmonary tissue. The lung therefore has expanded, admits air, and does its work. It has expanded, but it has not expanded to its full size, nor does it admit all the air it ought. For on percussion the part below the clavicle remains dull, and is flatter than the opposite side, and the left ribs

do not open out with the breathing so well as the others. I have no doubt that from long compression the lung tissue has partially degenerated, and it will be months, perhaps years, before it recovers its full life. Her occupation of nursing an invalid husband is not the most favourable for regaining vitality, but still you see her in a fair way to do so.

Besides the possible degeneration of the tissue, there may be another cause for the dulness on percussion. I pointed out to your notice in the wards some time ago a vessel of serous fluid, which had been drawn off by paracentesis from the thorax of a patient of Dr. Sibson's. It was clear and straw-coloured, not perceptibly reddened by blood. But in the centre of the porringer floated a delicate fibrinous clot, just such as forms in blood minus the blood-discs. It was obviously coagulable fibrin that had coagulated after being drawn off. Now if this collects in the pleura, it clothes the lung with a strong coat which impedes its expansion, and forms also likely enough a layer over the costal pleura, both of which would contribute to produce dulness on percussion, without the pulmonary tissue being seriously the worse for it.

I am glad Annie M. came to show herself just now, as you have under your eyes a case very similar to hers where a somewhat different treatment has been pursued.

James S., a labourer, aged 26, was admitted May 30th, 1862. For nearly a year he had found his breath short, but was not so seriously inconvenienced by it as to be obliged to give up work till last Christmas. Shortly before that he says he remembers observing that his heart beat on the right side of the chest instead of the left. That symptom was certainly very conspicuous on his admission; you could not hear or feel

a trace of heart-strokes except on the right of the median line, and there they were very strong and loud. So one can easily conceive its having been remarked by an unprofessional person. There was an entire absence of breath-sounds on the left side, which also was absolutely dull on percussion. Several careful examinations on successive days by different parties made sure of the fact that the left side was not in the least dilated, eighteen inches from median line to spinous process being the exact measure of the semi-circumference of the thorax on left and right.

He is a hearty strong man with the exception of Dyspnœa, and appears to have no other disease about him beyond that of the pleura.

He was at first treated with the diuretic pill (*Pil. Hydrargyri, Pulv. Digitalis, Scillæ, aa. gr. jss*) every night and morning, a draught containing Nitre and Iodide of Potassium three times a day, and a large blister to the side. But after a week of this treatment no ground seemed gained, no respiration was to be heard in any part of the left lung, and the heart seemed if anything rather more over to the right side than before. He himself too thought that the Dyspnœa was increased. I therefore tapped the chest with a small trochar between the fifth and sixth ribs in the lateral region, and drew off sixteen fluid ounces of fluid, and then continued the same treatment as before, to try and encourage absorption.

The fluid drawn off was a yellow serum slightly opalescent. After standing, it deposited some of the grey opaque matter which caused its opalescence. This opaque matter examined under the microscope was seen to consist of fine granules, irregularly conglomerated into globules of various sizes. The application to it of Acetic acid did not exhibit the presence

in those globules of any nucleus, but rather dissolved them, and rendered them still less like pus than they were previous to its application.

My own impression is, that this granular matter is fibrin altered by long soaking in serum—the same fibrin in fact which I showed you, showing signs of recent life by coagulating into a clot, in the fluid drawn from Dr. Sibson's recent case; but which has become by time dead and unable any longer to coagulate. It is the fibrin which is exhibited in ordinary blood-serum, and, after exuding through the coats of the vessels, is still found in the more watery serum of serous sacs.

On the day the fluid was drawn off there was some bronchial breathing to be heard beneath the left scapula, but the dulness of the left chest on percussion, and the dislocation of the heart, were unaffected.

Two days after that I could not hear even the bronchial breathing, and matters seemed exactly in the same state as on admission.

Four days after the first tapping he was tapped again to the extent of eighty-eight fluid ounces. After this, breath-sounds were to be heard very distinctly in the lower lobe, but not in the upper.

On the 18th of June the diuretics were left off, and the following prescription was ordered:—

R Quinæ et Ferri Citratis, gr. xv, cum Olei Morrhuæ ʒij ter die.

For though the diuretics seemed to be doing no positive harm, yet I thought it possible that tonics would do him positive good.

He was ordered also to get up and walk about, and to have full meat diet.

(Case continued in a subsequent lecture, July 19th, 1862.)

One would have thought that enough fluid had been drawn from James S. to allow the heart to return to its place. But it was not so. On the 6th of July, five weeks after admission, he was tapped again to the extent of forty-four fluid ounces. He has also had the chest painted with Iodine to encourage absorption. But the heart has not come back.

This advantage, however, is gained, that the lung is gradually returning to its allegiance; there is very fair breathing beneath the scapula and some in the lateral region and in the supra-mammary region.

You may have remarked that after each tapping, although the breath-sounds increased, still the lung remained dull. This I conceive to be due to a layer on the lung of that fibrin which I have pointed out to you as a natural constituent of the serum in both the recent and more chronic forms of Hydrothorax. I believe the fibrin confines and binds down the lung, preventing its expansion, and counteracting the remedial action of the tapping. So that much less than you might have expected has been gained by the operation, and the case hangs on hand as long as did that of the young woman, Annie M., whom I showed you in the ward and lectured about a month ago, and who was not tapped. In fact, the chest refuses to be hurried by violence, and must take its own time.

I say this not to discourage you from practising the operation of Paracentesis;—for it is an easy, safe operation, and in recent cases very effective—but simply to prevent your disappointment in case you should anticipate too immediate benefit therefrom in chronic collections of fluids.

As an experiment upon the heart, I have had this

chest bound up with a stout tight bandage, as if the ribs were fractured. The object is to make the bony parietes of the thorax a fixed point, so that the healthy right lung may compress the heart by its expansion; and as it moves more than the left imperfect lung by reason of its healthiness, it may possibly assist in reinstating the displaced organ. All I can report upon the experiment as yet is that it seems to do no harm.

The patient also continues his tonic treatment, and I think that each time I listen the breathing in the lower lobe is more distinct. The upper lobe expands much more slowly. I suppose the diaphragm has not the same power over it to draw the air in, and so we find only an indistinct distant breathing in that part.

You will probably ask what is likely to be the result of this case. In answer I refer to that of Annie M., which was one exactly similar. And I may refer also to another, not indeed of Hydrothorax, but of a disease whose mechanical relations to the chest are closely analogous, Empyema thoracis.

An old patient of mine, formerly a horse-jockey, aged now fifty-four, is occasionally to be seen about here, whose chest presents a striking instance of the form which contracted ribs assume. It is a case not indeed of Hydrothorax, but of Empyema after Pleurisy, which occurred in this hospital in 1857, and is reported by the then house-surgeon, Mr. Ash, in the 'Lancet' for May 31st, 1862. The Empyema was cured in the only mode in which it can be cured, namely, by the external discharge of the pus. Thus the chest was put into the same relative mechanical condition as is that of the patient now in the wards upon whom I am lecturing. The heart, which had been displaced to the right side for two months, returned to its place in about a month. After that the ribs fell in, and

became flattened very gradually, so that they did not attain their utmost flattening till the autumn of 1859, two years after the Empyema. And then how were they flattened?—not in the part where the Empyema had been, and whence it had been discharged—not in the lower part of the thorax—but beneath the clavicle, which is so depressed that the man looks quite lop-sided as he walks.

I fully expect the ribs of our present patient will fall in after the same fashion, and that his heart will in due course of time get back to the right place, but that as the displacement has lasted longer, so that the restoration will be longer about.

It may be remarked farther that in the lop-sided old jockey, the ribs, though flattened, move freely and equally on both sides with the breathing, and that the air enters the two lobes of the lung on the formerly affected side fully and equally. This is a cheering observation; it encourages us to prophesy that our present patient also will with time recover the full use of his lungs.

LECTURE X.

ACUTE LARYNGITIS.

Case related—Important point in the pathology of the disease is its locality—Tracheotomy must not be represented as a last hope—Reasons for delaying it and reasons for not delaying it—Care of digestive organs—Wine—Solid food—Antimony—Mercury—Laryngitis, acute and chronic—Difference in pathology and in principles of treatment.

(October 25th, 1861.)

MARIA F., aged 22, a servant, was admitted under my care a fortnight ago. It appeared that she came first as an out-patient, with a Catarrhal cold of head and chest of a few days' duration. But she found so much difficulty in breathing that on the second day of her attendance she could not leave the hospital, and was sent up to bed. She was when first seen (on October 12th) cold and shivering, her face was livid, her pulse weak, her breathing laboured, noisy, and spasmodically irregular. There was also slight fulness of the throat and tenderness on pressing the upper part of the larynx. She was ordered inhalations of hot steam, and frequent teaspoonfuls of hot beef-tea and wine; four leeches were applied to the trachea, and a draught of an ounce of decoction of Cinchona, and a drachm of compound tincture of Cinchona, ordered to be taken every alternate hour.

Next day, October 13th, it is reported in the clinical case-book of Mr. Young, the house-surgeon :—

"She passed a very bad night. The dyspnœa is increasing; but she was able to swallow till 11 A.M., with difficulty. The throat is more tender. She is obliged to be propped up in bed, as she could not breathe in any other position. There is slight cough, the face is flushed, the lips livid, the eyes swollen, and countenance anxious. These symptoms gradually increased till 7.30 P.M., when she was found gasping for breath, and asphyxia was fast coming on, when a little Chloroform was administered, and Mr. Young performed Tracheotomy. After the operation, the pulse was 100. She was able to swallow, and expressed herself greatly relieved.

"Oct. 14.—She could not sleep very well. She took a little nourishment. The breathing was tranquil. She was ordered to have an enema of mutton-broth, with ten minims of laudanum every three hours; and also as much nourishment as she can take by the mouth.

"Oct. 15.—She slept pretty well, pulse 100, tongue furred, slight cough. She breathes a little through the nostrils.

"Oct. 16.—The trachea and larynx are not so tender, pulse 98.

"Oct. 17.—The tube was withdrawn, she breathes tranquilly. The bowels have not acted since the operation. A simple enema was ordered at bed-time. Her appetite is very fair; she is able to take three eggs, beef-tea, &c., in addition to enemata of mutton-broth.

"Oct. 18.—The bowels acted freely. The wound is granulating a little. Air still passes through the opening, which is covered by a piece of muslin gauze.

"Oct. 19.—She is cheerful, tongue cleaning at edges, but still very much furred in centre, pulse 95.

"Oct. 21.—Pulse natural. She sleeps tolerably well. She has slight cough, and expectorates a little.

"Oct. 23.—The appetite is improving. She was ordered to have half a dozen oysters daily in addition."*

* * * * *

Inflammatory Laryngitis (or rather Glottitis) is a disease in which the power we wield of saving existence by restoring a deficient function is most strikingly exhibited. What a paltry scrap of flesh is damaged! Yet how frightful the results are to witness! The question of life or death is a question of an eighth of an inch more or less diameter in a tube. If the same amount of inflammation were in your finger or at the end of your nose, any old woman would laugh at you for going to a doctor about it; if it were in your digestive canal, you would perhaps stay away from lecture, and take some slops, but you would not care to make an accurate diagnosis of its whereabouts. Catarrhal inflammation may even attack the lower part of the larynx itself pretty severely, and yet "nurse" practice be all that is required. The girl in bed number 7 (admitted at the same time as this one), had lost her voice from the tumefaction of the vocal cords, yet I did not think it worth while to treat her further than by keeping her in bed with hot water inhalations and ammoniated salines. But let inflammation sink through the mucous membrane of the glottis to its submucous tissue, let that become anasar-
cous, and you see what a piteous call for active interference arises! I say advisedly, "you see," because, though the patient has all the appearance of screaming loudly, and mayhap is trying to do so, no cry reaches your ears. It matters not if the inflammation be

* The wound healed on Oct. 28th and on Nov. 4th, she was able to be employed in assisting the nurses in their care of the patients.

violent or weak, be rapid or slow—directly it has caused the edges of the glottis to swell to the point of not admitting as much air as the lungs want—instantly that it has reached this point, life is in immediate danger. It matters not what was the former state of the patient—the present moment is a present and pressing peril—a Samson or a Lazarus equally hovers on the edge of the grave.

In point of fact, the importance of acute Laryngitis depends not on the *degree* of injury to life, but on the *localization* of the disease. And hence the value of remedies is proportioned closely to the special definiteness of their action on the part affected. There may be perhaps at the druggist's excellent remedies for inflammation, which would act most powerfully all over the body of your patient—all over the body of an animal three times her size; but you do not *want* just now to act all over her body, only on that little spot which stands between her and life. Do not run the chance of acting deleteriously on the whole person for the sake of a possible benefit to such a minute portion of it. Do not misquote from Hippocrates, "*extremis morbis extrema remedia*,"* and ransack your brains for that which is the *extremest* remedy for this extremely dangerous inflammation; but for that which will get *nearest* to the seat of peril. When this woman came into the ward, she was (as described in the report) blue in the face, speechless,

* Few erroneous translations have done so much harm as this, which has led people to justify themselves by the authority of the shrewd Greek, when they increase the violence of their remedies in proportion to the violence of disease. I have heard M. Chomel do so when bleeding the most severely the worst cases of Pneumonia; and "the more Syphilis the more Mercury" was the doctrine at the Lock Hospital not many years ago.

incapable of swallowing and breathing without labour and noise. It was very obvious that something must be done to relieve her without delay. But her skin was cold, her pulse was weak and quick, and she was exhausted by abstinence and bodily exertion. Therefore, though I anticipated Tracheotomy would have to be practised, I thought it as well to try other measures first, especially as there are other measures equally local and equally important without being so alarming. I got her warm in bed, gave her some teaspoonfuls of hot beef-tea and wine, made the air damp and soft round the mouth with hot steam, and put four leeches on the outside of the trachea. There was a certain amount of relief from this, and the purple hue of the face faded during the afternoon. But the next evening it came again; and Mr. Young carried out the provisional order for performing Tracheotomy. Then the relief was immediate; the lividity of countenance vanished; she shortly fell asleep, and continued afterwards to respire through the tube till such time as the swelling of the glottis subsided enough for her to breathe in the natural way; then the instrument was removed.

Tracheotomy is an alarming operation to hear of or to look at, but in reality it is not a dangerous one. Bungling suicides often saw open the trachea by cutting their throats right in front; yet, they fail to kill themselves if they miss the great vessels. And if a wound under circumstances of such violence is not fatal, how is it likely to be so when made with the deliberate caution of a surgeon? In point of fact I cannot find on record any instance of the operation being fatal. Patients, of course, often die after it, because Laryngitis is so often complicated with extensive Pneumonia, Croup, Diphtheritis; but I cannot find anything indicating that the operation has ever hastened the

death ; nay—in most even of these it seems to have postponed the unfortunate termination. Do not, therefore, alarm the patient's friends by speaking of it as "a last hope," "a final resource," or by any other twaddling expression. The effect of such conduct is that they beg you to postpone it a little and a little longer, till the time has passed for a chance of success. Each minute the throat is becoming more swelled and filled with black blood, and there is more likelihood of the surgeon's hand being stayed by troublesome Hæmorrhage. Each minute congestive Pneumonia is becoming more and more probable ; more and more incurable, if already existing. In fact, the operation is as the stiff leap to the timid sportsman, "the more you look at it, the less you'll like it."

The only reason for delay is that of which you saw an instance in the present patient ; namely, a possibility that the excessive urgency of the symptoms may be due to some easily obviated external cause, such as cold, weariness, nervous excitement, Hysteria, or the like. It was not unlikely that a patient, chilled with coming to the hospital and sitting in the waiting-room, might appear worse than she really was, and that warmth, food, and rest, might alleviate the pressing danger. It did so to a certain extent ; but not so far as to prevent a relapse.

This is not a place to speak much about the surgical part of the business. I will merely say what the physician requires of the operator. His requirements are :—1. That blood shall not be allowed to get into the trachea (to secure which the use of a simple scalpel, and the waiting for all serious bleeding to have ceased before the cartilages are cut, are the best means). 2. That the opening shall be large enough to admit of a sufficient body of air ; that is to say, it

must be capable of being stretched to nearly the diameter of the trachea. 3. That the instrument inserted should be capable of being kept clean by a nurse, and not easily jerked out by spasmodic movements on the part of the patient. (The ordinary curved double canula seems to me the best.)

So far, then, for restoring the deficiencies of the respiratory functions.

But other functions require care also. You will observe that half a pint of warm beef-tea is ordered to be thrown up into the colon by enema every three hours from the first admission of the patient. These patients are usually suffering as much from want of food as from want of air. The deficiency, indeed, does not kill them so rapidly as the impediment to respiration; nor does it make itself so conspicuous; and, for that very reason, is apt to be forgotten. But observe the convulsive motions of a patient with Laryngitis on trying to swallow, and you will not be surprised that they resist all attempts at feeding by the mouth, and that nurses have no heart to force them. The attempt is another name for strangulation. Yet if they get no nourishment, they are hourly becoming less able to bear up against the depressing influence of the devitalised blood, less able to renew the injured larynx. This is a matter of great moment, not only as regards the present retention of life, but as regards the later prospects of the patient. For the last hundred years, people have been writing a great deal, more or less wisely about Laryngitis; but I do not think any one has noticed this important part of the treatment since Van Swieten a hundred years ago. ('Commentary on Boerhaave,' vol. viii., sect. 813, *ad fin.*) It seems not improbable, from the details given in published cases, that

many of those whose immediate danger has been happily postponed by the operation, have died of starvation through the neglect of this simple measure.

In all cases where you desire to administer nutriment in enema, it is well to prevent it from running off before being absorbed by adding a few drops of an opiate. This was done at first in our patient's case; but it was not necessary to continue it, as no fæces were passed *per anum* for three days.

When the powers of life have been so reduced by the deficiency of the respiration that the mucous membrane of the intestinal canal rejects the food undigested, you mix pepsine with it; and you may appropriately administer tincture of bark and port wine. Both were ordered on this girl's card; but little of them were given, as within forty-eight hours after the operation, her pulse had got full and natural. Always remember what I told you when lecturing on Low Fever, *Wine is an adjunct or help to restorative treatment; but if made to take its place, is hurtful.*

When the patient begins to take food again by the mouth, you will not rarely find that solids of certain kinds are easier swallowed than pure liquids. This happens in all kinds of Dysphagia; in fact, the embracing of a gulp of fluid by the semi-voluntary pharyngeal muscles is a greater effort, and more apt to cause spasm, than is the case with a more resisting mass. You can try this any day in your own throats. But you must select as the solid you administer some one which slips down easily, such as the oysters which have been ordered for this girl.

I feel you expect me to say something about two drugs which have been strongly recommended in Acute Laryngitis—Antimony and Mercury. I must confess I have never been able to trace any advantage from

their use, either in cases which have recovered, or which have died. I no longer use them, and do not recommend them to you. The action of these metals is to increase destructive metamorphosis, and to lower the force of the heart. By such means they certainly do appear to me to have a controlling power over inflammation. But it is a power exercised slowly, and at the expense of depressing the general vitality rapidly; so that they are peculiarly unsuitable for cases where an effect is desired to be quickly produced; for, if enough of them is given to stop inflammatory action in the short time allowed, a serious lowering of the functions ensues, extremely dangerous to patients who have already sustained the shock of being half stifled. And this depression is the more decided from the limited extent of the inflamed spot, and the limited inflammatory reaction on the system; for the poisonous actions of Antimony and Mercury are the stronger in inverse proportion to the amount of tissue inflamed. Give them to a healthy man—to a man with a cold in his head, or an inflamed corn—and they pull him down most wonderfully; but give them to a patient with double Pneumonia or Peritonitis, and he hardly feels their effects. In Laryngitis, therefore, *more* than in most inflammations, these drugs are likely to have a deleterious action, and *less* than in most inflammations a beneficial action.

What I would have you keep in mind, in your treatment of Laryngitis, is as follows:—

1. If the external and obvious conditions of the patient be such that some part of the symptoms may be due to those conditions, remove them. *Warm* the surface of the body; saturate with hot *steam* the air inspired; put on *leeches*, and *hot fomentation* to the throat. In special favourable cases, *bleed*.

2. If benefit do not quickly follow, perform *Tracheotomy*, or get it performed.

3. If a relapse occur after temporary benefit, every minute that the operation is delayed is a minute lost.

4. *Food* must be sedulously administered, if not by mouth; by rectum. This is especially necessary if leeches are applied, more especially if you decide to bleed, and still more especially than ever if Mercury or Antimony have been thrown in by yourself or others.

5. Let the restored air for respiration be moist and warm; and take care that there is enough of it, by inserting a full-sized double canula in the trachea, and sedulously watching the orifice day and night, lest it get blocked up by mucus.

As a contrast to a disease in the larynx inducing such serious danger by its locality, but rapidly recovered from by reason of the slight morbid alteration which has taken place, I show you here a larynx taken this week from the body of a man who died of Pulmonary Consumption. See how extensively it is disorganized. The mucous membrane covering all the upper part is white, thick, and rough; just below the vocal cords on the right side, there is a ragged deep ulcer, which has bared the arytenoid cartilages, and caused them to become necrosed by killing the perichondrium; a piece of the dead cartilage projects into the bottom of the cavity. There is another superficial ulcer in a corresponding place on the opposite side. Yet here the symptoms referable to the larynx were of very little weight. The man's voice was indeed hoarse and weak, but not more so than you find in most sufferers dying with a very large vomica in one lung and the other filled with crude tubercles, which we found in this autopsy. There was a considerable secretion of pus also, and

pain in the larynx when pressed ; but no difficulty of breathing, in whatever position the patient lay. Consequently, no local applications were made to the organ. There was no demand for local medication, and certainly it would have been useless to the prolongation of life. The deficiency calling for restorative treatment was the important one of chronically deficient nutriment to the whole system. The larynx was ulcerated and degenerated for the same reason that the kidneys were shrunk and granular, and that the whole person was emaciated to a skeleton—*sufficient aliment was not absorbed to compensate waste*. A despairing effort was made to supply this by trying to restore digestive and absorbent powers to the alimentary canal by means of Quinine and Iron, and to supply muscle and fat with Meat and Cod-oil. But in vain. Sentence of death had long before gone forth ; and it was hard to say that the decree was in any measure delayed by treatment, however appropriate it may have been. My object in quoting this case now is not by it to commend the remedial agents employed, but to draw your attention to the rule, that—*the immediate danger of diseases* is mainly traceable to their locality ; *the final danger*, to the extent and intensity of the pathological changes.

I would lay it down as a law to be observed that, in cases where the danger is immediate, the attention of the medical attendant should be directed to locally active remedies ; where the risk is more remote, his mind should be turned to those of general agency. Thus in Acute Laryngitis you are to think of the larynx alone, to the temporary neglect of other parts ; in Chronic Laryngitis, you are to consider the general nutrition in preference to the local injury.

LECTURE XI.

PNEUMONIA.

Three cases of Pneumonia—1. Frank uncomplicated double Pneumonia in temperate man, with excessive Dyspnœa—Cured with Venæsection, Jacket-poultice, continuous feeding and Wine. 2. Pneumonia of upper and lower lobes of one Lung, very slight in the other Lung, in a broken-down old man—Cured with Cupping, Jacket-poultice, continuous feeding and Wine. 3. Congestive Pneumonia of lower lobe in Typh Fever—Cured with Half-jacket-poultice, Cupping beneath Scapula, continuous feeding, Wine and Bark—Commentary—Pathology of Pneumonia—Importance in proportion to quantity of Tissue involved, not to stage of progress—Hence value of ready and quick means of checking it—Bloodletting—Action of it—General and local compared—Ill effects of loss of Blood—Mode of judging of the necessity for it—Compensation for it—Poultices—their Action—Especially adapted for Infants—How to make it—Alcohol, when required—Position in Pneumonia of Typh Fever—Bloodletting—Purgatives—Blisters—Remarks on previous treatment.

(May 10th, 1862.)

THERE have been three cases of Pneumonia under my care in Albert Ward this week to which I have drawn your attention, as illustrative of the most common phases under which you have to treat that disease in the adult.

No. 1 is a case of frank uncomplicated inflammation of the lungs.

R. G., aged 21, a very steady, temperate policeman, well made, robust, and never previously ill, was on April 12th taken with severe rigors, followed by dull pain in the side, and cough. He got worse under treatment from day to day, and on the 18th was so alarmingly ill that his friends brought him to the hospital. I saw him two or three hours after he was got to bed, and certainly felt that they were justified in their alarm. The respirations were abdominal and were 36 in the minute; he struggled and gasped for breath, his lips and tongue were livid; the pulse was very quick and small, but on listening to the heart it beat strongly, considering its great rapidity. The expectoration was copious and glairy, of a deep tawny colour, and with a few small striæ of blood in it.

The whole of the ribs on the right side were immoveable by inspiration, while the motion of those on the left in front was very conspicuous. In the upper half of the upper right lobe, and in the lower right lobe in front, there was fine crepitation and comparative dulness on percussion. In the lower right lobe beneath the scapula the dulness was more absolute, and there were coarse râles. In the lower left lobe behind there was fine crepitation. It was obvious therefore that active inflammation existed throughout nearly the whole (if not quite the whole) of the right, and in the lower lobe of the left lung, and that it was most advanced in the back part of the right side. At most a third of the pulmonary tissue was in vital condition, so no wonder that exaggerated puerile breathing was heard here, and the ribs were heaved in an extraordinary manner.

The patient was bled to three-quarters of a pint

from the arm, took eight ounces of port wine during the twenty-four hours, and beef-tea every two hours, and had his chest completely enveloped in a thick hot linseed-meal poultice. He was ordered also three effervescing draughts* daily.

I am told that relief began immediately after the venæsection. At all events, next day there was a great improvement, the breathing being much easier, the patient expressing himself as "stronger," and the sputum being but slightly tinged with brown. On the succeeding day there was a further step gained, and the pneumonic hue had disappeared altogether from the mucus expectorated. However, in the parts of the right chest in front, whence I raised the poultice temporarily for examination, viz., an inch beneath the clavicle and an inch beneath the mamma, the dulness on percussion remained very decided. But I will not allow myself the enticing task of describing a patient's daily progress towards health; suffice it to say, that on the 26th, eight days after admission, the effervescing draughts were exchanged for Decoction of Bark, and that to-day, May 10th, he goes out well. The respiration is quite natural, percussion and expansion normal in the upper lobe and back part of the lower lobe recently inflamed; but there still remained (yesterday at least) some little crepitation mixed with the healthy breathing, and slight comparative dulness below the mamma.

No. 2.—Hugh J., aged 63, porter at a charitable institution, a respectable man, but not quite free from a suspicion of petty tippling, had an attack of Pneu-

* A drachm of Citrate of Ammonia in each. This is so refreshing to the feelings when one is tired or ill, that I think it must be a directly constructive drug. Both the Carbonic Acid and the Ammonia take part in the substance of the body.

monia of the lower half of the left lung under my care about this time last year, from which he entirely recovered so far as the local symptoms were concerned, but he has looked older since. At the beginning of last week, April 28th, he was again taken ill. I saw him on the 2nd of May, and sent him up to this Hospital. On the right side the whole lower lobes and the greater part of the upper lobe were consolidated. In the latter, fine crepitations were heard throughout. There was also some fine crepitation in the back part of the left lung. His tongue was thickly furred and clammy, his hands tremulous, and his manner excited. There was also occasional delirium. The pulse was large, short, and empty—such as is usually found with the inelastic arteries of old age. He was cupped to six ounces on the cardiac region that day, and the day after to six ounces beneath the right clavicle. The chest was completely enveloped in a jacket of linseed poultice. He was ordered eight ounces of port wine, food every two hours, and three effervescing draughts daily of Carbonate of Ammonia and Tartaric Acid.

May 5th.—On the 4th there was considerable Diarrhœa, which ceased on the following day-break, after a small dose of Dover's Powder. Pulse 128.

May 6th.—Less crepitation in left upper lobe, but dulness on percussion, and coarse mixed with fine crepitation in right upper lobe. Sputa have been for the last three days very abundant, and of a deep rusty colour.

No change in the symptoms, except the gradual diminution in quickness of the pulse, is noticed till to-day. (the 10th), when the sputa are darker and more like prune-juice, but showing signs of improvement by having some specks of opaque purulent matter in

them. The tongue is also a little moist, and only gets quite dry after sleep. He may be considered to have turned the corner in his progress towards recovery, and I have no hesitation now in pronouncing a favourable prognosis. No change has been made in the treatment.

[On May 16th he began to take Bark and Ammonia. On the 17th the expectoration is noticed to consist of clear mucus for the first time since his admission, and he left the hospital to return to his place on May 30th.] (Case Book 161, p. 187.)

No. 3.—John L., aged 17, was brought here from a house where his mother and sister have just died of "Typhus Fever," according to the account of an aunt who came to see him. He was taken ill on April 20th, and when admitted on April 23rd, was as unfavourable a subject to look at as I ever saw at that early period of Low Continued Fever. There was complete prostration and constant delirium, the tongue was clammy and tremulously protruded with great difficulty from the dry lips, the pulse 120 and small, the skin hot and dry. The eyes were bloodshot, and on the front of the body were from 30 to 40 fever spots of various hues, some slightly raised and inclining to rose colour, some livid, some completely purpuric and not changed by pressure. I mention these details because it is such cases of Typh Fever, where the hæmatine of the blood is apparently so much poisoned, that are aptest to be accompanied by inflammation of the lungs. He was treated in my usual way with Hydrochloric Acid and tepid sponging, and was going on as usual very well till May 3rd, when some fine crepitation and dulness on percussion were found in the lower lobe of the right lung, accompanied by slight cough, but without expectoration. On the 4th he was

cupped beneath the right scapula to four ounces, a Poultice was applied over that part, and he was directed to be kept turned over on the left side. On the 7th the breath-sounds were healthy except a little coarse crackling mixed with vesicular breathing, such as is generally found in typhous patients; the percussion was normal. The tongue and other muscles were scarcely, if at all, tremulous. He is now going through a rapid convalescence under Bark and wine, and in a few days will doubtless be able to stand on his legs.

Whilst speaking of this case, and before I enter on the question of the treatment of Pneumonia, I will make one observation to you on the importance of the diagnosis of the cause of dulness on percussion in Acute Fevers. In this instance there was no doubt about the prognosis of the rapid termination of the congestive inflammation. But you must not say the same on every occasion of finding the pulmonary tissue condensed in Fever. A man will leave the hospital for a distant home in a few days, who has recovered very slowly from an attack of spotted Fever rendered severe by Diarrhœa and inflammation of the bowels. He has had at the same time primary syphilitic sores and a Bubo, and had taken Mercury; * so that his tedious convalescence was quite accounted for by his previous history. Besides this, during the time he was laid on his back, I had found a considerable amount of consolidation about the middle of the right lung,

* I would remark in passing that this man's Enteritis (pain in the bowels with blood-stained stools) came on very early in the illness, namely, on the third day, although the usual tendency of Continued Fever this year is by no means dysenteric. He was under the influence of Mercury at the time. The action therefore of that drug is at least not preventive of bowel affection. Is it *curative*?

and at the apex crepitations. As at that time he was not well able to give an account of himself, I was inclined at first to set this down to Pneumonia, to treat it as such, and anticipate its disappearance. You saw, however, that this morbid state remained unaltered when I examined him for his discharge, and it seemed to me by his tale of former winter cough and Hæmoptysis to be due to chronic tubercle. He will probably become consumptive some day. Learn from this case to be cautious before you hail consolidated lung in Fever as merely congestive.

Now to return to the object of the present lecture.

In Pneumonia a terribly vital organ is smitten; and so far as the disease extends, the destruction is total. A consolidated, or even congested piece of pulmonary tissue is absolutely impotent to fulfil its functions, and yet that those functions should be fulfilled is essential to animal existence. It is easy therefore to see that the gravity of the Pneumonia is in direct proportion to the quantity of lung involved. The degree or form of the inflammation or condensation makes much less difference, so far as immediate danger is concerned, than the extent of tissue over which it is spread.

Hence comes the importance of having some ready and effectual means at hand of checking the march of the inflammation to fresh parts. If we can do this we contribute more certainly to renew the patient's life than if we regulated, however favourably, the progress of it in already affected places. No means is so readily applied, so immediate in its operation, as blood-letting. Its action has not to be waited for, like that of drugs in medicinal doses, but begins at the moment of application. That is a great point where time is so valuable. I believe also that it is the most powerfully effectual of the agents at our disposal, and that

rightly used it is the saving of many a life in Pneumonia.

The beneficial action of bloodletting in Pneumonia is mechanical. It is more a question of Hydrostatics than of Physiology. The pathological state which demands its use is as follows :—by the temporary death of a portion of the lungs the blood cannot be quickly enough passed onwards through their tissue; it can run freely as far as the right side of the heart, but there it is stopped;—the throng pressing onward from behind makes matters worse, and thus the balance between the venous and arterial heart is destroyed. You can feel the apex of the organ beating strongly against the ribs, the muscular action being excited by the presence of an unusual amount of venous blood; yet the artery at the wrist is at the same time striking your finger with an imperfect weakened force. Take away some of the blood from the veins, and the balance is restored, the pulse becomes “freer,” as the technical phrase is; that is to say, the heart being relieved of the undue crowd in the right side, is not arrested in its contraction, but is able to close upon its contents, and supply them steadily to the arteries.

The advantages of general and local bloodletting are of identically the same nature, though the operations differ somewhat in degree, and are diversely applicable. Where the patient was, previous to his current illness, in vigorous health, actively digesting his food and actively renewing his tissues, he will bear and easily repair the detraction of a good large quantity of blood. And a good large quantity of blood is most conveniently drawn from the arm. To get therefore the full advantage of the remedy, and be on the safe side, you practise Venæsection. But if the Pneumonia has come on a person previously an invalid, or

in weak health, you fear for the possible bad consequences of your treatment, and you cast about for some means of getting the greatest advantage out of the least loss of blood. This is obtained by cupping the region of the heart. Your six or seven ounces taken from thence in a delicate invalid seem to produce an effect corresponding to the loss of twelve or fourteen let from a vigorous man's arm. But there are practical inconveniences in cupping to a large amount in this situation. You are obliged to cut deep to obtain a good flow, and deep cuts cannot be stopped easily, but go on oozing unperceived into the poultice, which, as I will instruct you presently, is to be put round the chest.

Remember that in letting blood you are wielding a dangerous weapon. While from a mechanical point of view nothing can equal the aid it gives, at the same time its more remote or physiological action is hurtful. If you gain the inestimable boon of a restoration of balance in the circulation, and a consequent relief of Dyspnœa and renewal of life in the lungs, you must not complain if some evils attend the process. The mere loss of so much "liquid flesh" is in itself an evil, but a minor one; of greater import is the increased proportion of effete fibrine and water which it induces, the diminution of solid hæmatine, and the consequently diminished power to bear up against the destruction, however temporary, of so much pulmonary substance.

Judge, therefore, of the necessity of this treatment by the balance between the heart and the arteries. If the apex of the former organ strikes strong, while the pulse at the wrist is defective, act freely and confidently. If, on the contrary, the ventricles are weak, while the pulse is large, full, and rapping, be cautious

in what you do, and if you draw blood at all, let it be by cupping the chest.

You will find in some treatises on Medicine, rules about bloodletting in Pneumonia attempted to be deduced from the supposed degree of consolidation of the pulmonary tissue. These rules are singularly foolish and inapplicable to practice. They say you should bleed so long as you know that the lung is in its first stage of condensation (*i. e.* congestion) as indicated by fine crepitation and incomplete dulness; and that you should not bleed after it has once become completely consolidated so as to admit no air into the finer bronchi, a state declared by the sound of coarse crepitation and complete dulness. Such a rule is quite useless at the bedside, and will often prevent your employing active practice in cases where it is urgently required. In the first place, in a majority of cases fine crepitation is masked by the mixture of coarse, produced by the presence of catarrhal mucus in the larger bronchi, especially in the catarrhal Pneumonia of the young. If you wait till you can distinctly hear fine crepitation, you will wait too long. Then, again, the dulness of congestion is not necessarily incomplete; as you may satisfy yourselves by examining a case of transitory congestion in Continued Fever, which is often very absolute, though it is so transitory that a mere change of position may remove it in twenty-four hours. Then again a slight collection of serum in the pleura may make the lower lobe dull at the very commencement of the Pneumonia, and prevent your bleeding at a very early stage, if you were to follow the rule I quoted. But the most truly important consideration, and the most serious objection to the rule is, that you may have all stages of partial tissue-death going on at the same time; one lobe, or one part of a

lobe may have advanced even to yellow hepatization, while another part is just beginning to enter into red hepatization, and in a condition which most would agree is that capable of benefit from letting blood.

Your best guide to the necessity will be the Dyspnœa, and your best check the balance of the heart and arteries, as I have explained already.

Remember now what I told you about bleeding in a former lecture on "*Anæmia and Bloodletting*;" *be careful to supply material in the place of that which you are taking away.*

Let the patient be fed with beef-tea or milk every two hours, just as if he had Typh Fever. I mention this part of the treatment next to the bleeding, to remind you of the close connexion which there is between the two, and because of the immense importance of it to your success, whether you elect to bleed, or whether you do not.

I now come to a direct Restorative, about the use of which at all times you need have no manner of hesitation. You can always, without any exception of age, sex, condition, cause, or complication, follow a treatment to which I attribute more power of saving the lives of pneumonic patients than to any other, and which you see me apply in all cases;—I mean the enveloping the chest in a large bath-like Poultice. The action of warmth and moisture on animal tissues tends directly to increase their vitality. You may see with the naked eye a healthy surface of skin under their application renew its life; it empties itself quicker of its pale, livid, venous blood, and glows with a fresh access of the bright arterial stream; it swells up elastically with fresh juices; it is more delicately sensitive when used for the purposes of touch; at the same time it feels no pain, but on the contrary an

exquisitely pleasurable calm. You cannot see with your eyes this renewal of life in internal organs, but you may infer that what takes place in one tissue takes place also in another, with modifications of course dependent on distance and other difficulties of application. And you may infer it also from the results; for you find the Dyspnœa diminished, the breath being easier drawn in spite of the weight of the Poultice; the hot fevered skin becomes moist and active, and soon the ribs begin to move again, and air is readmitted into the previously paralysed lung-tissue. These effects are the most strikingly shown in the case of infants, whose thin chest-walls are rapidly and efficiently permeated by the influences of the Poultice, and in whom also this remedy is the only one really safe and invariably necessary. I cannot speak too strongly of the importance of your adopting it, and letting all other treatment be rather rejected than this directly Restorative agent.

The Poultice is best made of linseed meal, because that keeps moisture the longest. It should be spread half an inch thick on a cloth or flannel as broad as the circumference of the thorax. If any portion of the upper lobes be inflamed it is essential, and even if only the lower lobes are inflamed it is prudent, that the Poultice should be deep enough to cover the whole chest, from the collar-bones to hypochondria. Lay the patient in it on his back, and fold it across the front till it meets. In adults it will usually keep in place of its own accord; but in children you should have a tape stitched on in front and a tape behind which you can tie over each shoulder in the manner of a shoulder-strap; otherwise the little prisoners wriggle out of their soft breastplates. When once you have got it *in situ*, keep it there, and desire the nurse, on

pain of dismissal, never to take it off till another hot one is ready to go on. In Low Fever, the continuous Poultice somewhat stands in the way of the cool sponging. But in practice this last important part of the treatment becomes less necessary at the period when congestion and Pneumonia occur; the skin has then become cooler and more active. Besides, the Poultice often takes the place of sponging by softening and suffusing with a gentle perspiration the whole body. I have often had Pneumonic patients complain of the way in which the moist warmth makes them sweat.

Alcohol, especially in the form of Port wine, is very useful in treating Pneumonia. Even in hearty temperate persons, when you are going to bleed, it is desirable to give a little, as was done in Case 1. A glass of hot negus before the operation, makes it safer. And whenever you observe the nervous system prostrated by the extent of the disease, so as to produce tremor of the hands, quivering of the tongue, delirium, dry brown tongue or a tendency thereto, throw in a little Wine from time to time. In old persons, especially in the upper classes, who have been used to good living, and in persons of all ages who have indulged too freely in alcoholic liquids (as Case 2), you need not wait for any symptoms as above described, but begin with wine immediately. In children it is not required, and they get well quicker without it.

In the Pneumonia of Low Fever position is of great importance. As long as the walls of blood-vessels retain their natural elasticity they are able to resist the gravitating force which acts of course on the blood as on all matter: but when their life is lowered in disease, the elasticity is the first vital property which suffers, and the blood then gravitates towards

the lowest part of the viscus. This is especially the case in Low Fever. Lay the patient, therefore, on the side opposite to that affected (as was done in Case 3), or even on his face for a time, if both are affected; and thus the very force of gravitation which you feared as an enemy, becomes a friend, by withdrawing the congestion from the weaker point.

This boy was cupped on the side. You need not be afraid of a small loss of blood in Low Fever, where an important viscus requires it. A large portion of the vital fluid you take away is poisoned and dead already, and unfit for the purposes of life, so that you are not robbing the patient to the full extent of the quantity drawn. You saw the lad was much more lively after his cupping than before. It is better to draw it locally than generally, because local benefit is expected from it and not general.

I always abstain from giving Purgatives in Pneumonia. My reason is because I have observed that patients who have Diarrhœa at the same time generally do very badly. And if natural Diarrhœa does harm, I infer that artificial Diarrhœa does harm also. I prefer to produce constipation by opiates, where it does not already exist. If the rectum gets blocked up with fæces, it is easy to wash it out with warm gruel.

Blisters, also, have seemed to me to do harm in a few cases where I have seen them employed before the patients came under my treatment. It is usually non-medical persons who put them on, under the general idea that they are good for a cough with pain in the chest.

Nothing has been said about Antimony and Mercury, drugs formerly much used in Pneumonia. They are Destructives, and I cannot see that there is anything to be destroyed in this disease, or that there is

anything whose destruction would aid the employment of direct Restorative treatment. When I used them I was frequently obliged to leave them off on account of bad symptoms attributable to their agency, and I always felt doubtful if success in prosperous cases could be traced to it.

But in all diseases which have been under treatment before yours, pray never let a word escape your lips, or a thought dwell upon your minds, about the patient being worse for the means previously employed. Most probably the harm done even by the most unsuitable drug is much less than we suppose. And it can hardly be but what *some*, at least, of the treatment has added to his chances of life more than if he had been let alone. Besides, we are all infinitely fallible, God knows, and it is not for us to judge of circumstances we have not seen.

LECTURE XII.

PULMONARY CONSUMPTION.

Definition of the Disease—Localized by morbid anatomy and auscultation of the lungs—Pitfalls of this knowledge—Not the presence, but the increase, of tubercle, the chief point—Innocuousness of non-progressive tubercle—Object of treatment to be the organs of nutrition not of respiration—Food—Cough medicines—Appetite—Iron—Cod-liver oil—Alcohol—Remedies for Diarrhœa—Cachectic Phthisis—Chlorate of Potash—Specifics.

(December 13th, 1861.)

PULMONARY Consumption affords to the student an admirable opportunity of learning the work of Restorative medicine. He sees so much of Consumption among in- and out-patients, that he gets soon a good general idea of the disease, uninfluenced by the accidental circumstances that occur in individual instances; the means of accurate diagnosis at his disposal are easier of application; and the direct connexion between the anatomy and the symptoms more traceable than in any other class of medical cases.

I shall not detail from the Case Book any instances. There are now (and always are) several in the wards, to which I have called your attention on points of diagnosis, but it would be wasting the short valuable time of lecture to recite their familiar phenomena, which in so far as treatment is concerned, are very

uniform. These are my reasons for not lecturing as usual on specially selected cases to-day.

I take it for granted also that in the Systematic Course of Lectures on Medicine you have had the following propositions made clear to you. They seem to me to comprise the chief points contributed by pathology towards the treatment of the disease, and in proving them a great deal of time and thought have been worthily because usefully spent.

1. That the cause of the symptoms, of the disease, of its fatality in fatal cases, is the occupation by tubercle of vital organs, especially the lungs.

2. That the tendency to the formation of tubercle resides in the constitution of the individual.

3. That this tendency may be either hereditary or acquired, or both hereditary and acquired at once.

4. That the circumstances which quickest develop this tendency are the same as contribute to Anæmia, want of supplies for the formation of tissue; namely, starvation, bad air, deprivation of light, exposure to cold without power of resistance, fatigue, previous illness; in short, any depressant of the powers of life.

Anatomy and auscultation have rendered us the enormous service of tracing out truly in death and life the organs chiefly injured in Pulmonary Consumption, and the nature of the injury done. What an incalculable advantage we have over our grandfathers in this respect! What a contrast between the dangerous confusion of various diseases under one head, the distinctions without differences spoken of in the writings of the bygone age, and the almost finical precision of our diagnosis! But do not stop here; pathology must carry you on further, or you will have gained so little from science, that I doubt if your practice will be any better than your grandfathers', in spite of the

treasure of additional knowledge you possess. Often, during conversations in the wards, I perceive signs of your considering the tubercle as "the disease" against which you have to direct the energies of your minds, and from which the patient has to be delivered. You want to do something to "stop" it, to "absorb" it, to "counter-irritate" or "evacuate" it; you seem to imagine that if you could take away that mass of cheesy matter which auscultation puts as readily before your mind as if the ribs were transparent, your treatment would be perfect.

And I fear that in this you might be encouraged very often by the tone of medical literature, even of modern date. For example, I read in the 'Cyclopædia of Practical Medicine' that emetics are useful in the early stages of Phthisis, by displacing and evacuating the tubercles from the lungs. Can the writer ever have really tried with a scalpel to pick out a tubercle from the pulmonary tissue, when he thus suggests the possibility of the gentle pressure of vomiting effecting such a feat? And I find the effects of Cod-liver oil sometimes attributed, not with obvious common sense to its being an easily digestible oil, but to the minute traces of Iodine which it contains. Yea, Iodine itself has been given in long courses with the idea of causing the removal of the tubercles.

I wish to put these notions out of your heads. What the patient has to fear, is not the remaining of the tubercle in the body, but its increase. That which is once there has done its mischief, its path of ruin is past, the portion of lung which it has occupied is gone for ever, and cannot grow again any more than an amputated leg. The dissection of consumptives almost always show the cause of death to be a fresh formation of tubercle at no distant period, which has abridged

the remaining organ to a degree inconsistent with life. A single deposit of tubercle to a moderate extent can almost always be recovered from. It is the continuous repetition of the morbid process which is so fatal.

I cannot, therefore, too strongly impress upon you, that not so much the tubercle as the tendency to form tubercle, not the morbid matter but the diathesis, is that which should occupy your thoughts.

When tubercle first takes its place in the pulmonary tissue, the lung feels a good deal inconvenienced by its presence; there is cough, inflammation round it, and condensation of the neighbouring substance; and this is accompanied by general ill health, arising from the sudden loss of part of the respiratory function, to which loss the system has not had time to become accustomed. These consequences are directly proportioned to the quantity of lung spoilt. They may be so severe as to cause death by what is called "Tuberculous Pneumonia," or by "Gallopings Consumption," when a large extent of lung is very quickly rendered unserviceable. Or, when the injury is more gradual and slighter, they may be so insignificant as not to have attracted notice at all. The other day in a patient of mine who died of Chorea dependent on a tubercle in the spinal cord, you saw at the *post-mortem* examination scattered tubercles in both lungs which had caused no symptoms at all during life, though they probably had been there much longer than the tubercle in the less usual situation which proved fatal. And very often in persons killed by accident, apparently in the prime of activity and with no history of any serious illness, you find crude tubercles, scars of former tubercles, and the chalk-like *débris* of tubercular matter.*

* In 566 autopsies of tubercular persons, which I found recorded in the *post-mortem* books of St. George's Hospital, during

Passing on to more agreeable evidence—we find people with a very large quantity of tubercle in the lungs, so large as to have proved almost fatal, who yet recover to a great extent from the mischief which it has caused. When once the lung has got over the shock produced by the presence of the first load of dead matter, the health recovers, and the patient (though imperfect in body of course) has only to fear a fresh crop. It is astonishing what enormous ravages may be made in the lung, and yet with the help of what remains how people will recover the health that has been lost. I dare say you may remember in the summer a poor woman sent to the hospital apparently to die. There was in the left upper lobe a vomica, so large that there was “metallic tinkling” in it; and for some weeks I took the opportunity of teaching you this sound. You know from my lectures on Diagnosis that it hardly ever occurs except in Pneumothorax with perforation, and not always there; that it is very rare in vomicae, and when present indicates a cavity bigger than your fist at least. So weakened was the patient by the loss of so much lung, that she was at first unable even to feed herself, and quite soaked the bed with colliquative perspirations. Yet, contrary to all we expected, she lost her perspirations, gained flesh, walked about the ward, and finally walked home during my absence from London, so that I cannot say what was the exact state of her chest on leaving. But I take for granted that the cavity remained unclosed, and probably will remain unclosed for the rest of her life.

ten years, there was seen cretaceous matter in the pulmonary tissue in 65. See ‘Decennium Pathologicum,’ chap. v, sect. 7, where statistical arguments are assigned for considering this solid substance to be really of tubercular character.

I say I take for granted that the cavity will remain unclosed for the rest of her life, from my experience of *post-mortem* examinations which lead to the conclusion, that in cases of cured Phthisis Pulmonalis, vomicæ rarely heal up, but that they become dormant and comparatively innocent, lined with a thick, pus-secreting membrane, and thus separated from the healthy lung around them.*

I can give also other and living evidence.—For example, R. S., a wine merchant, aged 42, was, in 1846, under the care of several of the most experienced in chest complaints of the London physicians. He had a large vomica in the left apex, was excessively debilitated by it, and was sent home with the information that he could not live a month. Well, he picked up strength and flesh, was enabled to return to his business, and, when I saw him in 1858, twelve years afterwards, he was in fair health, and as able to do a moderate day's work as anybody I know; but auscultation left no doubt that the vomica was still open in the lung, and that the small quantity of pus he expectorated came from it.

In 1855, I advised a young man, with softening tubercles in the left lung, to accept a chance which he had of settling in the West Indies. Six years and a half afterwards, he returned to England for a temporary purpose, and came to me about some symptoms not entirely connected with his chest. I found that his vomica was still there, and secreting pus; but that he had never permanently lost again the flesh

* Reasons are given in the chapter cited in the last note from my 'Decennium Pathologicum' in the Medico-Chirurgical Library for believing that "chalky masses" in the pulmonary tissue are not the remains of vomicæ but of hard tubercle, which has dried up without softening.

which a course of Iron and Cod-oil had put upon him. He had even had an attack of Hæmoptysis, and gone through Yellow Fever, without serious injury.

As a contrast to such cases—and the way in which we lose sight of our patients prevents our multiplying them—as a contrast to these where vomicæ have become innocuous, compare those in which chronic Consumption proves fatal. In the latter, a dissection always (accidental cases excepted) reveals, either in the lungs themselves or in other vital organs, a formation of fresh hard tubercle as the cause of death, besides the established vomica or the old masses of morbid matter.

It is clear, therefore, that it is the *tendency* to tubercle, and not the *existing* tubercle, which we have to fear and to guard against; and that for the successful treatment of Consumption we must withdraw our minds from the morbid anatomy of the locality to the fatal propensity of the constitution.

To my mind, it is a great relief and rest to be able to map out by auscultation the exact extent of the mischief done, and to know that there is enough of morbid change discovered to account for the severity of the symptoms. I feel then like a general who is acquainted with the exact position and whole force of his enemies, and is sure that the country will suffer no further loss if they can only be kept from advancing. I feel then in a position to calculate whether those enemies are such that life can or cannot be carried on in their presence, whether they are or are not too strong for me.

In the case of chronic Consumption hope should never be entirely lost. If the remaining portion of lung has retained life so long, it can retain life longer, and the whole attention can be applied to its conservation. There is no question about the future conduct

of the war, if only reinforcements for the enemy can be stopped in their march.

In what direction must we turn to aid in this conservation? I know you are disposed to turn first to the lungs. But if we look to the histories of those who have lived long with vomicæ or tubercles, they are by no means found to have taken special care of their lungs—they have not coddled or lived in-doors in even temperatures, hanging their lives on to their thermometers for fear of coughs; they have gone on with their professions or business or work; they have not “laid a knife to their throat,” but have eaten and drunk like other people, and have enjoyed the gratification of their appetites. A patient of mine, over fifty, with copious Pyoptysis and condensed lungs (probably tubercular) from his youth, has kept hounds, broken his bones like other Nimrods, contested county elections, sat in parliament, enjoyed his champagne and other good things, but *never allows any doctoring of his chest*. An examination of it is a favour, as a contribution to science.

Nor is it only when tubercle is established that it may be arrested by exposure of the body to active change; even the tendency may be averted. I saw for insurance a few weeks back, a gentleman aged fifty-five, the second of a family of eleven in whom Phthisis was hereditary. Circumstances have caused the three eldest to rough it in the world; they have travelled and worked, and now, when wealthy, they are healthy, active sportsmen. The seven youngest were coddled and petted, and all died of Consumption under twenty-five.

The necrological statistics of the phthisical in the two sexes corroborate this deduction. Although males are more liable to Tuberculosis than females, yet they

are less liable to have that Tuberculosis exhibited in the lungs. (See 'Decennium Pathologicum,' chap. iv.) Now in all classes of social life, women are the least disposed to exert and expose their lungs; they are more ready to invalid themselves; and in the lower classes, whence these statistics are taken, they do not wear low dresses or tight stays (to which habits some have attributed Consumption). Yet we find that tubercle with them takes the direction of the spared organ.

You may, however, perhaps say, "This spared organ is a most important one; I will sacrifice the others to the possible chance of saving it." But consider—what is this tubercular matter? It is not anything *peculiar* to the lungs, but may arise from the degenerated nutrition—the inferior development of life—of any part, and may occur in any part. Now, excepting my glands, many of which I could easily spare, I should prefer having it in my lungs to any other part of my body; for I know that I can live with a good deal less pulmonary tissue than nature has given me. But I cannot live with it in my brain, or my heart, or my alimentary canal, of which I have only one. So that if tubercle is to exist at all, I really do not know that we should look upon it as a misfortune when it occurs in the chest, as it is safer there than in most parts of the body.

If then care bestowed upon the lungs and special coddling of them increases the danger of tubercular tendencies, as the above arguments clearly show; and if, supposing that special medication could keep tubercle out of the lungs in particular, no advantage is thus gained—to what would I have you turn?

Leave the respiratory organs alone, and direct your thoughts to the organs of nutrition, the stomach and

bowels, which will receive with thankfulness and return with interest any care you bestow upon them.

It is truly by aid of the digestive viscera *alone* that Consumption can be curable. Medicines addressed to other parts may be indirectly useful sometimes, but they more commonly impede the recovery; whereas aid judiciously given in this quarter is always beneficial and usually successful.

THE CHEST IS THE BATTLE-FIELD OF PAST CONFLICT,
THE STOMACH THE RIPENING GROUND FOR NEW LEVIES
OF LIFE.

The object at which you should aim is to get the greatest possible amount of albuminous food fully digested and applied to the purpose of the renewal of the body, at the same time that the renewing agencies are brought to their highest state of efficiency. In this way, a healthy cell-renewal takes the place of that morbid imperfect cell-renewal which appears in the shape of tubercular matter.

With this view I avoid, as far as possible, all those drugs which may be classed together as "cough medicines." I mean Antimony, Ipecacuanha, and Squill especially. I avoid also Mercury, purgatives, and neutral salts, which are debilitants. Where the heart is thin and weak, Digitalis is sometimes useful, by regulating and calming its action; but, as a rule, it is injurious, by the nausea and loss of appetite which it causes.*

The appetite should be the great object of your care. You will often find it exceedingly deficient; and, where that happens, the mucous membrane of the stomach and bowels should be braced up by Quinine and Strychnine. The latter acts quickly, and may be added to

* On the action of Digitalis a few remarks are added to a lecture on Aneurism of the Aorta, which follows this in order of present publication.

the other medicines from time to time ; but the former is most permanent in its effects, and should be begun at once, and continued through the whole process of medication, till the appetite equals or exceeds that of a healthy person.

Iron, again, you will find a most powerful ally. The increase in the hæmatine of the blood which follows its use is all-important ; for thus you supply to the tissues the true life-giving medicine—red blood. Begin Iron in small doses, and gradually increase it till you have found the full quantity the patient can take, and then continue to administer rather less than that, so as to leave room for an occasional augmentation according to circumstances. Where you give *Digitalis*, make it a rule to add Iron and sometimes *Strychnine* to the dose, as you thus get the full advantage of the *Digitalis*, and avoid some of its possible evils. Iron prevents Nausea, and *Strychnine* co-operates in strengthening and regulating the action of a weakened heart.

When the disgust to food is extreme, adopt the plan you so often see adopted in these wards with success, of giving milk in small and very frequently repeated doses. Food has an illogical habit of arguing in a circle ; food creates the desire for food—of course, by strengthening the digestive organs ; and thus, after a few days of milk diet, the patients will voluntarily ask for meat, and enjoy as a luxury that which a short time before excited the greatest disgust. If you find the milk lie long in the stomach and produce heartburn or acid eructations, add Lime-water or Soda-water to it. The first is the cheapest, the latter the pleasantest.

Cod-liver oil will also often, like milk, create an appetite. But as a rule, especially in private practice, it is as well not to commence it too soon ; for the

disagreeableness of the taste and feel is difficult to get over at first, and it is much easier to take it when the appetite has begun to be renewed. Then it is not felt as a hardship even to begin, and in a short time patients will get really to like it. And they will like it, not merely as reasonable men like that which does them good, but irrespectively of such knowledge they will find it nice to the palate. Thus children, who always object to being done good to, will still often take to their oil with gusto. And as a proof that exalted reason has nothing to do with the preference, the same thing has been observed in animals. A clerical friend of mine had a consumptive Skye terrier, which he treated *secundum artem* with Cod-liver oil. At first the poor beastie abhorred it, and looked melancholy before and after each dose; but in a short time he began to lick his lips after it, and if he was forgotten, would go and beg at the door of the cupboard where it was kept.

The best sort of Cod-oil is the most agreeable, the clearest, the sweetest, and the most scentless—that, in fact, which is thoroughly free from extraneous dirt. The oil from the same fish, formerly employed by curriers, was sold for their use cheap and foul, and no doubt was quite good enough for manufacturing purposes; but it must excite a very reasonable disgust in every one but an Esquimaux, I should think, for it stinks like old train-oil. Its low price wholesale permits certain firms to spend a large sum in widely advertising it as a superior form of drug; but I strongly advise you never to prescribe the “brown oil” (as the name runs); it is never beneficial where the pure oil fails, and it often and often makes the patient declare he will on no consideration take it again. The mode of manufacture which causes the difference of the

"brown" and "pale" oil is described in an article of the 'Medico-Chirurgical Review' for January, 1856, and is quite sufficient to prevent any person of delicate perceptions ever ordering or taking it again.

The best mode of exhibition is to give at first a teaspoonful, and afterwards two teaspoonfuls thrice a day, floating on the Quinine or Iron mixture to which the patient has already got habituated. I think an ounce a day is enough to administer as the full dose, and need not be exceeded. If the patient absorbs all that, you may be perfectly satisfied; and more will be apt to turn rancid, and cause indigestion—the worst enemy of the phthisical. The best time to take it is at the greatest distance from meals, as thus a sort of additional meal is gained, and food and physic are not confused; but if your patient prefers any other time, on account of taste or business, do not prevent him from indulging the fancy.

The effects of Cod-liver oil become less and less a marvel, the more we know of physiology. The instinctive desire shown by all nations for an oleaginous diet, and their association of substances of this nature with ideas of happiness in all ages, show the value of a certain amount of it to man's comfort. The "butter and honey" of the prophet, used as a phrase for royal food, and the constant reference in the Bible to oil as a luxury (though it could have been no *rarity* in "a land of oil-olive")—these are sufficient to prove its estimation among the Hebrews. The Hindoo labourer, when he devours his gallon of rice for a meal, will spend all the pice he can get on the clarified butter of the country; and "as good as ghee!" is his expression of unqualified admiration. It was an error in Baron Liebig to state that oily foods are an object of disgust to natives of hot climates. All races of men require

them and seek after them; and the taste of the Esquimaux, so often quoted, depends mainly on the abundant supply of the article which the sea places at his disposal, coupled with a scantiness of other provisions. Throughout mankind there is an instinctive appreciation of the importance of this aliment, independent of accidental differences of nation or locality. It seems felt to be, as science shows that it really is, a necessary material for the renewal of the tissues, and the desire for it becomes synonymous with a desire for augmented life.

An easily assimilated oil comes, in fact, into the short list of directly life-giving articles in the 'Pharmacopœia;' for it is itself the material by which life is manifested. Hence, under its use, beneficial influences are exerted throughout the whole body; old wounds and sores heal up; the harsh, wrinkled skin regains the beauty of youth; debilitating discharges cease, at the same time that the normal secretions are more copious; the mucous membranes become clear and moist, and are no longer loaded with sticky epithelium; the pulse, too, becomes firmer and slower—that is to say, more powerful, for abnormal quickness here is always a proof of deficient vitality. Such are the effects, perfectly consistent with physiology, of supplying a sufficiency of a molecular base for interstitial growth.

The addition of a small quantity of Alcohol will often enable the oil to be absorbed more readily. This is a principle well understood by growers of live stock for prizes at agricultural shows, who, by the addition of fermenting grains or spirits to the animal's food, often fatten it more quickly. The addition, therefore, of wine, whisky, tincture of orange-peel, or of any other harmless bitter, to the medicine, is rational, and may be freely conceded, if the patient finds it agreeable.

The liberal use of alcohol as a remedy or preventive is a different question.

I must say, I think that, excepting for its beneficial action upon the mucous membranes, Alcohol is not only useless but injurious to the consumptive. It arrests and obstructs the vigour of vital action ; by it growth is checked, as we see in animals perfectly kept small for artificial purposes, and in men who have from youth habitually indulged in ardent spirits. Under its use renewal goes on slower, as we know by the diminished excretion of urea, water, bile, &c. (Böcker's Experiments), and we can hardly therefore reckon it advantageous where the chronic renewal of vital powers is our primary object.

But you may ask how are to be explained cases like the following, in which to all appearance Alcohol seems the preservative of life : J. P., a butcher, remarkably strong and stout, was first attended by me for Delirium Tremens, which he had suffered from several times before, and was always well in the interval ; an attempt to become a teetotaller was immediately followed by Galloping Consumption.

J. A., a brewer, came to me last year about indigestion and pimples (*Acne rosacea*) on his nose and face : I urged him to give up brandy-drinking before breakfast and between meals ; and he has now a developed vomica in his lungs, of which previously there was no evidence.

You may cite instances such as these, and attribute the vomicae to the omission of alcohol, which therefore you may represent as a direct preservative. I think you are wrong.

I confess I do not think such cases mere coincidences, but I explain them in a way by no means corroborative of the idea that spirit-drinking keeps off Consump-

tion. I think that Alcohol acts as an anæsthetic, and keeps the system from noting and exhibiting the presence of the tubercles; then, when it is left off, they act with doubly deleterious effect on the body unaccustomed to feel them, unprepared by their gradual increase to bear them as it were by habit. The quondam tippler is then in the same position as one in whom there is a large sudden development of the morbid matter; for the presence of the morbid matter unexpectedly becomes known to the system, and its ravages suddenly taken notice of. Thus instead of really checking tubercular disease, the Alcohol has acted merely as a mask, behind which the evil has gone on unperceived.

What should you do in such cases as those above related? Should you advise resumption of drinking habits? I think not; for though the symptoms are somewhat alleviated thereby, I doubt if life is prolonged; and moreover it is possible to adopt measures as immediately effectual, and certainly offering more prospective advantages. In the last case which I quoted, after a certain struggle with Bronchitis, night-sweats, and emaciation, weight and strength are being gained under Cod-liver oil and Quinine, although the allowance of Alcohol is reduced to what may be taken by a temperate man. And to such remedies I advise you to trust in all similar cases. But here, as before, the appetite must be your index; the stomach must be the viscus whose health is to be your care.

In advising foreign travel, again, take the stomach for a guide. At the dreary time of the English year, when your patients cannot get enough light and exercise to give them an appetite, let them seek those sunny climes where the winters are the joyous times for out-of-door employment. Madeira is the best. The

next is that lovely Mediterranean shore recently annexed to France, from Cannes to Mentone; and after that comes a long list of localities highly lauded by their inhabitants, but with more uncertain climate.

Instead of naming one place after another, and thus certainly offending a large number accidentally omitted, I prefer to give you a simple common-sense rule by which you may help your patients to make the best use of the winter season.

In choosing a residence for your consumptive, do not mind the average height of the thermometer, or its mean variations; do not trouble yourself about the mean rainfall; do not be scientific at all—but find out from somebody's journal how many days were fine enough to go out forenoon and afternoon—that is the test you require, and by that you may be confidently guided.

But do not suppose all is done when a climate is chosen. Your responsibility is by no means ended; you must *be careful to enforce that a right use of the climate is made*. If your patients from distaste of foreign habits, from pining after home, or because they are too advanced in the disease, take to moping in-doors or being overwearied in going out, the sooner they return to England the better. They are getting no good, and they are running the risk of diarrhœa, depressed spirits, Hysteria—or still worse, of failing so much, that they cannot return home, and must remain to die

“By strangers honoured, and by strangers mourned.”

But if they write you word that they are boating, riding, swimming, sketching, catching lions in Algeria, or butterflies in Madeira—be satisfied that you have added perhaps months, perhaps years, perhaps lustra, to your patient's life.

Next to the stomach, the bowels claim your main care. Of course, during this course of lectures, in which I am impressing upon you the principles of Restorative medicine, it is unnecessary to say that in Pulmonary Consumption you are to avoid artificial purgatives. But I had better remind you of the importance of being on your guard against natural Diarrhœa. Do not allow it to go on an hour longer than you can help. The best remedies are Sulphate of Copper, Hæmatoxylum, and Opium. Chalk mixture will sometimes act well; but, if it fail, you have lost valuable time; so, if you follow custom in beginning with it, do not be obstinate in the continuance of your remedy. The Sulphate of Copper may be begun in doses of one-fourth of a grain, and increased up to two grains, if required to be persisted in. The Hæmatoxylum may be given as an extract from four grains up to any amount required, but should not be mixed with the Copper, or you produce an ink. If you give both together let there be three hours' interval between them.

You see almost daily, in the hospital, cases of Consumptive Diarrhœa arrested sometimes for a season sometimes permanently, even in patients whose disease is too extensive for recovery. This is doubtless a great point gained, and some time added to life. But, more than this, I believe that the tendency to deposit tubercle also is sometimes arrested by arresting the bowel-complaint. Just after Lady-day, 1861, Miss Harriet B., aged 30, whose "father and mother had both died of Decline," was placed under my care by Dr. Buckell of Chichester. She had evidence of a small focus of tubercle in the apex of the left lung, producing pain, dulness, and crepitation (from the partial condensation of the lung round it) but no

marked pulmonary ailment. I imagined that the tubercle was being slowly increased from week to week. What she complained of, however, was emaciation and Diarrhœa, accompanied by the passage of pus and sometimes streaks of blood in the mucous fæces. She was soon relieved of this by appropriate remedies; and with a store of Hæmatoxylum and Copper was able to go on a long summer visit to some friends. I heard of her as going on well, and did not expect to see her again, or to make her case available for science. But as she returned through London in September, proclaiming herself quite well and stout, I had an opportunity of examining her chest again; and much to my delight was it that I did so. To my surprise, I could detect no disease at all in the lung; so that, instead of increasing, as I had feared, the pulmonary tubercle had become dormant, solely by the cure of the bowel complaint. Not all cases do as well as this, but still what has once befallen may befall again, and it is the surest road to success to hope for it.

(June 7th, 1862.)

In some cases of Consumption there is a considerable amount of Cachexia, the gums become spongy, or whitlows form on the fingers, or there are various kinds of skin diseases. This happens usually in consequence of low living, damp, and depression of mind. There is now in Victoria Ward a girl of 16, who was transferred from a surgical ward.

She was at first in a deplorable condition; she had been admitted for Impetigo,* with which her cheeks

* *Impetigo* = a superficial formation, consisting mainly of *pus* from the denuded connective tissue of the corium, without external exciting causes.

Eczema = the same of *serum*.

and nose were covered, while the pads of her fingertips and nails were sore and purulent from the same eruption. But the Impetigo did not account for colliquative night-sweats, extreme emaciation, and weakness so great that she could not raise herself in bed. The presence of these symptoms was explained by dulness at the apices of the lungs and localized râles. Some thought there was a vomica at one apex, on account of the cracked-pot sound on percussion, but it was a doubtful point. She did not behave as if she had a vomica, for she has been gaining strength and flesh continuously up to this time. My reason, however, for recalling this case to you is to note that, in spite of tonics and high feeding, before she came under my care, she had been getting weaker and weaker. The only alteration of importance which I made was to give with her tonic mixture half a drachm of Chlorate of Potash daily in some Cod-liver oil, with I confess but little hope that she would revive. I was never so struck by the directly vitalizing force of this salt upon connective tissue. In a fortnight, "her flesh came again like unto the flesh of a little child," as the Hebrew historian expresses it; the clear doll-like complexion of face and the pink babyish finger-tips are very pretty. And I have no doubt that a similar renovation has gone on in the skins of the inside—the mucous membranes—so much strength and appetite has she gained.

This case shows you when to give Chlorate of Potash in Consumption with expectation of advantage. And I am glad you have the opportunity of seeing this, because a short time ago Chlorate of Potash was blazed forth as a cure for Phthisis in general; and if you had tried and found it wanting in some ordinary instance, you might be tempted to treat with unde-

served contempt a medicine of really marvellous efficacy in proper cases.

(*May 10th, 1862.*)

A few words as to special specifics for Consumption. Some years ago, Dr. John Hastings announced that "Naphtha" was an infallible cure for this disease. Well, people tried it, and soon knew that it was only applicable at all in cases where Alcohol was beneficial, and even to such patients they found that the purer and wholesomer forms of Alcohol in daily use were both more useful and more acceptable. All the advantages of the remedy had been in the possession of the public in a pleasanter form centuries ago. Determined at last to try a virgin substance—

— "Integros accedere fontes
Atque haurire"—

the same gentleman has lately announced that serpents' dung (!) now succeeds to the throne on which Naphtha reigned of old. Our rude forefathers in art administered many curious things; the ashes of toads, the urine of boars, live spiders, human liver, human ordure, the skulls of murdered men, the blood of the patient's father, and other gatherings from witches' caldrons, are in their lengthy pharmacopœias. Their notion was, I believe, to drive out the devil by disgusting him. But I do not think they ever hit upon the bright thought of using the very dung of the accursed type of evil, that as he "went out," he might say,—

"That eagle's fate and mine are one,
Who in the shaft that made him die
Beheld a feather of his own
Wherewith he went to soar so high."

I really believe this expansion of the idea to be quite original.

Good coprologists tell us that the excreta of snakes consist mainly of lithate of ammonia—a harmless, though unattractive substance, and which most persons familiar with physiology would conclude to be inert. I remained satisfied with that belief till I heard Dr. Hastings, when arraigned before a public court of justice for avaricious malpraxis in knowingly administering inert remedies, swear positively that he believed this substance to be a powerful physiological agent. The powerful physiological agent was made by dissolving (*i. e.* destroying) sixteen grains of boa constrictor's ejecta in a gallon of water by the addition of Bromine. A Bible oath is a staggerer, and after that I could not feel justified in asserting faeces to be useless till I had tried them. I procured, therefore, a sample from the Secretary of the Zoological Society, and caused to be prepared a quantity of the so-called "Solution" under the name of "Mistura Pythonis." You have seen me order it a good many times since in cases where, no drugs being required, I felt myself justified in so doing. But instead of half an ounce, which was said to be so active, I have given two ounces three times a day. You have seen that its effects are exactly the same as those of so much ditch-water.

Such is the fate of *specifics* for Phthisis—*ex uno disce omnes*—and lucky is the public if all specifics are as innocent as snakes' dung.

But do not let us part without a moral, or be satisfied with merely laughing at a delusion. Remember, you are acting no better than the vaunters of new specifics when you vaguely prescribe one thing or another, even of established power, because you have heard of its being "good for Consumption." The

time which is lost in trying this and trying that is lost for ever. You have no right to suppose that there can be any specific for that complex morbid state which originates Phthisis; you have no right to substitute an experimental search after such a specific for rational treatment; you have no right to stand in the way of the patient getting his chance of the renewal of his waning life by the assiduous use of restorative agents.

LECTURE XIII.

DISEASE OF HEART.

1st Part. Case of diseased mitral with healthy aortic valve—Comparison of injury to life from the two sets of valves, severally—Deductions from autopsies—Treatment calmative and restorative. Second case—Diseased mitral and aortic valves with dilated parietes—Treatment similar to last case—With what additions.

2nd Part. Degree of importance to be attached to different points ascertainable by auscultatory diagnosis—Consequences of valvular disease, different in different classes of life—Cases in illustration of its effects in the upper classes as distinguished from hospital patients—Causes of difference—Treatment of patients with disorganized valves—Avoidance of dangers—Iron—Chloride of Sodium—Hydrochloric Acid—Abuse of Alcohol—Danger of rupture of valves—Case—Angina Pectoris—Pathology of dilatation—Explanations to patients—Diseases of heart to be viewed, practically, as one.

(December 20th, 1861.)

A. J., aged 13, now in Victoria Ward, had Rheumatic Fever three years ago at Brighton, of which illness she has not much recollection, but she shows marks on the cardiac region of leeches, probably applied at that time for inflammation of the heart. She has since then always suffered from palpitation on the slightest exer-

tion, or on any emotion; and she has Dyspnœa on attempting to go up stairs or up hill, or to walk above her usual pace. She had an attack of spitting of blood eighteen months ago, but otherwise her health has been good. Her complexion and appearance fully bear out this statement; she is fresh-coloured, muscular, bright-eyed, and plump; her mind is active and intelligent, and though the *mammæ* are infantile and the *catamenia* have not appeared, she has the air and appearance of a girl two years older than her real age. The palpitations have lately been rather more troublesome than usual.

On examination of the chest there is found a vibrating tremor sensible to the finger at the apex of the heart, and, at the same point, a very loud systolic murmur. The second sound is loud and sharp. The interval is distinct. The systolic murmur is heard only very indistinctly at the base of the heart. On admission the pulse and heart-stroke were uneven in strength, but have by rest in bed become nearly natural.

On percussion the dulness of the cardiac region does not appear to extend beyond the breadth and height which it does in the normal state.

In speaking of diseases of the cardiac valves we usually intend what we say to apply to those of the left side of the heart, for the tricuspid and pulmonary are seldom affected alone with such severity as to produce either symptoms during life, or lesions recognisable after death; so that as physicians we know very little about them. It is the mitral and aortic valves whose alterations we are able to recognise by physical signs, and whose defects cause injury to the muscular walls of the heart. They are a source of anxiety to us in our daily duty, whereas the others are rather a matter of curiosity.

Comparing the different valvular lesions of the left heart, with regard to the injury they inflict, and the consequent proportionate goodness or badness of the prognosis to be formed, I find that the worst cases, that is, the most liable to have serious consequences, are those in which both the aortic and mitral valves are simultaneously imperfect; the next worst are those in which the aortic have suffered; and the most favourable are those where the mitral alone are inefficient.

Thus I find that in 115 cases recorded in the 'Post-Mortem Book' at St. George's Hospital from 1840 to 1850, where disease of one set of valves was accompanied by alteration in the cardiac walls, the aortic valves alone were diseased in 64, the mitral valves alone in 51. And in the former case also the alteration had assumed a more marked character; for in cases where the aortic valves alone were diseased, the size of the cavities was disproportionately large in comparison with the enlarged walls in 36; whereas, when the mitral valves alone were diseased, the disproportionate enlargement occurred in only 18. And this difference, it is to be observed, is not dependent on the greater frequency of lesions of the aortic valves alone, for in point of fact they are not more frequent. Thus in hearts whose walls were still normal, there was more or less lesion of the mitral valve in 34, of the aortic in 30.

The powerful influence of the *double lesion* (i. e. of both valves at once) is shown by its being found with healthy heart-walls in only 6.

Now this diseased state of the heart's walls is so very much the most important, and so very much the most frequent of the evil consequences of disorganized valves, that, practically speaking, it may be taken to

represent the whole of those consequences. All our calculations of prognosis in cases of valvular injury need have reference to it alone.

This girl (A. J.), then, is labouring under one of the varieties of valvular disease the least likely to cause enlargement of the heart, and therefore the least injurious of any; and since I cannot find that the heart is as yet enlarged, we will give her the benefit of the doubt, and hope that it may not become so.

In the treatment, the first object is to restore regularity and calmness to the heart. With that view she has been kept lying down for a week; she has had once two leeches and once one leech applied near the apex of the heart, and has taken five minims of Tincture of Digitalis three times a day. This has been so far effectual, and will be continued only a short time longer.

The next object is to keep the blood in as rich and nutritious a state as possible. The poor child has a critical period of her life to go through shortly, the time of puberty, when there is a call upon all the powers of growth. If she gets anæmic then, the heart will infallibly enlarge by dilatation. I have begun, therefore, giving her Iron from the first, and shall urge its continuance as long as I can keep sight of her.

The richness of the blood, instead of increasing the chance of Hæmoptysis, as you might have imagined, diminishes it. Thin watery blood easier oozes out; and besides, the more nutritive the circulating fluids, the more active is the heart, the better it empties itself, and the less is the blood kept back in the lungs.

Another case is not quite such an encouraging one. Mary K., aged 22, single, was admitted November 25th, 1861. She says that she has had Rheumatic Fever once, seven years ago. She had no pain in the chest then, and perfectly recovered, remaining well till an attack of what she calls "Bronchitis," three years ago. After this again she was quite well till two years ago, when she began to suffer from severe pain in the cardiac region, and had frequent colds. She also frequently had bleeding at the nose, and spitting of blood, even when keeping quiet, and when she moved about experienced much Dyspnœa and palpitation of the heart. She however continued in service, and did her work. Six weeks before admission she observed that she got blue in the face, and suffered more than usual from Dyspnœa, so that three weeks before admission she was obliged to give up work.

On admission she was very livid in the face, and could hardly get her breath; she was spitting blood, and there were loud sibilant and crepitant râles all over the lungs without any localised dulness on percussion in the pulmonary regions. The pulse was excessively irregular and intermittent. The cardiac region was dull on percussion up to the interval above the third rib, and as far as the sternum towards the right side. The second sound of the heart was scarcely to be heard at all, but was replaced by no murmur. There was a loud systolic murmur loudest at the apex, and followed by a peculiar chirping sound, rather anterior to the time of the second sound. The intervals were not marked.

In Mary K. there is probably regurgitation through both aortic and mitral valves. What she has suffered from is obstruction to the passage of blood through the lungs, and consequent non-aëration and venosity.

She had some Hæmoptysis which relieved her, so I took the hint and cupped her, and put on some leeches several times, which have also given relief. The irregularity and excitability of the pulse have been relieved by Digitalis.

The venosity of the blood is in great danger of being succeeded by Anæmia, especially as her appetite is very deficient. The heart is already enlarged, and I fear it is impossible that she will ever be able to get her own living again, still I think it right to give her Iron, and purpose to continue it as long as possible, that at all events she may get all the advantage from it she is capable of receiving. The most fatal event for her would be degeneration of the muscular walls of the affected viscus, so that they should fail by debility to circulate its contents, and I believe the best chance of avoiding this degeneration lies in keeping up the supply of a really nutritious blood.

You may observe that the dose of Digitalis was left off several times. This was not on account of its failing in its object of calming and reducing to regularity the irregular heart, for that it effects well; but because when given in larger doses than five minims of the tincture it produced nausea and prevented her taking her meals. Now the physic we order on the diet card is at least equally important with that on the medicine card, and you must be careful where you want to renew life not to diminish the means of that renewal. The production of nausea and loss of appetite do more harm than any action of the drug can do good.

(December 6th, 1861.)

There are always in the wards a few cases of chronically diseased heart, and I very seldom go round

without directing your attention to one or two as studies of diagnosis.

I notice that when you begin the physical examination of the patient whom you know to have a cardiac complaint, you search first and foremost for endocardial murmurs, and then you often rest from your labour and say what you have found. You seem to consider that sign as the most essential part of the diagnosis. You are partly right and partly wrong.

This knowledge doubles the value of other future observations about the heart, but standing alone it is of less importance than any of them. While then I willingly receive this report first, I always beg you to go on without delay to further observations.

The importance of ascertaining the existence or non-existence of valvular disease lies not in the injury it inflicts itself, as in the likelihood of the induction of other lesions of the heart. If the muscular structure remains healthy, injured valves do not appear capable of causing death. But very surely are they fatal when they are followed by dilatation and thickening of the cardiac walls, with their sad train of Dropsies, Apoplexy, Pulmonary Hæmorrhage, &c.

In the 2161 post-mortem examinations at St. George's Hospital in ten years, the cardiac valves were diseased without the walls of the heart being affected 113 times; but in every case there were other lesions amply sufficient to account for death quite independent of the valves, such as accidents, surgical complaints, Cancer, Low Fever, &c. In one alone, where Anasarca from granular kidneys was the immediate cause of death, could any symptom be debited to diseased valves with healthy heart, and that symptom was Pulmonary Hæmorrhage.*

* 'Decennium Pathologicum,' chap. x, sect. i.

In the classes of people represented by hospital patients, the probability that valvular disease will be followed by its unfortunate consequences is very great. When a patient thus affected leaves the wards, you expect to see him again shortly, and on each fresh admission with a more severe complaint. Hence the more attentive students you are the worst prognosis do you justifiably form. But you must not apply the same rule to the different grade of society amongst whom you hope your private practice will lie. With persons in easy circumstances valvular lesions may exist for years and years, perhaps through the greater part of a long life, and not only not prove fatal, but may even fail to cause symptoms sufficient to induce consultation of a medical practitioner.

To prove to you this fact, I quote from my private notes some cases of persons in easy circumstances in whom the stethoscope and the history gave every indication of injury to the valves of long standing, but in whom no inconvenience sufficient to be called a disease has followed.

Defective valves of 57 years' standing.—Col. R. S. at eight years old had a bad attack of Rheumatic Fever, which laid him up for eleven months, and from which his heart has never entirely recovered. At sixty-five years of age he had a very loud murmur with the first sound. The year before he had had an attack of inflammation (congestion?) of the lungs which had left a considerable portion of the pulmonary tissue impervious, for his vital capacity tested by the spirometer was only 150 cubic inches, his height being 5 feet 10½ inches.

Defective valves of 50 years' standing.—Archdeacon B. at six years of age had an attack of inflammation of the heart, and since that time has been subject to

irregular action of the organ, often followed by fainting fits. He has for some years lived more generously than he used to do, and suffers much less inconvenience. The action of the heart is irregular and uneven, and there is a murmur with the first sound. He is now fifty-six, well, and moderately active. (Dec. 1861.)

Defective valves of 44 years' standing.—C. B. at twenty-eight had Rheumatic Fever from sleeping in a damp bed. At sixty-three years old (in 1852) he had a marked systolic murmur at the apex of the heart, but considered himself quite well, and is alive now (1861) when he must have long passed his three-score years and ten.

Defective valves of 27 years' standing.—T. H. G. at six years old had Rheumatic Fever. Since then he has had no illness of any kind. In June, 1860, when he was thirty-two, I detected a loud whizzing murmur with the first sound; in July, 1861, the same murmur remained. He is alive and I believe well now.

Defective valves of about 21 years' standing.—C. S., aged thirty-six, in 1855 had a loud blowing mitral murmur. He used to have severe palpitations when an under-graduate at Cambridge; he has enjoyed average health since, with the exception of what he calls "colds," that is, a feeling of general *malaise*, for which he takes tonics, and is always better for the practice. He is alive and well now in 1862.

Defective valves of 15 years' standing.—E. G. in 1846 had inflammation of the chest accompanied by severe pain in the heart. I saw him first in June, 1848, when there was a loud musical murmur with the first sound. In December, 1848, and in January, 1850, the same murmur remained. He is still alive, aged seventy-two.

Defective valves of at least 11 years' standing.—

R. H., who in 1861 is still alive and forty-two years of age, had, in 1850, a blowing systolic mitral murmur.

Defective valves of at least 7 years' standing.—

R. A. A., who in 1862 is still alive, aged fifty-three, had in 1854 a blowing systolic murmur. He is a robust muscular man, in the habit, while a young man, of pulling in boat races, to which he attributes his occasional palpitations.

Defective valves of 7 years' standing.—T. J., aged twenty-three in 1854, had undergone Scarlatina at sixteen years old and never any other illness. There was then a blowing systolic murmur at the apex of the heart, and he had pain in the cardiac region on moderate exertion, but was not otherwise ill. His subsequent history is unknown.

Defective valves of 7 years' standing.—D. F., aged twenty-nine in 1852, also had Scarlatina at twenty-two years of age, accompanied by pain in the heart and followed by palpitations of six weeks' duration. There was with some beats a systolic murmur loudest at the apex at that period, seven years after the reported cardiac affection. His subsequent history is unknown.

Defective valves of at least 5 years' standing.—F. J., aged thirty in 1856, had then an irregular pulse and a systolic murmur. He is alive now.

Defective valves of 18 months' standing.—A. D., aged forty-three in 1850, had had Rheumatic Fever eighteen months previously. The heart's action was irregular and there was a systolic murmur, but no general symptoms at all referrible to cardiac disease. His subsequent history is unknown.

Defective valves of a year's standing.—W. H. C., aged thirty-one in 1850, had had Rheumatic Fever a year before, with inflammation of the heart, but con-

sidered that he had quite recovered, and he really seemed to have done so; for his vital capacity was 220 cubic inches, his height being 5 feet 9 inches, so that there was no pulmonary obstruction. There was a systolic murmur, loudest at the level of the aortic valves. His subsequent history is unknown.

Defective valves without date.—J. P., aged thirty in 1854, had an intermittent pulse with a systolic murmur at the base and middle of the heart. Unusual exposure affected his chest so as to lay him up with cough, but his general health was good. Subsequent history unknown.

G. P., aged twenty-six in 1856, had a very irregular, unequal, and intermittent pulse, accompanied by a systolic murmur. He never suffered from palpitation, cough, or any illness at all. Subsequent history unknown.

F. D., aged forty-nine in 1857, had a sawing systolic murmur, but had never had any illness or inconvenience referrible to the heart. Subsequent history unknown.

J. B., aged forty-eight in 1856, had an intermittent pulse and a blowing murmur with first sound most distinct at the base of heart. He never suffered from palpitations. Subsequent history unknown.

Irregular pulse without date.—Lord —, aged seventy-four, with a soft systolic murmur to be heard at the apex of the heart, has a distinct recollection of having an irregular pulse as long as he can remember anything. And other old people have told me the same, though I have not kept a note of their cases.

Injury to heart from Rheumatic Fever of 10 years' standing.—T. A. O., aged fifty-one in 1855, had had Rheumatic Fever ten years previously, and since then frequent "fainting fits" and palpitations. The action of the heart is jarring, and there is extended dulness

on percussion, but no evidence of valvular disease. He does not get worse.

You know very well that cases like these are not to be met with in hospital practice or among the paupers in a workhouse. Wherein lies the difference? It is discoverable generally from the histories which these poor people tell of the final breakdown. The tale usually runs, "I was pretty well, or only a little short-winded, till I was thrown out of work and had to live low: then my heart got to beat worse, and my feet swelled." Or "I could always earn my living till I was over-worked last summer," or, "till I caught a bad cold last winter," or, "till I had to sit up with my mother who died," and so on. And from this breakdown they never get quite up again, they never recover lost ground. In short, you will see that injured valves are slow to lead to further cardiac disease in the well-nourished, and quick to lead to further disease in the ill-nourished; and that the motive cause of their evil effects is Anæmia, Exhaustion, Debility.

Do not look upon this disadvantage of the poor in respect of cardiac disease as merely a universal rule in all diseases. In a good many cases the poor are reinstated easier than the wealthy, and the good prognosis which you have habitually attached to certain morbid states in hospital practice will not be justified in private. Continued Fever, to wit, is less fatal in the lower classes, although more common. Consumption is less frequently "galloping," it is more chronic, and more rapidly benefited in their case. Anæmia is more often found dependent on removable causes, and therefore quicker cured in cottages than in palaces.

The peculiarly fatal nature of valvular disease of the heart among the labouring classes arises from the fact

of lost ground being never recovered from. The heart is (physiologically speaking) a single organ with the single mechanical function of forwarding the blood, and consisting of a number of unique parts mutually dependent on one another. If the left ventricular valves are injured, the right cannot take their office, nor the aortic replace the pulmonary. It is like a continuous chain, which is never stronger than its weakest link. Therefore no relief can be given to a failing part by another taking its duty, no rest for the purposes of recovery. The designer of our frames has been here peculiarly economical and sparing of reserve function. Such is not the case in other organs; if one kidney is destroyed the other supplies its place, and as much urea is excreted as before: large portions of lung may be impervious from tubercle, yet the blood be aerated normally by the remainder, and the patient recover of Consumption. But in the heart each successive little injury can never be compensated for, and is added consecutively to the previous list. The wealthier classes can avoid all the many circumstances which produce these successive little injuries—cold, deficiency of food, over-exertion, mental worry; and so under good advice can keep their imperfect valves from getting worse; but those who depend upon daily exertion for daily bread run the risk and suffer the unhappy results.

I said early in the lecture that I did not blame you for beginning your examination with listening for cardiac murmurs, but I do blame you very much if you stop there. The evil import of valvular injury lies in its probable consequence, enlargement of the muscular walls, and it makes all the difference in the world to you and to the patient to ascertain if this already exists. Percussion and palpation are a much

more necessary part of the examination than mere listening with a stethoscope. If the heart is dilated or thickened, or dilated and thickened, your ascertaining the fact makes all the difference in the world to your prognosis and to the hopes which you have that your treatment may be successful.

It is obvious that in the treatment of the disorganized valves themselves, Restorative Medicine in the strictest sense must be quite at fault. The Renewal of the destroyed tissues is impossible, and equally so is any compensation for the arrested function. But indirectly it is almost as effective in prolonging life, as if it could put in a new valve, or make another muscle do duty for the resting ventricle. It may repair those reparable conditions which are so injurious, and which by bringing on Enlargement constitute the real danger in cardiac cases. In this as in all diseases, try and *cure what is curable and trouble yourselves as little as possible about by-gones.*

Learn from the histories you hear in the wards what are the external causes which have brought on the first affection of the health, and you will thus learn the perils which your patient with valvular injury has to fear. These are, placed roughly in the order of prominence—

Fresh attacks of Rheumatism ;	} producing Anæmia ;
Insufficient food ;	
Mental anxiety ;	
Drinking ;	
Overwork ;	
Temporary violent exertions.	

The first danger is to be avoided by warm clothing, dry air, especially in the sleeping room, and a residence in such a climate as does not naturally induce

Rheumatism. As a rule, high ground is to be preferred to low, and an inland to a seaside or island abode. A town life, as being more healthily sedentary and avoiding changes of temperature, is preferable to rural occupations.

During the attacks, if unfortunately they come on, you cannot do better than adopt the full treatment of Rheumatic Fever, namely, the greatest possible quantity of Potash and sufficient doses of Opium, as more largely set forth in my lecture on Rheumatic Fever. And you must leech or cup the cardiac region, if there is any pain there indicating the probable presence of fresh Endocarditis or Pericarditis.

But do not let the licence you give yourself of local blood-letting to a moderate extent for the relief of the acute condition, which your fear may aggravate existing evils,—let not, I say, this licence lead to your adopting the old “heroic” practice of thinking to cure established valvular injuries by continuous bleeding, like our forefathers Albertini and Valsalva. They fell into the mistake thus; they first supposed every enlarged part was over-nourished, or hypertrophied; then they thought that the best thing to prevent its over-nourishment was to under-nourish it; and then finding that bleeding in moderation sometimes alleviated a few symptoms, they determined that it did so by under-nourishing the heart, and that of course the more the patient got of it the better. Under the idea, therefore, of producing its full influence, they bled frequently in small quantities—the most effectual way of accomplishing the end they had in view, the impoverishment of the blood. With bleeding for such an end it was strictly logical to join starvation, as certainly the most direct way of diminishing nutrition. What the results would be of thus deliberately inducing

Anæmia we can easily guess, for daily experience shows that in none do the hearts so rapidly become enlarged and on none does that enlargement have more deleterious effects than on those who are subjected to all or any of the causes of Anæmia which I have named. Had the Sangrado treatment really been in vogue now in England, I should have certainly ranked it in the first class of the causes of loss of health in patients with lesed valves.

I have spoken of the poor as incomparably most exposed to the effects of those agencies which produce valvular disease; but the rich are by no means exempt, and often require the protection of sound medical advice. Even "Insufficient food" is not an unknown cause of disease among them; the power to buy it, does not always imply the power to eat it. They not uncommonly become anæmic from loss of vigour in the digestive organs. To obviate the chance of this I usually recommend that persons with affected valves should three or four times a year take a fortnight's course of Iron under the eye of their ordinary medical man, whose watchfulness is required to prevent excess. The insoluble forms of the metal, such as the Sesquioxide, or the finely pulverized metallic Iron made by French chemists, or the *Mistura Ferri Composita* are the best adapted preparations. Chlorine also in the form of Hydrochloric Acid baths is a tonic not contraindicated by any circumstances in this case, and is a good accompaniment to the Iron. The habitual use of a large quantity of Chloride of Sodium with food is another way of guarding against Anæmia, which can readily be adopted by the patient.

When there is reason to fear that dilatation has already begun, I often join with the Iron small doses (from $\frac{1}{20}$ to $\frac{1}{14}$ of a grain) of Strychnine. If the pulse

intermits, this remedy sometimes exhibits its tonic power over muscular fibre by restoring regularity of beat, and thus gives you the satisfaction of feeling the good you do with it. When there is much palpitation on occasion of slight nervous excitement, especially if that is joined with unevenness and intermittence of pulse, a few small doses of *Digitalis* are occasionally useful. Strange it seems that this drug, which makes a healthy heart first intermit and then stop altogether, should reduce to regularity the organ when it is weak and beating irregularly! We can only account for the apparent anomaly by supposing it to act as an anæsthetic on the cardiac nerves, withdrawing them from normal and necessary stimulation in the first case, and from abnormal and hurtful stimulation in the second. The worst of *Digitalis* is, that its benumbing influence extends not to the heart alone, where it is wanted, but to the whole tract of the pneumogastric nerve; it reduces the appetite and produces nausea; so be cautious not to continue it longer than necessary.

While you encourage your patients to live generously, you must take care to disabuse them of the vulgar notion that the advice includes excess in Alcohol. There is no more certain road to that degeneration of the muscular fibre which is so much to be feared. And in heart-disease it is more especially deleterious, by quickening the beat of the pulse, causing capillary congestion and irregular circulation, and thus mechanically inducing dilatation of the cavities. Let the alcoholized drink taken be limited to that quantity which increases the appetite and does not hasten the pulse. In a great many instances this quantity may be very shortly written down — 0.

To mental anxieties perhaps their social relations expose the rich quite as much as the poor, and their

education makes them more sensitive. Both joys and sorrows affect them more deeply, and instead of balancing one another do equal harm. Happiness is as pernicious as misery. For example, I have a patient whose first attack of dilatation arose from distress at his first wife's death, and his second during the honeymoon of her successor.

By overwork as a cause of Anæmia, I mean too long-continued wearying toil either intellectual or bodily. I have distinguished from it temporary violent exertions, to which we can sometimes, though not very commonly, trace injury to the valves.

Now and then a case occurs showing the possibility of a valve being ruptured by a sudden strain. Thus I remember seeing one of Tattersall's stablemen under Dr. Nairne's care, at St. George's Hospital, who distinctly traced his first cardiac symptoms to a sudden pang which he experienced when running a fast horse down the yard, a year before. After death two of the pouches of the aortic valve were found torn, and from the regurgitation thus arising the ventricles had become enormously dilated during the year that he had lived. But the torn portions were not of normal structure; the tissue was thickened and opaque, and therefore wanting in elasticity or power of resistance. And I believe this always is found to be the case in valves ruptured by sudden exertions; I am not aware of any instance of healthy valves having been found broken.

Where the tissue has become bony and brittle, rupture is more common; but then of course it will have been preceded by a long course of ill health, for such an advanced lesion as ossification could not exist without seriously incommoding the individual. You will not be long without seeing in the dead body the cords

of a mitral valve thus broken, rather from the quantity of lesion than from any external strain or violence.

More common still are cases that you see during life of sudden pangs from exertions, such as rowing, jumping, fighting, &c.—sudden pangs followed by increased palpitation, and often all the signs of aggravated enlargement of the heart. Yet the aggravation is not such as must surely accompany a ruptured valve, nor is the path to death so direct as it was in the case which I detailed to you. Moreover, in some instances where an autopsy reveals that the valves are unbroken, you had previously heard a history of such pangs, and sometimes had witnessed them in the wards. What is going on in the heart during these paroxysms of Angina Pectoris we do not precisely know, but it seems to me extremely probable that its state is one of over-distension. The pain has the same tearing and paroxysmal character that you find accompanying the over-distension of hollow fibrous organs, usually insensitive to pain, such as the stomach, the colon, the bladder.* And the consequences too are similar as well as the pain; that is to say, like the bladder or the stomach the heart may completely recover in the first place; or in the second, it may be completely paralysed and cause death; in the third, it may remain partially powerless and dilated. As in the bladder, so in the heart, any one of these consequences may follow.

Having said so much about the nature of injury by

* The pain is of the same nature as that experienced in over-stretched or racked tendons, or muscles over-wearied by sustained efforts; it appears strictly associated with the stretching of usually insensitive fibres, and is in some cases the most severe pain the body is susceptible of, as the inventors of racks and other instruments of torture well knew.

sudden exertion, it is unnecessary to remark that it is to be avoided by all the expedients that lie in the patient's power; and perhaps the most effective way of impressing upon him (if he is a sensible man) the importance of your advice, is to explain in plain words the pathology of the case. I cannot agree with those who would make a "mystery" of our science. I believe we are never called upon to pervert the truth, rarely even to be passively reticent, and that the most thorough openness is always the best policy. To this end a complete explanation is generally necessary. The patient must be disabused of vulgar notions derived from popular fiction about the extreme fatality of organic disease; the true facts of the case must be stripped of their picturesque accompaniments, and the patient must be taught to look upon his condition with the same business-like calculation of consequences that a physician does. Unless this is done your half truth will act like a lie.

I should strongly recommend you to cultivate the habit of giving these sort of clinical lecturettes in clear untechnical words. Let your pathology shape itself within your own minds in such language as all educated persons can enter into; and depend upon it not only will you be able to explain matters more easily to your patient, but you will understand them better yourself.

In practical lectures it is always wisest to take chronic Diseases of the Heart as one individual subject, for this is the way in which you have to think of them at the bedside. You should not treat patients with lesed valves on one principle, those with dilated ventricle on another, those with thickened ventricle on a third; but, as I have tried to impress upon you in several lectures, each and all with a reference to the same

function impeded in the same manner. Division leads to unnecessary repetition, and you may observe that I am careful to avoid it both in the way in which I class the patients in the wards for instruction, and in the extracts I make from Case-books for the lecture-room. I do this with a design of impressing upon you what I consider the main points in the management of diseased hearts, viz.:—

1. The importance of valvular lesions consists in their liability to cause enlargement of the heart.

2. In auscultation we should strive more to find out the state of the heart-walls than of the valves.

3. The danger of enlargement is greatest where the muscular fibre is weakest.

4. The muscular fibre is weakest where the blood is most anæmic.

5. The principal object therefore of treatment is to avoid Anæmia.

LECTURE XIV.

THORACIC ANEURISM.

First case of Aneurism—Of the innominata—Diagnosis—Aortic valvular murmur accounted for—Probable abnormal position of Artery—Prognosis unfavourable—Why—Second Case—Aneurism of aorta—Treatment—Blood-letting—Low diet—Digitalis—Explanation of the joint action of these agents—Pathology of Aneurism—Object of treatment—Favourable prognosis—Two cases of favourable result of treatment—Additional note on the action of Digitalis.

(January 5th, 1861.)

I ADMITTED yesterday into Victoria Ward a prostitute, aged 22, who has been nearly a year in the Lock Hospital. She has had Syphilis more or less since the age of 14; and though the secondary sores are now healed, her health is naturally much broken, and she looks anæmic and weakly. She comes into St. Mary's not for that disease, but on account of palpitations and pain across the front of the chest, which she states that she has experienced for three years, but which lately have got much worse. She has also frequent giddiness and fainting; and last Sunday was carried out of the Lock chapel in a dead swoon. The house-surgeon has just been in to report that on account of one of these attacks she is unable to come down to the theatre, as I had desired.

She has often a difficulty in swallowing food, especially solids.

She states that she has very partial use of the left arm; and, on examination, it is smaller in girth to a marked degree, and the muscles are flabbier than on the right side. No pulse can be felt at the left wrist, nor at the bend of the elbow, nor on the inner side of the biceps. The axillary artery can be felt beating very feebly in the supraclavicular region.

In a marked contrast to this stands the right side. The pulse at the wrist is natural, and above the collar-bone may be perceived a strong pulsation, and at the origin of and for an inch or more along the carotid a very distinct thrill. In the hollow above the sternum the same pulsation is even stronger, and throws forward the trachea, when you press upon it with your finger.

On applying the stethoscope, a purring whiz is heard in the situation of the pulsation. A murmur is heard also in the upper part of the sternum, and is particularly loud at the level of the fourth costal cartilage, where it is sometimes accompanied by a musical note. There is no dulness on percussion beneath the clavicle.

My diagnosis of this case is, that she has an Aneurism of the ascending aorta at the point where the innominate is given off, and that this Aneurism involves the innominate and the origin of the carotid artery. I do not think it an Aneurism of the innominate alone, because of its being situated so much at the back of the trachea as to throw the tube forward by its pulsations, and also to press upon the œsophagus and interfere with deglutition. Besides, in the only case I have seen during life of Aneurism of the innominate, proved to be so after death, the tumour was smaller,

rounder, and pointing more distinctly in the supra-clavicular hollow.

You have here nearly all the signs of Aneurism of the aorta—(1) pulsation; (2) whiz; (3) impaired deglutition; and (4) impeded circulation.

But you may say there is the same whiz at the aortic valves. What is the cause of that? It is not I think, produced directly by Aortic Aneurism, but it is produced by the same original cause. Aneurism forms because there is a friability or loss of elasticity in the coats of the vessels, due generally to a deposit of white opaque matter and to a partial degeneration of them. What is more likely than the existence of the same disease in the aortic valves?

Now I come to the puzzling part of the case. You will observe that the right axillary artery is quite free; there is quite an open passage through it to supply the radial at the right wrist. Yet it is in this superclavicular space that we have the pulsation and whiz; whereas the left axillary, though it has normally nothing to do with the innominate, is not supplied with blood, and the left arm is atrophied.

I can account for this in one way, which I might as well detail, though it is more a physiological than a medical matter. I do not bind you to accept the interpretation; and if any of you fresh from the anatomy school can suggest a better, I shall receive it with pleasure. In many beasts, ruminants and solidungula, and in some pachydermata—as for instance, the hog—the aorta divides into two branches, the *ascending*, giving off the two subclavians and the two carotids, while the other turns backward and becomes the *descending* aorta. On this has been founded, by the earlier anatomists, the division of the aorta into “ascending” and “descending,” a

division awkward in the human species, but exceedingly applicable to the domestic animals whence they learnt their anatomy. Now, it is by no means impossible that the patient before us may have a malformation, which is an approach to this lower condition of animal life—a malformation, of which specimens may be seen in many museums; namely, where the left subclavian, as well as the right, is given off by the innominate, and has to cross over the arch of the aorta to get to its work; and in this crossing it would be interfered with by the tumour of the top of the arch. I cannot otherwise explain the puzzle, as the tumour is not large enough to obstruct a normal left subclavian. As an argument in support of the explanation, I may mention that the patient has a congenital deficiency of the reproductive organs, curious in a social point of view for a person of her degraded occupation. She has no uterus, the vagina ending in a short *cul-de-sac*. A malformation in one part is a probable argument for it in another.

This Aneurism presents several points which induce me to pronounce an unfavourable prognosis. *First.* It is in the ascending part of the aorta. Now, you will find that almost all Aneurisms of the ascending aorta are rather dilatations than Aneurismal sacs. They have no sharp edge, opening out suddenly into a distinct bag. And these are more difficult of cure than the sharp-edged sacs, because there is a clear stream through, and no back current, so that you cannot get clots to form in them. *Secondly.* The absence of clots is confirmed by the strength of the thrill. *Thirdly.* The supply of blood to the brain is seriously diminished, as is shown by her fainting fits. *Fourthly.* The impeded deglutition and the suspected malformation are discouraging. *Fifthly.* She is a poor anæmic

woman, reduced by poverty, disease, and physicking, to a very low state. She will not bear lowering treatment, I fear. *Sixthly*. Like many of her unhappy class, she is said to have a violent temper; so it will be difficult to detain her in the hospital, or to keep her circulation quiet while there.* It is doubtful how far we shall be able to apply the treatment appropriate for the disease, and how far it will be successful, if applied. What that treatment is, I shall best tell you after the next case. Henry E., a negro, aged 21, was admitted two months ago—viz., on November 9th—into Albert Ward. He is now a commercial traveller, but during the Crimean war was a sailor in a transport, during which time he once got a severe blow on the back of the neck from a "Derrick." He says he never had cough or shortness of breath, and was always "strong in the chest," till he began to have pain there three months before admission, especially in the left supramammary region. This pain increased gradually, though intermittingly. Three days before admission, while he was at his tea at Windsor, it suddenly increased very much, and he says he felt "as if something was going up and down from his heart to his arm." He says he fell down, unable to speak, and found that he had lost the use of the left arm. On examination, it was found that the pulse in the left wrist was much weaker than in the right, and there was loss of power, though not absolute paralysis, throughout the left upper extremity. The throat was swelled on the left side, and the carotid could scarcely be felt. There was considerable swelling of the whole

* Very soon afterwards she was obliged to be discharged for misconduct, and I have not been able to find what became of her. As she is corporeally rather a remarkable personage, perhaps this notice may bring the desired information.

mammary and infraclavicular regions, in which latter also there could be distinctly made out comparative dulness on percussion. This dulness was more distinct on the third rib than immediately beneath the collar-bone. On applying the stethoscope to the third rib, a distant whizzing murmur could be heard, which increased in intensity in nearing the shoulder, and diminished towards the sternum. There was no pulsating tumour, and the lung-sounds were natural, except perhaps rather more bronchial on the left side than on the other. There was a breathing pulsation in the left jugular vein.

The signs of Aneurism were not so distinct as in the last case, because it did not come so near the surface. I am inclined to think it is towards the back of the descending part of the arch; but wherever its exact locality may be, it evidently interfered with both arteries, veins, and nerves, which supply the arm, intercepting the pulse-wave and the nervous current, and causing anasarcaous tumefaction from its obstruction to the return of blood by the veins.

I thought local treatment desirable, and applied leeches several times beneath the clavicle. I should have bled him also; but, five days after admission he fortunately caught Scarlet Fever from a neighbouring patient. It struck me that this might prove a substitute for Venæsection; it enabled us to keep him a close prisoner in bed, and to put him on very low diet. And this plan was the easier carried out from his being, like most civilized Africans, of a mild tractable disposition. It has been pursued steadily up to the present time. On December 1st, I find it noted that he had recovered the power over his arm, and that the pulses appeared nearly equal. He has continued the complete rest, and has taken Prussic Acid and Digitalis.

I cannot now detect any difference between the radials, and he has complete use of the arm. He describes himself as quite well, and finds a bandage which he wears across the mammary region relieves the occasional pains. There is a murmur still in the infraclavicular region; but all impediment to circulation occasioned by the Aneurism has ceased, and he is going to be an out-patient.

The treatment which has been adopted here is an exemplification of the principles which I have taught in the lectures on the Principles of Medicine. It is a strict following up of that which nature adopts in all Aneurisms that heal spontaneously. In them you find a fibrinous clot formed, and the sac shrunken up from lack of stream passing through it. We have endeavoured to make the blood disposed to form fibrinous clots, by bringing it into that fibrinous state which loss of blood, Anæmia, and low diet induce; and we have endeavoured to keep the blood-stream as calm as possible by rest in the horizontal posture.

The pathology of Aneurism shows it to us as a local deficiency of life in a hollow organ, a deficiency of vital elasticity, which has let this hollow organ yield to the continuous pressure of the blood-stream. Doubtless if we could at first have renewed this vital elasticity, such would have been the legitimate aim of treatment, and such would be the course pursued by a rational physician. But here the mischief is already done, the vessel has dilated into an uncontractile sac and is beyond the reach of any of the powers of life. The object now must be to restore as much as possible the original area of the vessel, and to reinforce the weakened walls by an artificial clot; so that though we cannot have a complete artery, we may have as good a substitute for it as circumstances will allow.

There was much in favour of this patient from the outset; the Aneurism was in the descending aorta; there was no thrill; his general health was good; and he is an obedient quiet creature, very different from the ill-conditioned little woman last discussed. At all events, he has done very well; and I should urge upon you to make the carrying out of this principle of treatment the goal of your wishes in Thoracic Aneurism. You will find patients very often rebel, but do your best; and if you do not attain success, you will at all events deserve it.

I like in general to bleed the patients affected with Aneurisms from time to time, and should have employed that mode of treatment if this man had not had the Scarlet Fever. A former patient of Dr. Sibson's, now an out-patient, was to have come here to-day to testify, from his own observation, to the superiority of Venæsection over Leeches in its calmative influence over an Aortic Aneurism which he has long had, and on which he is very observant to the effect of remedies. But I suppose the frost has kept him at home.

I say you will deserve success, and sometimes you will get it. I kept a stone-mason in this hospital under the bleeding and starving treatment for five weeks. He had come in with a pulsating tumour and Aneurismal whiz under the left scapula, with severe pain in the floating ribs, which some thought were being absorbed. At the end of the five weeks he rebelled; but the pulsation had disappeared, and the whiz was scarcely to be heard; and I had reason, therefore, to think the Aneurism in a fair way to be cured.

Even in cases where the treatment cannot be carried out *à l'outrance*, good may be done by an approach to

it. In 1851, a lady was sent to me by a surgeon in the country, to consult me about increasing Corpulence and Dyspnœa. In investigating the cause of the Dyspnœa, I found a pulsation and an obscure whiz under the left clavicle, accompanied by deficiency of pulse in the left wrist. I was satisfied that there was Aneurism either of the subclavian or of the aorta at the origin of that branch. But bleeding was undesirable, because she was so fat; and I have often told you how badly obese people bear bleeding. Moreover, she was sixty years of age. But, as she was a sensible woman, I managed to gain her confidence, and starved her for several weeks, giving her at the same time drachm doses of *Liquor Potassæ* three times a day. The effect was a reduction of her Corpulence, a diminution of the pulsation in the tumour, and greater freedom of breathing. I did not see her from 1851 till 1856, when, being in London, she called to show herself, saying how well she was. The pulse in the radial had not returned; but there was no pulsation in the tumour, and only a sort of roughness in the sound of the artery. She felt confident herself of the good effect of the starving treatment.

I have taken the opportunity of your having two patients together under your eye to bring the subject of Aneurism before you, because of late the objections urged against *Venæsection* in excess and in improper cases have produced a fashion of decrying its use altogether, and especially in Thoracic Aneurism. Bleeding and starving, it is urged, induce debility and *Anæmia*; that is to say, in physiological language, they lower the force of the heart, and they cause a comparative excess of fibrine over blood-discs in the blood. These are both steps towards the mode adopted in nature to effect a cure of Aneurism, and perhaps of some other

diseases also. So that, I contend, not merely is it the best mode, but the only honest mode, of treating Aneurism of the trunk-vessels; because it is the only one we at present know consonant to reason and experience.

(September 1862, additional.)

Since publishing the foregoing lecture, nearly two years ago, it has struck me that we have not duly considered the duty of trying to restore the vital elasticity of arteries in cases of Aneurism. I do not mean of course that we can expect the sac to regain its tone, but I think we should attempt to prevent the neighbouring and only half-degenerated vessel from sharing the fate which threatens it.

The physical agent which seems to me of most promise is Digitalis. The effect of the continued use of this drug upon the contractile coats of the arteries is very remarkable. Let patients with a weak heart and loose, soft, irregular pulse, take Digitalis in moderate doses (say ten or fifteen drops of the tincture) in their Iron mixture for a few days, and the wrist pulse becomes small, firm, and regular. The strength of the heart's stroke is not altered, and the effect seems due to the restored balance of the cardiac and arterial circulation. The heart being in an abnormal state, the benefit accrues from bringing the arteries into a state, not normal indeed, but suited to the condition of their colleague. In this way I would explain the apparent anomaly, that in a healthy person Digitalis will produce the same symptom of irregularity which it removes in an invalid. Of course its physical properties must be the same in both instances; but if my conjecture be true that it acts especially on the arteries, it is easy to understand how the restored

balance follows in the one case and disturbed balance in the other.

I think, therefore, that we are justified in expecting advantage from Digitalis in Aneurism. Eight months ago I was consulted about a lady with an Aneurism, probably of the Innominata, pulsating and whizzing above the right clavicle. It compressed the trachea, causing Dyspnœa, and so disturbed the circulation that there was Anasarca of the lower extremities up to the loins. She had been taking tonics and full diet. I persuaded her medical attendant to leave these off, and to give her Digitalis with diuretics and low diet. The change was certainly beneficial; she soon lost the Dropsy, the Dyspnœa, and the sense of pulsation, and has since been able to travel a long day's railway journey to London, to visit the International Exhibition in a Bath chair, and to enjoy many more of the usual summer amusements of London than I thought prudent.

LECTURE XV.

ALBUMINURIA.

*Indications afforded by the presence of albumen in urine
 —Prognosis derived therefrom—Treatment based
 not on anatomical division of forms of degeneration
 in the kidney—Not on the quantity of albumen—
 But on the circumstances accompanying its presence
 —Iron—Digitalis—Strychnia—Lædenticia—Mer-
 cury—Alcohol—When each are justifiable—Treat-
 ment of Dropsy—Baths—Jalap—Cream of Tartar
 —Elaterium—Acupuncture—Sloughs of skin.*

THE clinical clerks have a printed paper on which they enter before each visit the result of an examination of the urine of each patient. A most indispensable column in this table is that which records the presence or absence of albumen, by the usual simple and rapid test of boiling and Nitric Acid. No indication is preserved of the quantity, and my lecture to-day is designed to excuse this seemingly superficial examination, and to point out what we gain by it.

The appearance of albumen in the urine is a notice whereby we learn the partial death of one of the most valuable structures in the body. It shows the inefficient state of those organs through which the urea is separated from the blood—the urea, which is a measure of the amount of destructive metamorphosis, a measure of the amount of one of the most essential parts of renewal. The knowledge, therefore, of this partial death is justly regarded as a most important piece of

information for us to gain. And you see it is easily and rapidly gained.

Remark first—*it is as a Notice that the presence of albumen in the urine is important.* The quantity of albumen lost makes little difference. The patient would be in a sad way indeed if such a small loss were of consequence to him. But it is the mere fact of its presence at all that affects our prognosis so much. Hence not the proportion of albumen made visible by our tests, but the circumstances accompanying the discovery, make that prognosis favourable or the contrary.

One very important circumstance is the prominence or persistence of the symptom. A single observation should never make you a gloomy prophet; for Albuminuria is occasionally only of a transitory character; and though that single occurrence may make you suspicious and anxious about the future history of the patient's kidneys, yet it may be years and years before any harm happens.

Another thing that you should look for is blood. If there is a stain of blood in the renal excretion, or blood-discs are to be found by the microscope in the sediment after the specimen has stood quiet for half an hour, you will know that the disease has not existed very long, and therefore is more likely to be transitory than if it were of old date. This observation is of great value after Scarlatina. In patients recovering from that complaint the absence of blood from albuminous urine is a bad sign, as showing that the kidneys were probably unhealthy before the accident of the eruptive Fever: while the presence of blood is an encouraging one. If the urine *must* be albuminous, it had better be bloody.

The secretion of a great quantity of water in Albu-

minuria is some evidence of the chronic character of the ailment, and is so far unfavourable ; but this phenomenon is so varied by the daily habits of the patient, the state of the skin, bowels, &c., that it is difficult to give any strict rules of prognosis dependent thereon.

Perhaps the most necessary fact for you to note in albuminous urine is the quantity of solid matter which is daily passed. The quantity of solid matter ($\frac{3}{5}$ ths of which is urea) is practically a direct measure of the vitality of the secreting portion of the gland from whence it issues ; and you know that if there is a fair average amount of that substance made in the twenty-four hours, there is a sufficiency of healthy kidney remaining, however abnormal the remainder may be.

Hence you derive the following rules :—

1. The prognosis is best, if the specific gravity is as high as that of healthy urine, and the quantity natural ;—
2. It is next best, if the quantity is diminished without diminution of the specific gravity ;—
3. Next, if the specific gravity is diminished without diminution of the quantity ;—
4. Worst, if both specific gravity and quantity are diminished together.

In the course of lectures on Systematic Medicine, I describe, as in duty bound, the many shapes which degenerated kidneys assume, the "large yellow," the large and small "mottled," the "granular," the "cysted," large and small, the "hard," the "atrophied," and whatever other I can find represented by specimens in the Museum, or sketched in my portfolio. I seldom conclude the subject without being asked whether these diverse forms are witnesses of diverse

noxious agencies—whether some impede one function and some another—above all, whether special remedies are needed for each. I am forced in conscience to answer No; and to say further that it is lucky it is so, for at present our means of diagnosis do not enable us to find out which form lies in the body of a sick man. The light has failed which it was hoped microscopic research of the renal casts might throw upon the matter, and it is only by a statistical observation as to which is most common at particular periods of life that a rough guess can be made. We must not base our treatment on post-mortal anatomy, or we shall fail in our duty to our patient.

Upon observations of the same phenomena, which form the groundwork of our prognosis, should be based our treatment also. It must not be affected by the proportion of albumen contained in the specimen of urine examined; we do not augment its vigour because the coagulum forms a more than usually solid clot; nor should we consider it less necessary in a case where we can only obtain indications of the abnormal contents by a slight opalescence. And knowing that the quantity, more or less, of albumen present is of no practical importance, let us not waste our time and drugs by direct attempts to restrain its evacuation. We may look, for instance, upon the administration of astringents, such as Gallic Acid, given with a view to stop the emission of albumen, as puerile. We know that not the loss of albumen, but the state of constitution of which that loss of albumen gives notice, is the real object to be attended to, and to be made the end of treatment. One runs a great risk of being led off the true track by following by-ends.

What, then, is the essential nature of the state of constitution which leads to the presence of albumen?

It is a defective formation of that epithelial cell-tissue which separates the effete matters from the blood in the form of urea. A portion of these cells remain dead and adherent in the tubuli uriniferi, degenerate into fat mixed up with fibrin derived from the blood, and thus replace a pervious gland by a solid, obstructive mass. Others, more fortunately for the patient, are shed in the form of microscopic casts of the tubes. It is obvious that the intention of all successful treatment must be to replace them, not to prevent their being shed. The patient loses no more by evacuating this useless tissue, than one does by the separation of the sequestrum of a dead bone, and it is as bad policy to try and prevent one as the other. Indeed, the shedding, in contradistinction to the degeneration without shedding, is to be looked upon as a desirable circumstance, and need excite no alarm, if other circumstances are in the patient's favour. In those cases which recover, the casts are often to be found in the urine after the urea has regained its normal proportion, and albumen cannot be discovered.

The main object of treatment should be to restore the blood to that sound vital condition which will supply a healthy growth of new epithelium capable of carrying on the renal functions. This is the best done by Iron. Though I usually order the Tincture of the Sesquichloride, I am nowise bigoted to that preparation, and if any reason can be given for administering another form of the metal, I do not object, as the quantity of Hydrochloric Acid in the salt is not sufficient to allow one to attribute any calculable efficiency to it. The Iron is the essential matter, and the more of it the patient can take the better.

Joined to Iron, Digitalis seems serviceable. I suppose it must act by restoring the balance of the circu-

lation, and so making the supply of the vital fluid more regular and full. With degenerated kidneys there is often joined a degeneration of the heart-muscle, so incipient as not to exhibit alone any symptom, yet possibly enough to aggravate other existing evils. It is in these cases of weak heart, especially with irregular pulse, that *Digitalis* is so useful. From 25 to 50 minims of the pharmacopœial tincture per diem is enough.

Strychnine is also a valuable tonic. It may possibly act in the same way as *Digitalis*, by strengthening the muscular action of the heart. The doses should be small; $\frac{1}{20}$ th of a grain three times a day is enough to begin upon of either the *Strychnia* or the more soluble and therefore safer Hydrochlorate of *Strychnia*. But with many patients, to whom the drug is especially beneficial, you may often increase it gradually to double that dose.

Iron, *Digitalis*, and Strychnine may be combined in the same draught, in the same pill, or in the same powder, without inconvenience.

There is no physical agent capable of doing so much harm in Albuminuria as Mercury. Its action as a destructive is much more rapid in this state of the system than in any other. You can almost see the increase of the Anæmia under your very eyes. In advanced cases of renal degeneration, after one or two doses sometimes the gums will demonstrate how the tissues are melting away, though there is hardly vitality enough to exhibit an increase of normal metamorphosis.

Yet this poisonous reptile carries, like the fabled toad, a jewel in its head. Where the specific gravity of the urine, and a quantity at all approaching the normal, indicate a trustworthy amount of metamor-

phosis, you can use this metamorphosis with most powerful effect to remove the dropsical effusions which are so common in Bright's disease. You may save the patient's life by an agent which in its full effect is poisonous to him.

But remember you are wielding a sledge-hammer. Visit your patient between each blow, and watch its action with extreme suspicion. Do not let the blows be too frequent—one in the twenty-four hours is quite enough. And do not wield it against such butterflies as swelled ankles and puffy eyelids, nor on any but urgent cases unless you have tried other means first.

I have not myself employed any forms of Mercury besides the Bichloride and the Blue Pill, but I have no reason to urge against other preparations. I usually give them combined with Digitalis, and sometimes with Squill; that latter drug seems to increase the quantity of water and salts in the urine, which are serviceable as a vehicle for the urea of metamorphosis.

Next to Mercury, I think Alcohol has the most harmful power in Albuminuria. Theoretically, we may suspect the injury to lie in further arresting the already deficient metamorphosis of tissues. As a matter of fact, you will find under its use the skin become anarsacous, fluid accumulate in the serous sacs, soaking of the lungs producing Dyspnœa and cough, poisoning of the brain with ureous blood, indicated by stupidity, giddiness, and coma, and, in short, all the evils you most dread in these cases. And Alcohol has not, like Mercury, a virtue which makes you overlook its felony. It seems to do nothing but harm in that deficiency of life which is the essence of the disease.

The only reason which can justify you in employing Alcohol is, that the mind and nervous system of the patient happen to have been so long accustomed

to its abuse, that when you have fairly tried to leave it off they sink from want of it.

In the last sentence I designedly used the word "*abuse*" instead of "*use*." You may readily distinguish those who have exceeded what is good for them in their employment of Alcohol by this very weakness; they cannot bear to leave it off when on a bed of sickness—the bond-chains are so welded on to the nervous tissue, that in tearing them off you tear away life with them. Whereas a temperate user, who regulates the quantity of Alcohol by its benefit to his digestion, and habitually lets the effect of each dose go quite off before he takes another, can bear without inconvenience to his nerves the removal of his accustomed indulgence. Be careful to ask your patients if they ever take alcoholics in the forenoon or between meals, as, if they do not, you need not in general be at all afraid of ordering them entirely to abstain.

A very important item in the treatment of Albuminuria is warm clothing, especially woollen, next the body. This is much more necessary to be insisted on than high temperature in the house, for in fact it is not a *high* but an *even* temperature that is required, and that is best secured through the normal retention of the animal heat by an animal tissue.

Dropsy of such extent as to require special treatment will scarcely ever come on when patients conform to the above treatment. But you may find it already existing, as happens with the majority of albuminuriacs admitted to hospitals, so that practically you have as often to treat it as to prevent it.

The quantity of water excreted *per urinam* is defective, and hence much good is often done by simple confinement to the horizontal position in bed, and the administration of watery drinks in greater

amount than the thirst demands. Frequent doses of weak broth attain that end very well. For water is a true restorative diuretic; it increases the amount of fluid secreted to a proportion greater than its own bulk, and it also increases the amount of urea and salts, thus directly increasing vitality. That nitre has the same power is rendered extremely probable by the experiments of Parkes and Dr. Shirks (quoted by the former*), and I therefore freely administer this neutral salt with water in all cases of Dropsy. Under their use the appetite improves, the lips become redder, and the pulse stronger, at the same time that the anasarca swellings, and sometimes even Ascites, diminish.

Warm baths, soured with Hydrochloric Acid, seem also useful. In two chronic cases (mild ones though) the excretion of albumen in the urine has disappeared, as well as the Dropsy, under their employment. But I have never ordered them alone, the patients always having Iron at the same time; so that I cannot speak very positively on the subject, except so far as to say that they certainly do no harm and probably do good.

While on the subject of baths I would remark that you must be careful not to let them be too hot. "The warmth of the body" is doubtless a wise rule, but then the warmth of the body in albuminuriacs is much below that of yours in health, and 98 deg. Fahrenheit often produces in them gasping, faintness, and exhaustion. They bear sudden changes of temperature in the direction of heat quite as ill as in the direction of cold, and 92 deg. is usually quite high enough for them.

* Parkes on the Urine. 'On the Urine in Health,' chap. ii, sect. iv, 8.

Hot air or vapour baths you sometimes see me order. Their advantage is that they can be used where the patient is so much swollen as to make getting up painful; but the effect is very stifling, even though the head is kept out, and is not more powerful in promoting the action of the skin than water baths.

It is only when these means have failed that I betake myself to Mercury, with the fear and trembling above described.

An occasional active purge of Jalap and Cream of Tartar will often be of service by setting up absorption of the extravasated fluid back into the veins. It is then thrown off by the kidneys. But you cannot trust to purgatives alone even to remove the Dropsy, and on the Albuminuria their influence is to be suspected. It is probably harmful, by increasing Anæmia.

Of all purgatives the most weakening is Elaterium. Its action is a peculiar one:—it causes an enormous flow of watery serum from the first mucous membrane that absorbs it:—if its vapour be drawn up into the nostrils for a short time, it is a powerful errhine, and is followed by a secretion of a pint or more of water from the Schneiderian membrane:—if it is dissolved in the œsophagus it causes such a deluge of the gastric fluids, that the stomach cannot retain them, and they are rejected by vomiting:—if it succeeds in passing the pylorus, a choleraic Diarrhœa gushes forth, stripping the membrane of its epithelium just like its morbid prototype. It is therefore very uncertain in its operation, and I am sure I have seen patients not only frightened but really hurt by it. Moreover, I have never found benefit from its use in renal Dropsy where Jalap and Bitartrate of Potash had failed. If you are steadily purposed to give Elaterium, use the form of

enema, for you thus avoid the vomiting which is so apt to arise.

Puncturing the anasarcaous skin to relieve temporarily the distension is only justifiable where that distension is causing more harm than mere inconvenience, as for instance in the penis where it impedes the passage of urine, or in the scrotum and legs when it threatens to crack or be frayed into sores. Then it is better to puncture it with a lancet to the depth of about a quarter of an inch than with a needle: the holes thus made discharge more freely and continuously, and are less likely to cause Erysipelas than the minuter but more numerous needle pricks. I have scarcely ever found any evil follow this practice, and where the distension of the skin and areolar tissue has been very great, I think it has thereby been preserved from sloughing.

By the by, when in Dropsy from either Albuminuria or diseased heart you are unfortunate enough to have your patient's skin slough, I should strongly recommend you to use a lotion which has been found highly efficacious in our wards, consisting of half and half Glycerine and water saturated with Chlorate of Potash, and to keep them carefully covered from the air. The restoration of vital action to the edges of the mortified tissue under the use of this means is very remarkable.

LECTURE XVI.

DIABETES.

Case of Diabetes—Treatment adopted here—Arrest of function of constriction in Diabetes—Saccharine diet wasteful and harmful—Test of treatment is gain of flesh—Patients to be made into carnivorous animals—Sugar may be made from flesh diet—May be made from liver—But from dead liver, not live liver—How far very strict dietary should be enforced—Opium—Cinchona—Iron—Iodide of Potassium—Gratification of thirst.

(July 19th, 1862.)

WILLIAM S., aged twenty-two, a thin, young-looking farm labourer, has suffered for two years at least with ailments of various kinds which are usually considered by pathologists to be symptomatic of Diabetes. He has been weak and unequal to work, felt always thirsty and usually hungry, and passed a large quantity of urine. For the last year he has been unable to work at all.

He was admitted to St. Mary's, May 31st. At this time the above-named symptoms were noted. The chest was examined and found healthy, the pulse was slow and regular, the bowels opened daily. The skin was naturally moist, and he stated that at night he often perspired. His sleep was sound, except when he was aroused by his bladder getting full of urine. His weight was 6 st. 11½ lbs. He remained in hospital five

weeks, during which period the following variations in the urinary symptoms, with the changes in weight during the corresponding time, and the alterations in treatment to which I trace these changes, are noted in a table condensed from the Case Book.

During the first week the total quantity of
 urine passed was fl̄3680
 Of the specific gravity before fermentation . . . 1·042
 „ „ after fermentation . . . 1·012
 His weight had increased to 6 st. 12 lbs.

During the second week the total quantity of
 urine passed was fl̄3449
 Of the specific gravity before fermentation
 from 1·039 to 1·040
 His weight had decreased to 6 st. 11½ lbs.

During the third week the total quantity of
 urine passed was fl̄3472
 Specific gravity 1·039 to 1·041
 His weight had increased to 6 st. 13 lbs.

During the fourth week the total quantity
 of urine passed was fl̄3452
 Specific gravity 1·040 to 1·042
 His weight had increased to 6 st. 13½ lbs.

During the fifth week he lost half a pound in weight, and then left the hospital by his own desire.

During the first week he was treated with a grain of Opium every night, a mutton chop for breakfast in addition to the Ordinary Full Diet, with three Captain's biscuits in place of bread daily.

During the second week the Opium was left off, and the treatment altered to eight grains of Iodide of Po-

tassium three times a day, with a drachm of Cod-oil; he was allowed but one Captain's biscuit daily instead of bread, but as much meat as he could eat and as much milk as he could drink.

During the third week the Captain's biscuit was changed to bran biscuit; but in point of fact he did not eat that substance, preferring to go without bread-stuffs altogether. No other change was made.

During the fourth week no change was made.

In the fifth week we tried to persuade him to eat Bouchardat's Gluten Bread toasted and buttered, but in vain.

The first practical point to be observed in the pathology of Diabetes Mellitus is the arrest in the function of construction.

That generally used material of nutrition, Sugar, which ought to be assimilated as food and made available to the growth of the body, passes into the thoroughfare of the circulation and out again unaltered, and is ejected in the urine. And here I refer not only to the sugar which is taken as such into the mouth, but also to that which is formed out of starch by the action of the saliva. So that in one thoroughly diabetic the whole of the saccharine and amylaceous matters in the dietary are utterly wasted. Trying to feed him upon them would be just the same as feeding him upon nothing at all.

More than this, I think you are doing him harm. These useless articles of food, though they contribute nothing to his support, destroy his appetite, and so he does not eat the needful quantity of really nourishing things. And, moreover, the analogy of other diseases would lead to the conclusion that burdening a disabled function with work to which it is unequal will disable

it more and more. If the stomach rejects undigested an ounce of beef, it is made worse by the administration of a steak. If the eyesight fails, or the brain reels on slight exertion, common experience forbids us to demand violent efforts.

Therefore, you find that cutting off a diabetic's sugar, bread, and potatoes, by no means lowers him. On the contrary, he often gets heavier under the restriction. And one can easily believe the instances recorded by Dr. Pavy where treacle, honey, and sugar, intentionally administered as an experiment to diabetics, made the patients feel worse and lose weight.

I do not mention in evidence or rate of any importance the increase or diminution of sugar in the excretions under the influence of saccharine or non-saccharine diet. It is less when little starch and sugar are taken, it is more when much is taken. But the real point is the acquirement of flesh, and the test the addition of weight. You will find when the ordinary mixed food of healthy men is used by diabetics that much flesh is lost, and that it is regained when a carnivorous dietary is rigidly enforced upon them. With the flesh also comes strength, showing that muscle is gained, and not mere fat.

The great point, then, in the treatment of Diabetes, is to accustom the patient gradually to live entirely on meat, or at least entirely on albuminous and gelatinous food. This need not seem a mighty hardship; the iron-framed Esquimaux do it, and the wiry, tough, half-breeds of the Pampas, with a bill of fare certainly less varied in flesh-meat than our European meadows afford. You may then fairly direct your energies to attain this goal with a good chance of success. What nations live and increase upon may be trusted to nourish a single individual.

Laying this down as the main point in the treatment, let us see what is likely to be gained by it.

You will learn from the history of our present patient that turning him into a carnivorous animal does not entirely remove a diabetic's peculiar ailment. Twenty days after all vegetable matters have been cut off from his diet card, and he has been carefully watched by others set to detect any breach of rules, still the urine is full of sugar. So that it must be derived from some other quarter than the starchy and saccharine constituents of the food.

We shall feel less surprise at this formation of sugar from animal matter alone when we call to mind that there is a normal secretion in which sugar may be found under even normal circumstances. The milk of carnivora contains it.*

Moreover, sugar may be formed in the laboratory by a process of decomposition without the presence of life. Nay, rather only when life is extinct. The simple application of oxygen will cause some animal substances to be converted into sugar. This has been noticed by Dr. Claude Bernard to be especially the case with the tissues which form the liver, which carefully washed from blood and exposed to the air quickly become copiously saccharine. So that your patient has a fertile source of sugar in his own body, even if none is supplied by the aliment consumed. He carries in his abdomen about two pounds of viscus capable of easy conversion into sugar.

But remark it is *dead* liver, not *live* liver, which in health is decomposed as above stated. Normal vital action seems to have another way of removing the

* Bensch has put on record the presence of sugar in the milk of bitches fed entirely on meat. 'Annalen der Ch. und Pharm.,' Bd. lxi, 221, quoted in Dr. Lehmann's 'Phys. Chemistry.'

hepatic substance, for during life no sugar can be detected as formed from the organ. Diabetes then, like all diseases of which we know more than the superficial symptoms, turns out to be a death in life, an anticipation of the post-mortal properties of the bodily constituents. This is an additional reason for casting about how best to apply restorative medicine in its treatment, and for urging an ample supply of the right material for revivifying the frame. If the dying liver is passing off quickly by the kidneys, we must give the patient quickly the wherewithal to make new liver. Now you gain an additional reason for enforcing animal diet in Diabetes.

To accustom this patient to leave off by degrees vegetable aliments, I gave him first Captain's biscuits for a fortnight. During that time scarce any weight was gained, and the urine was but little altered. He liked those biscuits very well. Then I ordered him bran biscuits, but he said they were so nasty he could not eat them, and he wasted some of his milk in trying to make them palatable. However he increased in weight by two pounds during two weeks, and made eleven pints less urine weekly than on his first admission. And this although he drank as much as he felt disposed to take.

After this Mr. Van Abbott was good enough to give him a supply of the gluten bread which is manufactured by his firm according to the prescription of Dr. Bouchardat. For a week he tried hard to eat it in addition to his former allowance of meat; but I am sorry to say he failed in acquiring a taste for it. His appetite fell off during the experiment, he lost half a pound of the weight he had gained, and was so annoyed at being pressed to eat the gluten bread that he insisted on returning home on July 12th.

My own feeling is that we do not act wisely in

enforcing a dietary which is really unbearable by the patient in any chronic disease. The great object to be gained is to conciliate the stomach, appetite, and fancy into taking the greatest possible amount of animal food, and if practically you find that the patient eats more by having a biscuit, or a crust, or even vegetables with his meals, it is better to give him his way than to act the tyrant.

As to drugs:—

Opium was given to this patient for a week. It did not seem to exercise any influence at all. However, in some cases it certainly does seem to diminish the excretion of urine. But is that any advantage? or is it only from our education in Allopathic prejudices that we reckon on help from such an interference? I confess it seems to me that if the blood gets loaded with sugar, as analysis proves it does, it is better that it should be washed out by an ample Diuresis, than that it should remain at the risk of poisoning the tissues. I have never distinctly traced any harm to *Opium*, truly; but I have traced harm to a drug whose action is similar. *Cinchona* also diminishes the flow of urine, and I once gave that to a diabetic patient. After a short time he became comatose, and died with effusion in the ventricles. The effused serum was loaded with sugar, which I suppose it was the business of Diuresis to have diluted and washed away.

For this reason I avoid *Cinchona* in Diabetes, even when I desire to give tonics for the sake of increasing appetite. I prefer Iron and Strychnine. An elderly patient of mine with moderate Diabetes is now taking these drugs, with advantage to his strength and digestion, and without any deleterious action on the kidneys.

The *Iodide of Potassium* which you see prescribed on the medicine card was given on purely empirical

grounds. There are no drugs known to do good to the essential phenomena of Diabetes; there were no secondary symptoms demanding special medication; so I thought it a fair case for an experiment. The result was that at all events no harm was done; the patient continued to increase in weight and strength, and did not exhibit any of the usual symptoms of intoxication by Iodine.

This is not like substituting an experiment in search of a possible specific in place of rational treatment; such conduct is indeed most blameworthy; but here there is no medicine omitted, for there is none to be given that offers any hope of its possessing an alterative agency, and it is a question of either something new or a mere placebo. I shall try the Iodide again on the next similarly pure and uncomplicated case.

People sometimes feel a doubt how far they ought to gratify the patient's unnatural thirst. On this point the same considerations weigh with me which influence my objection to Cinchona. I think there ought to be kept up a flow of water through the system in proportion to the abnormal quantity of sugar in the blood, in order that no retention or discharge in unusual places of this material may take place. I therefore let patients drink as much as they feel disposed to do.

You will find that the demand for drink is closely proportioned to the quantity of sugar required to be got rid of. Thus when the dietary is changed from starchy to meat food, much less fluid is drunk, and much less is evacuated by the kidneys, though no restriction is placed upon the thirst. Such was the case with the lad now lectured on; during the second week he made twelve pints less urine, though he was recommended at the same time to drink as much water as

he liked. The specific gravity also of the secretion was not raised, which it certainly would have been had the diminution in quantity depended on any other cause than a diminution of the instinctive call for diluents. I believe the thirst depends on the saccharine contents of the blood; it is therefore wise to gratify it, and to provide the normal outlet for the abnormal constituent.

LECTURE XVII.

HYSTERIA.

Hysteria not a uterine disorder—Its pathology lies between mind and body—Its forms to be divided according as it approaches one or the other—Such a division has a direct bearing on the treatment—Hysteria not fatal—But not less important on that account—Case 1. Mental Hysteria—Treatment—Restoration of voluntary mental force—Of cutaneous circulation—Of emotional control—Case 2. Corporeal cause for Hysteria—Treatment, tonic to mucous membranes—Case 3. Tea-drinking—Treatment dietetic—Hysterical vomiting—Two cases—It is not in strictness vomiting—Conclusions.

(November 8th, 1861.)

WILL you please to forget at once and for all that Hysteria is derived from the Greek word "Ὕστηρ? That is the only way to avoid the trap which the name sets open for the educated medical man. In reality, it has no more to do with the organ of reproduction than it has with any other part of the female body; and it is no truer to say that women are hysterical because they have wombs, than that men are gouty because they have beards. You may see daily in the ward appropriated to uterine cases all sorts of pathological changes in the part in question, without any greater tendency to Hysteria than in other women; and on the other hand, hysterical women are all around you,

among both in- and out-patients, whose uterine functions are perfectly healthy. Of two women I have examined who were born without any uterus at all, one was hysterical.

The ancients, who invented the appellation which we use, seem to have fallen in with a popular notion that the womb really danced about into all the strange places where discomfort is felt during the disorder. They allowed their patients to imagine that mysterious organ as now starting up under the left ribs and causing lumps and pain in the side, and properly called "Spleen," now brought right up into the throat as a "Globus," and now intruding itself into the brain, appearing as "Clavus" over the brow and disturbing the senses and passions. You may easily conceive that the believers in such superstitions were not trustworthy practitioners: but you will be equally bad, if you fall into the error of treating Hysteria as a disease connected with the womb.

Observe impartially the phenomena in those cases which come before you, and you will not fail to be convinced that the deficient vitality of which Hysteria is a manifestation is in that puzzling part of the circle of life which lies between spirit and matter. We know so little about the chain which connects the two, that its links are reckoned by us as few and short, and we have no names for any of them. Yet when we see the varied phenomena produced by breaches or impediments to the connexion, we are led to feel the depth of our ignorance on the subject, and to conjecture that these abysses of incertitude veil a long list of vital functions.

In default of names for even the healthy functions, we must not expect an accurate nomenclature for their aberrations from health; and the most we can do in

attempting to classify forms of Hysteria, is to trace how near their origin lies to one or other extremity of the series of vital actions which are interfered with; what relation their phenomena bear on the one hand to mind, and what on the other to body. We shall thus have a natural series of varieties in the disease, with pure Insanity as a boundary on the one hand, and Epilepsy traceable to organic lesion on the other. Such a nosology has a directly useful bearing on our treatment of the patient, which I cannot say of any other attempt at classification that I have yet seen. I say it has a direct bearing on our treatment of the patient to observe in each individual case whether the disease is most related to mental or to bodily lesions; for I feel convinced that it is only by this observation that we can avoid such disappointment as leads many in our profession to look upon Hysteria as an *opprobrium medicinæ*, which makes them feel the same sort of indignation against it that is excited by moral guilt, and disposes them rather to punish than to cure the patient who has thwarted them.

Those who rate the importance of disease solely by the space occupied in the Registrar-General's report of deaths, will care very little about the subject of the present lecture. It does not show its face at all in that list. The reason is, that whenever it leads to a fatal result, it qualifies itself to be classed either as Insanity, Epilepsy, or some organic lesion; and thus our pathological friends who pay attention only to diseases people die of, are apt to ignore it altogether. But this is not a practical way of looking at the human misery you come here to learn to lighten. The sum total of suffering which arises from Hysteria to patients and their friends is very great, and probably equal to that included under most of the names of

diseases followed by high numbers in the Register of the mortality in the United Kingdom.

I hope you will not be led by the opportunities for the study of morbid anatomy which student life affords to rate that science as the only mode of estimating disease. It is very rarely anything which can be put up in a bottle, and made an interesting preparation or picture of, that patients feel, and that it is the business of your life to help them to feel less. The true use of morbid anatomy is to teach physiology, not the art of medicine, and it is the art of medicine which must be the prime object of your work in the hospital wards, and in the business of your lives.

After this introduction I proceed to the more immediate business of the day, by recalling your attention to three cases admitted last week into Victoria Ward.

The first bed we come to is occupied by E. J., a nursery maid, aged 17, who was brought here from her bed in her night-dress, wrapped up in blankets, and admitted as an "urgency" during the week. She complained of dreadful pain and absolute loss of power in the legs, so as to be quite incapable of standing. She said that five days before admission her legs had been red and swollen, and that they had been rolled up in "bandages twenty yards in length;" though in the same breath she declared that they were so painful that she could not bear them to be handled, and that it made her faint to have them touched. This illness she attributed to having caught cold, accompanied by Diarrhœa, when with her mistress at the seaside, whence she has just returned. She complained also of severe pain and stiffness of the muscles of the neck and in the heart, and of excessive perspirations. In short, she gave a fair description of the

subjective symptoms of an attack of Rheumatic Fever, and in truth she was admitted as a case of Rheumatic Fever, and so entered in the "Urgency Admission Book." But ocular examination did not allow me to concur in this diagnosis. The legs and feet were evenly smooth and white, and she did not cry out when any part was handled except the calves, to which she said the pain had retreated. Now the pain of Rheumatic Fever retreats to the joints, and not to the calves. Moreover, there was no swelling of the neck; and, on diverting her attention, the cardiac region bore pressure without her flinching. And, although her face was flushed, that appeared to be due to blushing; for the inside of her lips and tongue were pale, and the latter was marked by the teeth. There was a soft murmur, such as you find in anæmic persons, with the first sound of the heart. But what mainly led me to the diagnosis of Hysteria was the expression of her countenance. She has, you observe, a finely tinted, readily flushing skin, delicately chiselled features, quickly answering the movements of the mind, and a peculiar look about the eyes, which requires a separate sentence to itself. The balls are large; the sclerotic of a transparent sky-blue; the pupil much dilated, giving a dark appearance to a naturally light eye. The conjunctiva is smooth and bright, and is readily overspread with tears on slight emotion. The eyelashes are long and curled; the eyelids large, and especially full towards the outer canthus, giving a drooping, longing expression to the face. Altogether, she has what ladies technically call "a sweet expression." Of these hysterical marks, the puffiness of the eyelid and the dilatation of the pupil are the most constant, are seldom absent, and seldom deceive you.

Her history has oozed out in dribblets during the

four days she has been here, and has been made up partly by a motherly old woman in the next bed ; for it excites her too much to attempt much cross-questioning. It appears she has been in service since she was twelve years old, and enjoyed good health till sixteen months ago, when she had a sad mental shock. She went home for a holiday, having heard of no illness in her family, and found her father in his coffin. This completely upset her. She has changed about from service to service, and has always been obliged to leave from inability to perform her duties. The first bodily symptoms she perceived were languor and palpitation of the heart on exertion ; then she became subject to fits of laughing and crying ; if anybody made her laugh, she could not stop, soon began to cry and to scream, and then had depressing low spirits afterwards. She has not, however, had these attacks lately. During this period the catamenia occurred for the first time last December, and again in January ; and she was neither better nor worse for the change. But since then they have been absent.

This is a case of Hysteria arising from a distinctly mental cause, and exhibiting itself mostly in mental symptoms. The organs first affected are those which are especially subservient to the emotions of both pain and pleasure. First the heart ; then the risory, lacrymatory, and expiratory muscles. In health, we know how these are affected by changes in the mind, but are still under its control. When, then, we find in a patient that control deficient, and trace the deficiency to a cause purely mental, it is rational to conclude that the broken link is nearer to mind than to matter, and to let this conclusion govern us in our treatment.

But as in Lunacy, so also in Hysteria, morbid phenomena connected with parts more remote follow.

The stomach loses its power of digesting food enough to supply the waste, and the person becomes anæmic. Then the destructive metamorphosis is arrested too, the urea is excreted in diminishing quantities, and the unrenovated blood supplies no colouring matter, so that the urine is pale and watery. In short, the patient becomes anæmic; and with Anæmia, of course, there is a deficiency in the sanguineous excretions especially. Thus in this girl, you have heard, puberty commenced in spite of the illness; but power was wanting to carry on its periodical evacuation of effete blood. Next to the stomach probably ranks the uterus in its liability to be affected by the mind. A fright may suspend the catamenia or cause miscarriage in a perfectly healthy woman; and in female lunatics the courses are scarcely ever regular; so that it is quite in analogy that the same defect should occur in the half-mental affections which we class as hysterical.

Now notice the treatment.

First. She was admitted into the hospital as an in-patient. You will find in practice that however good your theory of the treatment of Hysteria may be, it is much more difficult to carry out and much less effective when the patients are at home than when you can remove them for a time from their ordinary habits and associations. It is not merely that unprofessional nurses fail to obey implicitly your orders, from misplaced tenderness or ignorance; but that the patient's mind, by running in its habitual groove, and being perpetually subjected perhaps to the influences which originated the disease, less readily takes a turn towards health. If you expect, therefore, in private practice to be as successful as hospital physicians, you must try to imitate the circumstances they have in their favour. This is most easy in the poorest and in

the richest classes. The first can be sent into an hospital; and with the latter a complete change of scene, under the charge of some judicious friend, is not difficult to arrange. But this is often next to impossible for the families of farmers, retail shopkeepers, curates, and the like, from the combination of a light purse with a weighty feeling of independence. One good plan that can sometimes be adopted, to the saving of pride and pocket together, is to negotiate an exchange of patients where two families in about the same social position are simultaneously afflicted with an hysterical member. The relatives of A can take charge of B, and the friends of B reciprocate by their care of A. Mere kindness also will often induce people to receive on a visit even such troublesome inmates as these, if it is pointed out by a medical man how very valuable the kindness really is, and what a high office of Christian charity is thus fulfilled, when a sick person, incurable at home, is rendered curable by removal. And I hope you will teach by example as well as by precept; and remembering the claims we have on one another as united in the brotherhood of a holy ministry, that you will receive into your own homes members of the families of medical men, "*quorum conatibus obstat res angusta domi.*"

If an hysterical patient is sent to travel during convalescence, you must be cautious where you send her. Some places enjoy a bad pre-eminence for producing relapses. These are generally low-lying places of even temperature; and I think there is some connexion between Malaria and the induction of this disorder. Rome is an instance of this. I was exceedingly struck when there, a few years ago, with the way in which all disease was so frequently modified by hysterical phenomena; and one case I saw of well-

marked Catalepsy, which strongly impressed me. It occurred in an English lady who never had Hysteria before in any form, and who was excessively frightened by the unfamiliar symptoms. It came on within twelve hours of her arrival on a muggy spring evening, when she was fatigued by her journey, and open, therefore, to all the injurious aërial influences of the Campagna. During her stay she was occasionally threatened with a recurrence, and feared she was a destined victim of nervous invalidism; but, on her leaving Rome, the symptoms vanished, have never recurred, and were thus proved to be wholly due to the peculiar climate. Be careful, therefore, that your hysterical patients keep clear of the Eternal City. Much harm is often done by sending them to travel in Italy without a warning.

Whatever the scheme adopted for securing a change in habitual trains of thought, the principle of treatment will be the same. You must aim at restoring the control of the mind over the body. A link is dropped, and is becoming paralysed for want of use. Let the patients be exercised in voluntarily obeying specific orders for the direction of the will; moving the limbs to time, at first slowly, and afterwards more rapidly, till at last the culminating point of dancing can be arrived at. This is the crisis of the cure; and when a girl can be got to join a quadrille in the evening, you need not fear a relapse into hysterical paralysis. In hospital, we cannot be so frisky, and are obliged to substitute walks in regular time up to a definite point, assisting in the work of the ward, &c. The same strong effort requisite for these exertions is to be used to restrain the tendency to hysterical fits. The truth is to be forced upon the patient that she can learn to repress these manifestations of weakness;

and with the learning will come the power, and with the power the absence of occasions for exercising it.

What you have to aim at is exactly the converse of the arts of the electro-biologist, mesmerist, and medium-keeper. These persons, with devil-like ingenuity, find means to induce a form of artificial Hysteria in subjects with a tendency to mental disease; that is to say, they partially destroy the control which the mind has over the body, and subject it to the suggestions of their own will. Let it be your happier task to restore this control by inducing the patients to exercise it for themselves. Above all things, never be led by curiosity or idleness to repeat the experiments alluded to. Each time that poor creatures are so practised upon, they become more and more enslaved to the morbid impressions, till they lapse into permanent Hysteria or even Insanity. You might just as well give a man Pneumonia, or break his leg, for the purpose of studying the consequences.

Secondly. Shower-baths were ordered to be given every morning. The bracing up of the mind to the shock of a cold shower-bath is a capital exercise of the will. In summer it is most suitable; and I dare say you remember last July a farmer's daughter whom our late house-surgeon, Mr. Ash, sent up from Cornwall with absolute Paraplegia of both legs, which was attributed by her friends to witchcraft. It was due to Hysteria; and she was ordered a shower-bath twice a day, with the effect of enabling her to walk one day to the Pantheon, and another round the Serpentine, before she went home cured. In winter, however, such a prescription is rather a strong measure; and it is usually better to prepare the patients for it by the use of a tonic warm bath, such as the following, which you often see me order.

R. Acidi Hydrochlorici diluti ℥iiss ; Aquæ calefactæ ad 95° Fahr. Congios xxx. M. Fiat Balneum.

Shower-baths have also a beneficial influence by arterialising the cutaneous circulation. Their immediate effect is to drive the venous blood home to the heart and lungs ; and that which takes its place is arterial, as every one knows who has reflected on the pink cheery glow of his person while drying himself after this morning luxury.

Thirdly. Valerian was ordered to be taken three times a day. There are several substances which have a special action on those nervous functions which serve the emotions. They come from different kingdoms of nature, and agree in no one point except in having all a very strong odour. The essential oils of certain plants which are the pride and profit of the perfumer, the Rose, Bergamotte, Tuberose, Violet, Hyacinth, and some others of the few sweet scents that exist in the world, are poisons to all with a tendency to Hysteria, and are proscribed by universal consent of fashion in all places where the disease is endemic. In Rome, you would as soon think of entering an evening party with a drawn sword as with a strong-scented bouquet. Tea is equally injurious, and the bad effect seems to reside rather in the essential oil than in the alkaloid which it contains ; for Coffee, which is as rich in Theine, is by no means so noxious. On the other hand, the bracers-up of the nerves would seem to have received this good gift in recompense for their peculiar offensiveness in the raw state to the healthy nose—Valerian, Assafœtida, Garlic, Castor, Musk, and I believe some others whose disagreeable virtues are not familiar to me. The two first are the best ; as, though Musk is very beneficial, its high price and the intolerable permanence of its odour renders its use inexpe-

dient. Thus, in hospital, you will generally see me ring the changes upon the following prescriptions.

R *Tincturæ Valerianæ compositæ* ℥j; *Infusi Valerianæ* ad ℥j. M. *Fiat haustus ter vel quater die sumendus.*

R *Assafætidæ* gr. x in *pilulis ter die sumenda.*

R *Spiritus Ammoniacæ fætidæ* ℥j ex aquâ *ter die sumendam.*

But, in private practice, more *recherchées* substitutions can be made to suit the patient's fancy, such as—

R *Tincturæ Castorei Ammoniatæ* (*Pharm. Dub.*) ℥ij; *Aquæ Fœniculi* ad ℥j;

or—

R *Pilulæ Galbani compositæ* gr. x;

or—

R *Zinci Valerianatis* gr. iij;

One or other to be taken three times a day.

You will remember, I hope, that drugs, however powerful, can never take the place of other treatment. They are merely an aid and a means by which the essential principles of Restoration may be carried out; but if they be trusted to empirically, if the *disease* be prescribed for and not the *patient*, failure will attend your best efforts, and a disappointed scepticism haunt you in or drive you out of our God-like occupation.

The next case is an instance of Hysteria exhibiting a more material ailment from a more material cause.

Maria E., a muscular matron of forty-two, was confined of her eleventh child nine months ago, and had gone on letting it suck till her admission into St. Mary's. Very little milk there was for it indeed; and the only use of the nipple must have been as a

sort of moral opiate. However, by dint of other food the baby has grown fit to be described as a "beautiful fat" one; but the mother has been severely punished for her violation of common sense. Four months ago she was taken with a succession of fits, which drew her arms and legs up in convulsions, and deprived her of her voice. She was sometimes quite paralytic, and sometimes lost her senses, but never bit her tongue. Then she became afflicted with Dyspnœa, which even now, as she lies in bed, is troublesome, and cuts short her discourse, and is constant when she is up. Her appetite is quite gone, so that she cannot bear the sight of food. She has also excessive pain in the left hypochondrium, which quite doubles her up, and does not arise from flatulence. The catamenia have returned at their proper periods, in spite of the illness induced by the too persevering attempt to suckle the child.

You may observe here again the hysterical eye, with large pupil, clear sclerotic, full upper eyelid, and look of appeal for sympathy. This time it occurs in a brunette, and in a woman whom, but for this, you might pronounce a stern, strong-minded character.

Now the treatment here, you will observe, is different from the last. She was ordered as medicine—

R *Tinct. Cinchonæ* co. ʒj; *Decocti Cinchonæ* ad ʒj.
Fiat haustus ter die sumendus.

She was kept quiet in bed, and desired to take a cup of limed milk every two hours. I looked upon the chain of causation in this case as arising thus—(1) exhaustion; (2) imperfect gastric digestion; (3) Anæmia; (4) innutrition of nervous system, and the consequent exhibition of its weakness in hysterical phenomena. And I considered that the easiest chan-

nel by which to commence the renewal of life was the stomach. It would have been useless to load the poor organ with a quantity of heavy victuals, which it could only have relieved itself by rejecting. But frequent small amounts are not beyond its powers; and, if you give these as medicine, the patients will not think themselves at liberty to choose or refuse, as they do food. Medicine indeed it is; for it is intended to cure the stomach of its anæmic, inert condition, and thus to give an appetite. The Cinchona is designed to have the same effect, by bracing the surface of the mucous membrane, restraining its secretion of sticky mucus, and thus allowing the gastric juice to reach the food. And you see that between them the effect is produced; for, as we went round to-day, the patient said her desire for food was returning, and volunteered a request for meat. The pain in the splenic region is much better, and the Dyspnœa vanished.

Wonderful is the power of the stomach! When in its right senses, what a restorativist physician it is! By the aid of our patients' stomachs alone we can cure nine-tenths of the curable cases of disease. Surely, then, it deserves our gratitude and attention. Persius dubs it a "Master of Arts;" I would give it the degree of "Doctor of Medicine."

Another case of Hysteria with a traceable bodily cause was admitted on the same day.

Maria D., a single woman, aged thirty-two, is a maid-of-all-work in a light easy place, where she has been for seven years. She has usually enjoyed pretty good health, except for occasional headaches; but for some time lately things have seemed to annoy her more than they ought to do. Three months ago, she had a bad "bilious" headache, which was followed

by some fits of laughing and crying. Five weeks ago she had an attack of Diarrhœa, from which she got better, and went to work again, though feeling weak, as she did not like to let her mistress want her. However, she no sooner tried to clean a grate than she fell down speechless, and had a succession of hysterical fits, losing her senses, but not biting her tongue. Then she began vomiting everything she took, and this had been going on for three weeks before admission, and seemed to amount to a complete rejection of all her food immediately it was swallowed. When we saw her, there was excessive flatulence, the air bursting up from the stomach in roaring eructations while you were talking to her.

In this woman, the effect of the wide pupil and sympathetic Hemiptosis is not concealed even by the disfigurement of blar edges to the eyelids, and quite accords with the droll earnestness of her manner, increasing gradually as you let her go on talking about herself, which leaves no doubt of her strong hysterical diathesis.

As to cause, that is still more directly traceable to the stomach than even in the last case. It appears that for some years she has been becoming more and more attached to tea-drinking. She confesses to caring for little else, so long as she can get her favourite food or physic—or poison—I do not know exactly how to designate it. Her mistress was quite angry with her for eating so little meat; and, with a far-sighted economy not common in her class of life, was evidently desirous of keeping up the health of a faithful servant. But the debilitated stomach refused meat, and she was literally starved in the midst of abundance.

In this case, diet will be the cure. When we can make our patient a carnivorous animal again, she will

be all right. But what is the use of diet or medicine when it is all thrown up? With this feeling, at the same time (Nov. 1st) that I ordered her limed milk every two hours, I prescribed also an enema of half a pint of mutton broth four times a day. On the 5th, about half the liquid swallowed was retained, and she complained that the anus was made sore by the enema. It was therefore omitted, and the power of resisting nausea was aided by four minims of Prussic Acid every four hours. On the 7th, she vomited scarcely at all, and said she would try and keep down a piece of meat. This she has continued to do, and may be considered as convalescent.

Hysterical vomiting is a very troublesome affection—more so, perhaps, than any other manifestation of the diathesis; for the usual entrance for your means of cure is barred against you. I say designedly “barred,” because really the articles swallowed do not get into the stomach; they are not in strictness, *vomited*. There is, in fact, a spasmodic closure of the œsophagus, with irregular dilatations; and the phenomena of rejection are similar to those of œsophageal stricture. For this reason, the emaciation is not so great as in cases where the stomach is emptied by true chronic vomiting; for, though thrown up immediately, and to all appearance completely, yet in reality some of the matters swallowed slip through the spasmodic grasp, and keep up the nourishment of the body.

You need not, therefore, be in so much alarm about hysterical vomiting as the symptoms would at first appear to justify. The patient will not be starved so soon as the friends expect, and there is plenty of time for your judicious treatment to act.

In this form of Hysteria, as in those with more mental manifestations, a change of scene and habits

has a marked effect, even although the present circumstances are not deleterious. I do not think you would have seen such a rapid cure of this woman at her own home. I had a whimsical instance of this in an unmarried lady aged 19, who was sent up to me by Mr. Ayres of Ramsgate. After a preface of Hysteria, she had had daily rejection of food for six months, sometimes of everything taken, but always unchanged, so as to show the vomiting to be œsophageal, not gastric. Soon after she came to London, she got well. She returned to Ramsgate; and, being frightened by a chimney on fire, was taken with her old vomiting again. She returned to London; and the same day, without any remedy, the vomiting ceased, and she swallowed everything easily. It was the most "*veni, vidi, vici*" cure I ever saw.

Not but that care and decision will enable you to be victorious sometimes even in cases where removal of dwelling is impossible. Mr. Woodhouse of Hertford called me in to see a case of vomiting in an hysterical young married lady, where, either from misplaced catamenia or congestion from straining, blood was thrown up in considerable quantities. We succeeded in entirely removing all food, and in feeding her with beef-tea enemata for a fortnight, after which she gradually got back by the steps of spoonfuls of milk to ordinary diet, and recovered completely. But Mr. Woodhouse quite tired himself out by the care and vigour he had to exert to get this plan carried out. Several times we were almost reduced to despair of success. You must prepare for a course of decisive and sometimes unrequited labour in managing such cases.

The conclusions to which I have endeavoured to lead you by aid of the three patients under your eyes are—

1. Hysteria is a disease (a word which I always use as synonymous with deficiency of life) as much of the mind as of the body.

2. In some cases the mental, in others the bodily phenomena predominate.

3. The predominance of one or other must be our guide whether moral or physical agents are most required in the treatment.

4. The aim of the moral treatment must be the teaching our patients to exert their will; and that is best done by a change of habits and scene.

5. The organ which aids us most in our physical treatment is the stomach.

LECTURE XVIII.

SCIATICA.

Anatomical pathology of the disease—Case of Rheumatic Sciatica—Rokitansky's description of the morbid anatomy of Sciatica—The disease a local one—Therefore requiring local remedies—Case of Gouty Sciatica—Relief from cupping—Peripheral pain sometimes more lasting than central disease—Sciatic Paralysis of Bladder—Case of Anæmic Sciatica—Local treatment first requisite—Use of Iodide of Potassium—And of Quinine—Other forms of Sciatica—Other remedies besides those illustrated—Deductions and reflections.

(January 26th, 1861.)

THREE of my patients now under your eyes in the wards are indexed as cases of "Sciatica." The term is not a strictly pathological one; for it no more describes the essential nature of the disease than the words "Head-ache" or "Stomach-ache." Like them, it denotes the anatomical locality of the symptom, and is applied to painful affections of the great sciatic nerve, whatever their nature or cause may be.

It will impress upon your minds several points in their pathology and treatment, if I recall to you a few points in the anatomical relations of the parts affected. The sciatic is the largest nerve in the body; therefore, even slight interference with it may be expected to be severely felt. It is formed by a union of the sacral

nerves; which, inside the pelvis, (forming the sacral plexus,) are covered on the left side by the rectum, and on the right side are in close proximity to the cæcum; hence, it is very liable to be influenced by the condition of either of these portions of the intestinal canal separately. It is covered by a strong fibrous sheath; and may be expected to experience morbid states which attack such membranes. It supplies motion as well as sensation to the lower limb;—and therefore loss of muscular power often follows its loss of vitality. Inside the pelvis, branches are sent from the sacral plexus to the bladder and other pelvic viscera;—you will, therefore, not be surprised to find in Sciatica occasional Paralysis of the bladder. After it passes beyond the border of the pyriformis muscle, it lies nearer the surface than any great nerve, and it goes straight from one of the warmest berths in the body to one of the coldest;—so it is easily affected by changes of temperature.

The first case which I shall mention is a good instance of the last-named fact. The affection is strictly local and pretty recent, and is clearly traceable to a local change of temperature acting on this part of the body alone.

Case 1.—Henry T., aged 28, a night patrol, of temperate and regular habits, was admitted January 14th. He was quite well six weeks ago, when he got wet in the saddle several days running, and had his buttocks and thighs much chilled. This was followed by cold and shivering, but no particular pains in the limbs. Suddenly, while grooming his horse, he was seized with pain in the hip, which made him lame, but did not quite lay him up. He continued, with the aid of a stick, to walk his beat. One day, and one day only, before Christmas, the pain quite went away;

but, with that exception, it became worse and worse. Since December 29th, he had been laid up, unable to stand, so bad was the pain; and he had had Croton oil rubbed in externally, Mustard poultices, and Blisters, without the least relief. On admission, the tongue, pulse, and action of the bowels, were reported natural, the urine clear. The situation of the pain, as indicated by one finger, was the exit of the sciatic nerve, and pressure on that spot much increased it. He described, also, a pain as situated deep in the pelvis, indicating it as lying at the back of the groin.

There is here a purely local disease, requiring local remedies. The morbid anatomy of it I cannot describe from any observation of my own; none of us possibly ever have seen, or ever will see, the necropsy of a person who dies during Sciatica; it is not itself fatal, nor does it accompany fatal diseases. But Professor Rokitansky describes the sheath of the nerve as filled with a yellow gelatinous fluid, and as having its blood-vessels injected. This is just what you find in the rheumatic inflammations of other fibrous parts, and what a general knowledge of pathology would teach us to expect; and, therefore, I fully believe it is the unseen state in this and similar cases. It is a local disease, requiring, therefore, local remedies. You will say, it has been so treated in this case, and it has not got well. True; but the remedies were, for all that, of the right sort; perhaps not quite powerful enough, and, moreover, not quite local enough. What does that pain deep-seated in the pelvis mean? It shows that the sacral plexus is affected, as well as the trunk of the nerve; that the remedies must be applied to that part to have their full effect. Such, I take it, is its meaning. Now, applications to the skin of the hip and thigh are a long way off the sacral plexus, and

you would not get much nearer by placing them on the groin. You can, however, get close to, indeed, quite on, the seat of action, by remembering how the plexus is overlaid by the rectum. His former treatment, Mustard poultices, Blisters, and Croton oil, would rather puzzle that part certainly; but you can use an allied remedy, Turpentine; and you can introduce it to the pelvis either by enema or by the mouth. The former method is, perhaps, the most direct; but I have preferred the latter in this case, for the mutual convenience of nurse and patient. His card records the following treatment:—

Jan. 14th. R *Olei Terebinthinæ*, *Olei Ricini*, *Mist. Acaciæ*, \overline{aa} \mathfrak{zss} ; *Mist. Camphoræ* \mathfrak{zj} . *M. Fiat haustus mané sumendus*.

Jan. 16th. *Repetatur*. 19th. *Rep*. 21st. *Rep*. 24th. *Rep*.

So that, in all, five doses of Turpentine have been taken. On the 16th the pain in the hip was much relieved, but he had a little Strangury during the action of the Turpentine. On the 19th he said he felt better after each dose, though the pain returned. The Strangury was much less than at the first dose. On the 23rd, the pain was not felt during the day “a third as bad as it was.” He could cross one leg over the other in sitting, and could walk without pain. But you will have observed he still walked lame, and spoke of a kind of numbness running down the thigh. This is a slight paralysis very usual in Sciatica, arising from the pressure of the swollen sheath upon the nerve. He said the deep-seated pain in the pelvis was gone. You will find the treatment here ordered the most effectual in removing the local condition of the part affected in Sciatica.

To-day (the 26th) he walks quite easily. But, un-

fortunately, the Turpentine, not having sufficient employment in doing good, has taken to doing mischief, and has brought on Strangury again. He has had two grains of Opium as a suppository, which has relieved it to a certain extent; and, instead of continuing the Turpentine, I have ordered him to be cupped to four ounces on the hip.

Case 2.—Francis B., aged fifty-three, has no occupation now, but formerly did a business of £1000 a year, and had a famous constitution. Wealth and health were lost through self-indulgence in eating and drinking. He had Gout thrice in one foot, and once in both feet, twenty years ago. Poverty made him temperate, but again two years ago he had some money left him, and “drank it out,” being only stopped by a severe attack of Epistaxis. Since then he has not exceeded, but still had a twinge of Gout six months ago. After this he was quite well till six weeks ago; at which period, after having felt for three days pains flying about him, he was attacked, whilst quietly sitting before the fire, with a stabbing pain in the back and left hip, so bad that he was obliged to go to bed. It has lasted ever since, and he has generally kept in bed; as, though he can hobble along without actual pain, he is in constant fear of it. All through this illness there has been a difficulty in voiding his urine, and the bowels have been costive. He has been under medical treatment all the time, and has taken Bark and Quinine in large quantities, and has had Blisters on, without being at all relieved. On admission, the tongue and pulse were natural. On examination of the hip, the pain was found to be situated midway between the great trochanter and tuberosity of the ischium; and in this part there was great tenderness on pressure, and fear of its being touched. There was

pain also running along the outside of the fibula, but not in any intermediate place.

In this case you have seen a different cause for Sciatica—namely, Gout. But whatever the cause, the local condition of the nerve is probably much the same, and is better for local treatment in all cases—indeed it is rarely cured without local treatment. The remedies given here have been pretty active; the patient was admitted on the 11th, and between that date and the 26th he has had five half-ounce doses of Turpentine, and has been cupped twice to six ounces. For four days he was allowed, as an experiment, to have every night fifteen grains of Dover's powder, which I reckoned the Turpentine would purge off safely next morning. It did not make him sleep, or appreciably relieve the pain, so it was left off; for I do not like opiates in Sciatica, as a rule. He had less pain on the night after it was left off.

On the 18th he said he had experienced great relief after the second cupping. Take a hint from this—your second cupping will often confer much more marked benefit than the first.

“He felt pain in the lower part of the leg, but not in the hip unless it were touched.” You will observe that where there is pain in the periphery of a nerve, arising from disease in its trunk, the peripheral pain will often last longer than that which is at the real seat of injury. Take care to retain this fact, as it will often prevent you throwing away uselessly on the branches those remedies which should be applied to the trunk.

On admission, the patient accused the bladder of some want of power. I have seen this before in Sciatica; and I believe it arises from the vesical branch of the sacral plexus being affected, and therefore shows that the morbid condition has penetrated into

the interior of the pelvis. If it really arise from that cause, and not from any old Stricture, you need not be afraid of causing Strangury by Turpentine. You will have seen in this case the drug doing no harm; and, on the contrary, relieving the symptom which arose from a torpid condition of the bladder.

On the 23rd, he bore pressure on the sciatic nerve and walked and moved the limb without fear, though with a certain loss of power. He had remarked several times, that though the pain was relieved after each cupping and dose of Turpentine, yet it returned before the next. The cause of the disease, the gouty crisis, remains, and must be treated, or else he will have his Sciatica back again. He is therefore ordered—

R *Vini Colchici* ℥xx; *Potassii Iodidi* gr. iv; *Mist. Camphoræ* ℥j. *M. Fiat haustus ter die sumendus.*

Case 3.—Sarah B., aged nineteen, an anæmic maid-of-all-work and sempstress, with her face and shoulders covered with black-heads (*Acne*), was admitted January 11th. She has had occasional pain in her hip three years. It came on first when she was out of place, and had frequently got wet in her feet. She has often had pains flying about in her limbs, but has never been laid up with any distinct attack of Rheumatism in her hands or feet. She has been always pale, and liable to cough. Her bowels are costive, and her appetite bad. She is very subject to pain in the epigastrium at night and after food. She became lame from Sciatica a few days before Christmas, and took to her bed during the last few days of the year, because the pain got so much worse. She has been an out-patient at the Hospital, but does not appear to have attended regularly; so that Dr. Sieveking, under whose care she was, sent for her to come in. On

admission, her tongue was clean; the pulse was 92, and weak, the urine pale. The catamenia were stated to be always regular, except for three months when she was first ill, three years ago. She has occasional Leucorrhœa. The seat of the pain was clearly indicated by the finger to be the sciatic nerve, and not the hip-joint. The heart and lungs seemed quite healthy.

Here is a cause for Sciatica the very opposite of the last; that was from eating and drinking too much—this, from eating and drinking too little. Indeed, in a further page of the report, the girl says that “the pain sometimes entirely goes away, especially after a good dinner; but always comes back again, especially at night.” But though insufficient diet has been the cause of her illness, yet full diet alone would not restore health. In point of fact, however much she may swallow, she cannot really eat, that is digest, enough. This is shown by the want of appetite and peculiar Dyspepsia; which she describes as causing weight at the epigastrium, and inability to lie on the left side. The local disease required treatment first; she was cupped once to four ounces and was purged with Turpentine; and had four grains of Iodide of Potassium three times a day. Five days after admission, it is reported that “the pain in the thigh is less than it was, and she is improved in every way.”

On the 23rd, she expressed herself as still better, and was walking about the ward. She was put on Quinine and Iodide of Potassium.

The last-named drug I intend to act locally when I give it in Sciatica. I intend it to promote absorption of the yellow gelatinous fluid which is effused in the sheath of the nerve, and which keeps up lameness by pressing upon it, just as you numb your finger by

pressing the ulnar nerve. Iodide of Potassium has a very peculiar restorative action on the vitality of the white fibrous tissues, whether they form tendons, sheaths of nerves, or periosteum; as you may see daily in those parts when they have been injured by the poison of Syphilis. For I do not suppose there is any syphilitic taint in this case to be benefited by the Iodide.

Nor, though I give her Quinine, do I think that the disease is of malarious origin.

Yet Syphilis and Malaria do sometimes produce Sciatica. The syphilitic form is of the same nature as periosteal nodes, and it is undistinguishable in local effects from rheumatic, gouty, or anæmic Sciatica. The malarious form is purely neuralgic, and I do not think it can ever be accompanied by effusion. It is distinguishable by its complete intermittence, and, as far as my experience goes, is rare. The patients usually have some other development of the Ague-poison, which will help you to a diagnosis.

Sometimes there is a dull kind of pain running down the course of the sciatic nerve in persons with sluggish, costive bowels, which, unlike the forms I have been describing, is not worse at night, but neither in the day is it attended by paroxysms of agony, and it is not much aggravated by local pressure. This kind of Sciatica depends, not on the state of the nerve or its sheath, but on an unhealthy sluggish condition of the lower bowels. When on the right side, it is due, usually, to accumulation of faeces in the cæcum; when on the left, to Piles in the rectum, and the consequently congested state of the blood-vessels. It is not made worse by exercise; indeed, I think it gets well sooner when the patient is obliged to move about. And for this reason you do not see examples of it in

the wards, for it is better treated in the out-patient department; whereas, in the cases with which I have been illustrating the subject, absolute rest is essential.

I do not like in clinical lectures to speak of the treatment of forms of disease not at the time under your notice, and, therefore, I will not say more about Malarious, Syphilitic, and Costive Sciatica. But I think it will be useful, in reference to the three cases you have been watching, to notice a few remedies which might have been given without glaring mal-praxis, but yet which I do not think *the* best under the circumstances. In the first place, Sedatives might have been considered desirable; and you will find in books a long list, commencing with Opium, of those which have been administered in Sciatica. The very length of the list shows how people have been disappointed with the action of one after another; and my own experience is, that the benefit from their use is temporary, fallacious, and obstructive to the final cure. The only one thoroughly unobjectionable is the external application of Chloroform. Blisters and Acupuncture are remedies of similar intention to those which I have prescribed; not quite so powerful, but equally rational and proper. Plasters are of no use during the acute stage, but when the patient is getting about again, they are a useful defence against the cold. Let them be spread upon stout soft leather; for it is the leather, not the "*Emplastrum*," that does good, and any kind that will stick tight answers equally well. Of Electricity and Baths I have no favourable experience to tell. I have never seen them of use to the local disease after those which I have mentioned have failed; though I daresay mild cases may be relieved by them, as also by numerous other expedients, with a recital of which I need not detain you.

When you have once established in your own minds that one particular form of treatment is the most effectual for a particular class of cases, do not continue to retain in your armoury, to be used for that same purpose, the weapons which it has superseded. You merely burden your memory and confuse your judgment by so doing ; and you throw in your own path a temptation to wavering. New weapons try by all means, if they offer reasonable prospects of succeeding ; but reject all which have fairly proved themselves failures.

At the same time do not be too ready to adopt as fixtures any pet plans of medication. Let them be fixtures for the time, but prepared to make way for better when they fail to do all that is justly asked of them. Then let their conquerors occupy the same post under the same conditions. Thus will our art advance.

The most important moral which I would draw for the principles of medicine from the treatment of Sciatica is this : to treat local diseases which require destructive agents with remedies as local as possible. Do not call upon the body at large to make sacrifices for a small member, if you can by any means avoid such sacrifices. This rule applied to the administration of Destructives is directly antithetical to that which should guide us in the use of Constructive agents, where we should prefer in every instance constitutional to local action. Remember that in the first case we are doing harm for the sake of future good ; in the other we are doing general good for the sake of particular good.

LECTURE XIX.

MORTIFICATION.

Complete death of a part, contrasted with Nekrobiosis
—Case of mortified toes from cold and senile arteries
—Treatment explained—Preservation of dead tissue
from decomposition—Defence of weak vessels—Food
—Appetite—Action of oxygen on sore places—
Carbonic Acid the normal atmosphere of internal
parts—Superiority of Nature's surgery to man's.

(June 21st, 1862.)

THE greater part of the Lectures I have given you have been taken up with those forms of partial interstitial death, those mixtures of half-life and half-death in the same substance, which constitute morbid actions. Schulz calls them "Nekrobiotic processes." I wish now to call your attention to complete death—"Nekrosis."

I do not mean complete death of the whole body ;—I said the few words I had to say on that head in my introduction—but complete death of a part, the general life remaining untouched.

You had an excellent example on which to study this phenomenon in an old man who was in the wards for the first five months of the year with mortification of the foot.

The case is as follows :—

G. B., aged 66, is a cowman of respectable religious habits, living very temperately on small wages, seldom eating meat, and still more seldom taking beer or any

alcoholic drink. His health has been uniformly good, though he has felt for the last twelve months or so not quite so young as he was, and you may observe an *Arcus Senilis* round the iris. In the second week of last December he got a severe chill by being for several hours in wet clothes. He had then much pain in the left foot, and he observed that it was swollen and that the nails were livid. This passed off when he had lain up for a few days, and then he went to his work again. But afterwards, at Christmas, he got wet, and the pain in the foot and ankle came back. On looking at it he found all the toes above and below and their balls quite black, the blackness reaching about half an inch beyond the balls in towards the hollow of the sole. Sensation here was quite lost, the whole foot and ankle were swelled, red, and very painful, the pain extending up the inside of the leg. In this state he came into the Hospital on January 3rd. His appetite then was quite gone, the tongue was smooth and clammy with a brownish centre, the pulse large and empty with the sharp stroke usual in old age. Nothing abnormal could be detected by auscultation in heart or lungs.

He was laid in bed with the foot raised above the level of the body. The leg was wrapped in cotton wool, and kept warm with a hot bottle. The swelling went down, and circulation returned to the ankle in a week. An offensive smell being perceived to ooze out from some weeping cracks between several toes, the foot was kept in charcoal powder. When after two months the gangrene began to separate at the edges, a fermenting yeast poultice was applied night and day. For three weeks he had "Teacup diet," *i. e.* a teacup of beef-tea or milk every two hours, from four to six ounces of port wine and bark. He then recovered

appetite, and ate meat largely, going on with his wine. At the end of May he went out, having lost the last phalangeal bones and the cellular tissue from each toe, some from the sole of the foot, and his old nails. But new deformed nails are growing.

The object of this treatment you may readily conceive was not to restore life to the completely mortified parts, but to the mortifying tissue in their neighbourhood. Our mission is not to raise the dead, but to heal the sick.

The only attention which I paid to the destroyed portions was to keep them from putrefying, and to keep them attached as long as possible to their parent foot. You may perhaps say, "Why, like Mezentius, tie the living to the dead in hateful union? Why not rid the patient of what he can never use again?" There are several objections to such a trenchant course of procedure. In the first place, your rough hand would root up the wheat with the tares, and could hardly avoid cutting away much tissue capable of regaining perfect vitality. Secondly, the wound would still further render inefficient the degenerated blood-vessels which were the origin of the disease; they would be unequal to the task of healing up the sore, and further mortification would be likely to ensue. Thirdly, there is no better defence of the dying tissue against external injury than the dead tissue which exactly fits on to the place, and excludes the air more thoroughly than any plaster ever invented. There must, however, be this proviso, that it does not get decomposed and fetid, so as to be a nuisance by its exhalations.

With the view of securing this preservation from decay, we adopted precisely the principle on which meat is preserved for food—we kept the tissue from

air, we kept it from moisture, and we salted it. The foot was carefully wrapped up, first in cotton wool, and then in charcoal powder. But moisture at last began to soak out from the inside, and the parts got podgy; then I used salt and Muriatic Acid, which acid, uniting with the soda of the serous exsudation also formed brine, and assisted in hardening the tissue.

So much for forming what I conceived to be the best mechanical protection to the weak, half-dying blood-vessels and nerves in the neighbourhood of the dead. Half-dying as they were, we were requiring of them extra work, even the growth of new connective tissue, new skin, and a scar—in fact, all we could get out of them. Urgently needful, therefore, was this protection.

Let us do all we can to save them their ordinary work. With this view the foot was kept absolutely quiet, and raised above the level of the heart; so that at all events it might be spared the exertion of the usual elastic force in the vessels to resist the gravitating blood; at the same time the defective animal heat was reinforced by a vessel of warm water always retained in close neighbourhood.

And let us lay in good store of the materials for new tissue. Food was administered every two hours in small quantities and in a liquid form, for his stomach turned at the notion of eating. Bark was prescribed, and a daily dose of Wine. The desire was begotten by the gratification of it, and gradually the appetite rose; so that not only did he relish "Ordinary diet," but, before a month was over, asked for an extra allowance, in spite of being unused to meat, and in spite of having no exercise or any of the usual calls for nutrition in muscular exertion. Remark here that you must not wait till a sick body *asks* for nourish-

ment. The instinct, or corporeal reason, is overclouded by the sickness, and the spiritual reason must think for it. As life returns, so returns the vital desire, and thankfully confesses the justice of the martial law established by its conqueror.

As the new tissue grew it refused to be allied with the now foreign substance overlying it; the former kinship was disowned; it was no longer bone of its bone, and flesh of its flesh; and so there was a separation at the edges of the black mass, and some of the new birth was laid bare. A hurtful and abnormal state of things is thus introduced; it is most unnatural for tissue to have to grow exposed to the sharp influences of oxygen—the “biting bitter air,” as poets call it. Where oxygen is intended to touch a living surface, that surface is closely clothed in skin or mucous membrane. A fluid saturated with carbonic acid is the healthy atmosphere of an inside part, and thick darkness its light. So we restored as far as we could the conditions of growth and healing; we covered up the part with a fermenting poultice of yeast, which was continuously giving out warmth, moisture, and carbonic acid. Under its influence the restoration went on prosperously.

I believe an atmosphere like this of carbonic acid would be exceedingly useful in all cases of wounds, and that it is from its production that internal lesions, as a rule, heal so much quicker than external. The instinctive surgery of the dog leads him to cover his wounds with saliva and warm breath, and I do not think man can do wrong in learning of his mistress, Natural experience. But as a physician, I have no opportunity of putting the principle into practice.

In the fourth month the soft parts, the connective tissue and muscles, gradually rotted off, like the flesh

of the corpses watched by the concubine of Saul and by M. Devergie.* And then you were able to see the full advantage gained by the conservative practice. Had a knife been used, nobody would have thought of removing less than the terminal phalanges of the toes at the very least. They all looked black and dead. But what do you see here? The pads of the toes have rotted off, the bones have necrosed and dried up into light, brittle, brown sticks, which are being gradually separated. But on three of the toes, nails are growing!—distorted, indeed, and not ornamental, but still true nails. A rough and ready ignorance would never have thought of leaving the little bits of nail-matrix, which have grown on and given birth to those defences so essential to comfort.

I have given part of a clinical lecture on this man's case perhaps to the surprise of some, who will cry "*ne sutor ultra crepidam*." I was anxious, however, to point out to you that I place no limit to the application of Restorative principles. In surgery as much as in medicine, the thing mainly to be considered and treated is the living part, not the dead part—the normal functions, not the abnormal—the health, not the disease. Mark what is wanting, and what is left whole; supply the former, and use the latter. Make your chief end of ends, "the Renewal of Life."

* See illustration at beginning of Lecture II.

LECTURE XX.

THE IMPORTANCE OF THE DIGESTIVE ORGANS IN
THERAPEUTICS.

Disease of digestive viscera affects the whole body—Instances, Tuberculosis—Degeneration—Mental disease—Gout and Rheumatism—Digestive viscera the chief recipients of remedies—Not only of constructive, but destructive and arrestive remedies—Effects in disease of healthy and unhealthy digestion—Importance of replacing destructive by the aid of constructive action—Instance in bleeding—Digestive tract single.

(April, 1862.)

I AM anxious that you should be properly impressed with the importance of the digestive viscera to the cure of disease. The result of every case, surgical or medical, depends almost entirely on how far, wisely or foolishly, these organs are watched over, and whether they are well or ill treated, either by the scientific prudence of the skilled physiologist, the empirical rules of the routine practitioner, the tradition of the nurse, or the instinct of the patient. Each and all of these may be a useful guide; but where there is a difference of opinion, I should prefer trusting to the first, and so does the public, except when in a fit of obstinacy or prejudice.

It is my endeavour to give to the attention which I trust you will bestow upon the functions of these

organs, the rock-laid foundation of prescient science, and not the sandy support of mere empiricism.

To an unhealthy state of the digestive viscera, physiology enables us to trace, by distinct steps, several morbid conditions not manifested in the organs themselves, but affecting the whole body. Take for example the very visible, very fatal, and very common condition, Tuberculosis. One cannot fail to connect both empirically and rationally this state with deficient supply. Among whom is it most frequent? Among those who have either not enough to eat, or those who from imperfect assimilation are unable to convert into blood what they swallow. The starved fluid does not sufficiently stimulate the vitality of the body, connective tissue is removed by metamorphosis, and its place is supplied, not by new healthy connective tissue, but by that cheesy semi-vitalized substance we call "tubercle."

The next most frequent material cause of disease in the anatomical structure of the body is Degeneration. By birth it is closely related to Tuberculosis. The unrenewed effete particles remain as fat in the tissues; and so you get softened and dilated hearts, fatty liver, Bright's kidney, atrophic softening of the brain, Apoplexy, &c.

To the same cause may be traced an obscure inefficiency, rather than disease, of mind, very common among our chronic invalids and habitual patients. They complain that they awake in the morning, not only unrefreshed by sleep, but seemingly more tired than when they went to bed. They have an unaccountable despondency and carelessness about the future, accompanied by a conviction that something or another unfortunate is going to happen. They have no power to prevent this; and they are not sure

that they would exert the power if they had it. They drag their languid limbs to their daily task unwillingly, but feel quite unable to do anything as they ought. The figures get confused as the merchant adds up his ledger; the clerk remembers he has an important duty to perform, but cannot call to mind what it is; even the light labours of daily housekeeping are a heavy burden. A morbid dislike to the idea of food causes the attractions of the family meal to be simply repulsive. Sleep is sought, but is broken by painful dreams, or fidgets, or wakefulness. If there is any innate or hereditary tendency to insanity, now is the time when it is developed; spectral illusions, derisive, tempting, or foolish voices, half deceive, half irritate the victim; and he is fortunate if he is saved from crime or a lunatic asylum by the curable source of his unhappy state being correctly ascertained. But if there is no previous tendency, the mental miseries may go on for years and years without producing any real unsoundness of mind. Without any further symptoms even than these you may be safe in referring the *origo mali* to the digestive canal.

There is also a suspicion that some acute diseases of the fibrous tissues, such as Gout and Rheumatism, may be due to imperfections of the digestive organs. In them an organic acid, uric or lactic, and perhaps others yet unnamed, are found in pernicious excess over the alkalies; and, as acids are certainly formed by the decomposition of the food, and one of them (the lactic) especially, in great abundance, it is presumed that the cause of the malady resides in the viscera which contains the food during digestion. This idea that the digestive organs are to blame for Gout and Rheumatism is of very old date; yet it must be confessed that the evidence for it does not increase;

and it remains, as of yore, a strong presumption, waiting to be confirmed by a physiological tracing of its steps.

Whatever value we may attach to the evidences of the dependence of diseases on the digestive organs, it is very clear that we look to them for relief from those diseases. Out of the six or seven hundred forms of drugs in habitual use, very few indeed are not occasionally offered to the stomach for acceptance, and an overwhelming majority of them are adapted for use only in this way. If we are still to employ this time-honoured agency in our attempts to cure bodily ailments (and I see no threatening of a change at present), it is surely a matter of great interest to secure the active working condition of the stomach. It is waste toil to try and enter locked doors.

Let it be observed, that it is not constructive medicines only, not alone aids to the normal work of the alimentary canal, that we try to put in through its walls. We look to it also to take up those whose agency is, physiologically speaking, the direct converse, whose effect is that of augmenting destructive metamorphosis. We call upon the bowels to absorb Calomel as readily as Bark and Wine and Oil. We shall find it then of equal importance to have them in a normal state when our aim is destruction, as when it is construction or arrest.

When a sudden poison or Paralysis has fallen on these gates of entrance, our hands are paralysed too; the staffs we lean on fail us. What buckets of physic used to be poured through the half-dead bowels in Cholera! It might just as well have been thrown at once into the night-pan—its ultimate destination if the patients lived long enough. They did not always do so; for I once found a drachm of Ipecacuanha, which had been administered three hours before death,

safe in the stomach, where it had produced no vomiting, and had not been moved towards the pylorus. And Calomel pills, and Calomel powders, and Opium, and Cayenne Pepper, were a frequent ingredient in Cholera stools at the same period. Indeed, I believe that ninety-nine hundredths of the drugs swallowed in the stage of collapse followed the same fate, or the patients would not have survived the poisonous doses.

But it is when reconstruction is the immediate object of the remedies sought to be administered, that the importance of the digestive organs is most obvious. Mark the difference between two consumptive patients taking Cod-liver oil. One, whose digestion has been carefully brought into a healthy state, swallows it in large quantities, at any time of day you please, complains of no inconvenience, enjoys life, and does credit to the doctor, laughs and grows fat. Another, in consequence very likely of some easily removable cause, nauseates the smallest dose; if, in spite of instinctive repugnance, it is forced down, it gets rancid; fetid painful eructations follow; and the patient not only gets no advantage from the drug, but is prevented by it from deriving the usual benefit from the daily meals; appetite is lost; and rapid emaciation shows how little construction is carried on.

Watch a case of Typh Fever, and see what immediate improvement follows the shedding of the dead epithelium with which the mucous membranes have been coated—a change which is announced by what is called the “cleaning of the tongue,” but which is in fact the cleaning of the whole intestinal tract. See how immediately on this the poisoned nervous system begins again to renew its life, and delirium ceases as new nervous matter, fit for duty, is generated. Or watch another less fortunate case of the same malady,

how as the tongue gets dirtier and dirtier, and drier, and browner each day, the weakness of the nervous and muscular systems increases, and hope is more and more lost.

In both instances, the difference between one case and another, between the patient who is a credit and a joy to us and the patient who continues to wring our heart with anxiety, lies in the more or less vitality of the digestive mucous tract.

Then again, however sceptical we may profess ourselves as to the dependence of Gout and Rheumatism upon the digestive viscera, it is through those organs that we mostly try to reach the malady. It is through those organs that we endeavour to get our large doses of Potash and our Iodide of Potassium into the blood. There are practitioners who, in their treatment of these affections, rest more exclusively on the drugs named than you have seen me do; and to them even still more than to me should the integrity of the digestion be a care.

We must remember also, that it is of no use to employ the best possible means of staying the morbid symptoms, unless the digestive organs assimilate sufficient material to replace that which is diseased, and to remove which we are bestowing our pains. We waste labour in clearing away abnormal structure, if new does not take its place. This is too much forgotten by medical men when they use Bloodletting, general or local, as a means of cure. They often starve their patient at the same time, thus intensifying and exaggerating all the harm likely to arise, increasing the Anæmia, and still further depressing the nervous system. The truly rational plan is that which I pointed out to you some weeks back; namely, when you take away old blood, to try and put in new. To

that end the only path is, to get fresh food assimilated. And to get fresh food assimilated, the stomach must be in working order. So that in point of fact the only fair experiments on venæsection must be connected with feeding, and they who would restore its good fame must be careful of their patient's digestion.

The digestive tract has not the advantage possessed by the respiratory and by the upper part of the urinary apparatus, and other parts, of being double. An animal has two lungs, two kidneys, two hemispheres to his brain, two testicles or ovaries, but only one stomach, and one intestinal canal. This is a further reason for great caution in preserving each in its integrity: we have less to spare for disease to affect. A deposit of tubercle (for instance) the size of a nut in the pulmonary tissue may be neither here nor there, may be never known by its effects. But put it in Peyer's glands, and what a disturbance is produced!

This singleness also helps to explain the powerful influence which derangement of any one of its parts has not only over the whole tract, but over the whole body and mind. No chain is stronger than its weakest link, and an interruption of the function at one point is an interruption of the whole.

[I do not therefore think it will be out of place in a course of lectures illustrative of Restorative Medicine, to introduce several given a few years ago, which are specially devoted to a consideration of disorders of the stomach and bowels. I look upon these viscera as a means of cure, as an agency for me to employ for the renewal of life, in fact, as part of my MATERIA MEDICA. The lectures which follow may then be considered as being upon the subject of therapeutical agents rather than as on the subject of disease, and are placed together as having that natural bond of union.

Questions of morbid anatomy and diagnosis are here noticed as shortly as possible, and pathology introduced only in so far as seems necessary to give a reason for treatment.]

LECTURE XXI.

INDIGESTION.

Justification of the term as designating a class of diseases—Position of it in Nosology—Its importance—Examples—Its action on chronic disease—on acute disease—Use and abuse of purgatives—Cause of death in Acute Fevers—Mode of introducing food.

(Summer Session, 1857.)

THE term Indigestion or Deranged Digestion speaks to the mind of the physician of a very large class of morbid phenomena, various in their nature, and appearing under a great variety of circumstances. There are those who would banish the words from our nomenclature; some because the outward manifestations are so various that it is impossible to bring them together in any symptomatic nosology; some because the parts of the body whose morbid states induce deranged digestion are so many that it cannot be brought under any anatomical arrangement. It is quite true that a definition of Indigestion cannot be given according to the symptoms, and equally true that it cannot be called a disease of one part or of any set of parts or tissues. When external phenomena are made the principle of classification, those attendant on deranged digestion are so numerous and so discordant that they appear in every class; and if the organs that originate diseases are employed to give them names also, there are very few organs in the body

which do not sometimes produce the disorder in question. Still, to the practitioner, and to the common sense of the non-medical public, the name has a distinct meaning, and is a definite guide to action. No nosological, anatomical, or even chemical considerations have prevailed over it, simply because it indicates a true thing, because it names a class of disease having a connecting link in nature, though not in our artificial systems.

The common link which ranges into one class the diseases of deranged digestion is a partial defect in the necessary supply of that of which the body is built up, before it arrives at the medium of distribution; they are *anterior* to assimilation and to the blood; they interpose between life and the new matter which it seeks to renew itself withal.

This explains the fact mentioned before and familiar to us all, of deranged digestion affecting more or less all the functions of the body, and producing such a variety of morbid phenomena as immediate or remote consequences. It perverts incipient life at its very source, and therefore perverts all its future manifestations.

I am very anxious that you should have brightly pictured on your minds this idea of the position in pathology of diseases of digestion. It is of the utmost importance in your treatment of patients. It is of no use for you to pour in remedies, however appropriate, for the removal of some morbid tissue of the body, if the new material which is to replace it is itself insufficient in quantity or morbid in quality. While if you set to work in another way, and endeavour to provide healthy material, this of itself will act as a remedy, even though other treatment should have been neglected. Make it a universal rule, then, that *the*

special medication is never to interfere with or take the place of the supply of the materials of life.

In the management of deranged digestion, whether complained of alone, or occurring in other complaints, it is certainly important to know what organs are in any of the degenerated conditions which form the province of the morbid anatomist. Your prognosis is modified, and to some extent your treatment is affected by such knowledge. But it is infinitely more important to observe the functional disturbances which are the immediate impediments to the healthy renewal of the body, and to learn how to modify them for the advantage of the patient. You may remember my pointing out in the hospital the other day, with respect to a consumptive patient in the corner of Cambridge Ward, how little it helped us to know that half of the upper lobe of each lung was filled with crude tubercles,—pulmonary remedies had been of no benefit to him; but the reflection that the stomach was secreting an excess of mucus at the same time with the lungs, led to the relief of the poor man's progressive emaciation, cough, and other distresses. I also, a few weeks ago, called your attention to a girl in Victoria Ward, with the mitral orifice of the heart narrowed by rheumatic inflammation in childhood. On her being carried into the hospital, her face was like that of a corpse, and she could not stand without fainting from palpitation. I presume no sane student would expect to see remedies applied for the dilatation of that mitral orifice whose contraction is the source of evil: despair was not an illogical conclusion from the diagnosis, and I was but little surprised to hear the remark, that "at all events this is not much of a case for treatment." Yet observation of the functional state of the alimentary canal, indicated by the œdematous tongue and

fauces, made me express an expectation that she would walk home with colour in her cheeks. This she has been able to do, and the better-nourished heart now beats steadily and evenly, though its mitral orifice is as small as ever.

On stating in consultation an opinion that some viscus is chronologically degenerated, one is often met by the remark, "Well, what is to be done?—we cannot cure that?" Very likely not; then try and find something else you *can* cure. In the great majority of your patients you may find this curable something in functional impediments to the entrance of nutriment into the medium of assimilation; and when you can once get nutriment in, it will act as the best medicine. Do not, therefore, give way to despair even after it has become certain that the principal viscus which gives a name and origin to the disease is incurable. And do not have any conscientious fancies that you are not fairly earning your fees in giving careful attention and advice, though you prescribe little for the organ mainly affected. It is never too late to try and administer to the failing organ *the most potent of all medicines, the healthy human blood of the patient himself.*

The more I see of disease the more convinced I become that the most important function for us to pay attention to in all cases is the digestion; in chronic cases it outweighs all the other functions put together. I am led to this conclusion not so much by physiological reasonings, or by the important position of this function in the great circle of life, as by observation of the effects of remedies, prescribed perhaps with quite different views, and often without any thought of the digestion at all. The effect of climate, for instance, in Consumption, is proportioned with extreme accuracy

to the degree in which the absorption of food is improved or injured by it. I had a striking instance of this two months ago, in the comparison of letters which I received at the same time about two young ladies whom I had sent to pass the winter in a warmer climate. The elder of the two (S. S.) was last year much the more advanced in disease; half of the right lung was rendered impervious to air and immovable by tubercle, local inflammations, hæmorrhages, and pleural adhesions. She had also frequent Dysmenorrhœa, and occasional Menorrhagia. The younger (E. W.) had a small deposit of tubercle at the apex of the right lung, which excited cough, but no Hæmoptysis or Pleurisy. She was the stronger and more muscular of the two, and had least right to hereditary disposition, for all her family are alive, while S. S. has lost her mother by Phthisis. Both had been under long courses of medicine by my direction, so I set them to begin the winter at any rate, and to go on as long as circumstances admitted, without any. What now is the result which I said struck me so forcibly? S. S., the most diseased anatomically speaking, who had certainly the greatest amount of morbid tissue in her body, found the warm air assist her sluggish circulation, enable her to take exercise, improve the appetite, and add unwonted energy and spirits. No food was passed undigested, and the evacuation from the bowels was regular in time and quantity. The consequence of which condition of the assimilating organs, bowels and blood, has been a most decided amelioration of the pulmonary local symptoms, in spite of an intercurrent attack of Hæmoptysis. There is scarce any Pain, Cough, or Dyspnœa; she has increased in strength and weight, and boasts in her letter that she had one day ridden her pony five-and-twenty miles. E. W. had a

tendency to a relaxed condition of bowels—not absolute Diarrhœa, but the passage once or twice a day of unformed pultaceous stools, containing a large quantity of undigested food. It was easy enough by medicines to prevent the motions being too frequent, but difficult to amend the assimilation of aliment. This diathesis seemed aggravated rather than improved in the mild climate; there was greater and greater inability to take exercise; then a return of pain and tenderness in the upper ribs, and at Christmas time the surgeon in attendance found a deposit of tubercle taking place at the apex of the left lung, in addition to what already existed in the right. Emaciation then commenced, and continuously progressed, quite unchecked by Cod-liver oil and other expedients, which I thought it right should be tried, though without much expectation of success. In this patient my only hope is in a restoration of the digestive organs to a healthy state.

The remedy, the effect of which I thought was strikingly exemplified in this pair of cases accidentally reported together, is soft and warm air in incipient Consumption. The agreeable effects on the respiration, the relief of Dyspnœa, the power of getting out in the open air, were equal in both, but how different has the result been!

A very moderate experience of the cases we have seen together in the hospital will soon enable you to class a dozen or more as resembling in their type one or the other of the two above quoted. The atmosphere of our well-ventilated wards, and their even temperature in comparison with the depressing coldness and chilly damps of the streets whence our patients come, represents on a small scale what Torquay, Madeira, and Mentone are to the wealthy. And you may thus as students see what private practice will still more

strongly impress upon you, that the effect of climate on digestion is the most important part of its action. The atmospheric change alone without medicine will benefit those who resemble the class represented by S. S., more or less, in proportion to the extent of their disease, whilst those portrayed by E. W. will usually grow worse in spite of drugs.

In all forms of Dropsy, again, the effect which you desire to produce by remedies is strikingly dependent on the condition of the alimentary canal. Where the portal system is congested, I have given that strongest of drugs, *Elatarium*, in doses gradually augmented up to three grains, without any of the vigorous hydragogue action naturally following; and then, by applying a few leeches to the anus, so as to disgorge the abdominal veins, half a grain has produced excessive purgation with reduction of the dropsy.

Another striking example of the dependence of remedies on their influence over the digestion is found in *Anæmia*. If, as generally happens, Iron improves the condition of the alimentary canal, so that the stools, from being scanty, scybalous, and mucous, consisting mainly of wind and half-digested food, become natural and regular, then the body is renewed by fresh nutriment, and the strength is rapidly reinstated; but if it irritates the mucous membrane, so as to make the evacuation irregular, black, and slimy, your patient remains as anæmic as ever. Hence the importance of suiting to the case the different form in which the metal is presented. If ready solubility and presentation to the absorbing surface, in such a shape as to get an entrance of a large quantity quickly into the system, were the only thing to be considered, the question as to which is the best preparation might be left to the druggist. But it is not so; very often the easily soluble salts so

disturb the gastric mucous membrane that it refuses to pour out that secretion which is the chief solvent of albumen; the food passes unaltered into the intestines, and putrefying there, increases the disease. Whereas a sparingly soluble form of the medicament passes unaltered through the stomach, and exerts its main energy on the intestines. Again, some preparations, both soluble and insoluble, are more or less astringent, and have various qualities acting on various parts of the alimentary canal, which render them appropriate or not to individual cases. So that not the most elegant, not the most praised as ingenious by the druggist or scientific chemist, is oftenest selected by the judicious physician, to whom the cure of the patient, not the harmony of the prescription, is the object in view.

It ought to be better understood that the fitness of any substance ingested, whether food or medicine, for its final destination, is not the only thing to be considered. Its capacity for entering into the circulation must be taken into account, and, above all, its dynamic influence over the organs of absorption and digestion. As a general rule, Iron is the chief agent we think of in Anæmia. We think of it for its direct power of increasing the hæmatin of the blood. Yet it is by no means always the first, or even the best remedy when the blood-discs are deficient from faulty assimilation. I remember when I was a student noting down as a paradox that Salts and Senna acted as a tonic in three cases running, where Iron and Bark and bitters had done no good; yet that I could not find in any work a tonic action assigned to purgatives. I then saw that the action of medicines was not entirely according to their rating on our books.

The fact is, that until you have removed the slug-

gish state of the premises presided over by the portal circulation, which are doing nothing but forming mucus and obstructing absorption, you cannot get the protein compounds taken up, and they form a much more important constituent of blood-globules than even Iron.

And it is not only the general health that is benefited by attending to the functions of the stomach, but even organs as far as possible removed from it in a physiological point of view. A patient consults me from time to time who has an enlarged prostate. When digesting well, his urine is quite clear, and free from mucus, even when microscopically examined; but if the stomach is disturbed by any imprudence or accidental illness, there is a copious formation of pus in the bladder.

I shall return to this subject when I come to speak of medicines separately; now I mention it merely as an accessible instance to show you how all-important in treating chronic disease is the condition of the alimentary canal.

In acute disease, too, you will be almost equally disappointed with the effects of your remedies, if you do not, either by their means, or by other means in addition to their administration, bring the alimentary canal into a proper state for their reception. In no cases is this more marked than in Erysipelas and Delirium Tremens, and therefore you may have observed that I scarcely ever pass a bed in the wards containing a patient affected with one of these diseases without calling your attention to the fact. I point out to you that Cinchona and Wine are the proper remedies for the weak rapid pulse, the yellow pasty tongue, and the low inflammation of the skin in Erysipelas; but that if you give these remedies without clearing away

the saburral epithelium from the stomach and bowels, they are quite thrown away; the circulation continues as weak as ever, and the patient goes on advancing towards death. But if you have got a purgative to act, and are then in time with your Alcohol and Bark, the corner is turned, and every change which takes place is a change towards health. I have often shown you, in the little ward where we put raving cases of Delirium Tremens, a man who has been taking large amounts of Laudanum, Morphia, and solid Opium, yet is as rabid and demon-haunted as ever, his eyes never closing to the horrible visions that surround him. But on giving him an efficient dose of Salts and Senna by mouth or rectum, powerful opiates become no longer requisite; he goes off into a quiet sleep, sometimes without any more, sometimes with an ordinary quantity of Laudanum, and the next day he is usually calm enough to be removed to the common wards.

Now, do not misunderstand me, or suppose me to have turned "purgative-doctor," recommending an artificial Diarrhœa as a panacea; on the contrary, I am anxious to warn you that there are acute cases where a purged state of the alimentary canal, natural or artificial, is most injurious. I would instance especially Pneumonia and Low Fever. In the first, the treatment pursued is beneficial just in proportion as the bowels are not purged; and if you give a cathartic, you very often destroy all the good effect of your remedies. In Adynamic Fevers, the prognosis may be almost entirely governed by the average proportion of solid matter to the liquid in the stools, and by the degree in which the food is digested. Any expedients which increase the amount of solid and diminish the liquid intestinal evacuations, any which promote the taking

up of nutriment by the mucous membrane, are doing good; any that act in a contrary way, do harm.

In Pneumonia and Low Fevers, three-quarters of those who die, die of starvation. I mean that the real immediate cause of their death is the non-renewal of the blood by the supply of fresh matter. Both veins and arteries are filled with a dark, half-dead fluid, a great portion of which is incapable of fulfilling the functions of life at all. Expose this black blood to the air, and it remains nearly as black as ever. No oxygen will redden it, for it is too dead to imbibe oxygen, and it is only fit to be evacuated. But then, when it is evacuated, something must supply its place; new blood-discs capable of living and absorbing oxygen must be made, or the patient dies. Now, if you think only of getting rid of this dead matter by bloodletting and other evacuants, or if you think only of arresting the rapid destruction of the still living matter by Alcohol, you are taking an imperfect view of your duties, and not doing all that may be done to rescue the patient. At the same time that you fulfil the other indications, it is your business to adopt expedients for promoting the supply of nutriment to the absorbents.

That is not to be accomplished by throwing in a large quantity of food at once, which decomposes and stops digestion entirely. The alimentary canal either rejects the load or suffers from such treatment, and is all the more starved by the very abundance, like the Roman girl in Livy's legend, who was crushed to death by the stipulated rewards of her treachery.

The way to attain your object is to give very small quantities of food at a time and very frequently, so that a continuous flow may be kept up through the alimentary canal without overburdening it. The system

of a patient laid up with acute disease is like that of a new-born infant, in the weak hold it has of life, and in the constant support it requires; and the stomachs of the two resemble one another in the insufficiency of the meal they can take at once to satisfy their wants for any length of time. Treat them, therefore, in the same way; and as in proportion to its youth you order an infant to be fed frequently, so in proportion to their illness feed frequently your sick patients. A person prostrated by a Fever, or by inflammation of an important vital organ, such as the lungs for example, ought not to be more than two hours without food while awake, and I have not unfrequently administered it in doses of a few spoonfuls every hour, night and day, with decided advantage.

You may take a lesson, too, from the nursing of infants as respects the nature of the food; milk is the most perfect you can give. The only disadvantage is, that the caseine may be suddenly coagulated all at once in the stomach, and then, instead of passing on gradually, it has to remain there till enough gastric juice is secreted to dissolve it, and enough energy exist in the peristaltic muscles to move the mass onwards; till which time it stops the way. The better plan, therefore, is to mix sufficient lime-water with the milk, to prevent any large quantity of lactic acid being free; much of the milk will then pass the pylorus uncoagulated, or at any rate in very small coagula, and be digested by the intestinal juice, with no labour to the stomach.*

You saw, a month ago, in the Victoria Ward, a

* On the action of the intestinal juice see Bidder und Schmidt; 'Die Verdauungssäfte (von Darmsaft);' and 'Digestion and its Derangements,' by the author: Book I, chap. v, sect. 4 and 5.

striking instance of the effect of mere nutriment so administered as to be capable of being absorbed in acute disease. A young woman, the subject of pulmonary tubercle, became affected with Pneumonia of the whole of one lung. Her lips were livid ; the pulse not to be counted ; the respirations irregular, and between forty and sixty in the minute ; there were râles from the collecting of mucus even in the bronchial tubes of the unaffected lung ; the tongue had a smooth yellow coat ; and the repugnance to food was very great. She had up to this period had nourishment given, or rather offered, only at the usual times of meals. She had had some stimulants, but they had been thrown up. I then ordered her a pint and a half of beef-tea and two pints and a half of milk, guarded with a pint of lime-water, to be taken, a small portion at a time every hour, so as to finish the whole in twenty-four hours. The next day a sudden revival had taken place : the tongue had cleaned ; the respirations were about twenty-five or thirty ; and so she continued to hold on to life for five days, when a relapse occurred, and she died. Now, it seemed pretty clear that death would have occurred from the first condition in which the patient was seen by you, except for the continuous supply of nutriment. I cite this case rather than any of those where final recovery takes place, because in them you might doubt whether the disease really is of a necessarily fatal nature ; whereas here you have proof of the fact in its killing the patient soon afterwards. It was of a fatal nature, yet death was arrested for a time, and the sharpness of the symptoms made the changes more striking than in patients where your memory has to cast back for days or even weeks, in order to trace the effect of treatment.

Another case, now convalescent, in Albert Ward, illustrates a still more purely dietetic treatment of acute disease. I mean a young man in Bed 15, who was brought in three weeks ago with Low Fever, his tongue dry and brown, rose spots on the skin, weak fluttering pulse, and the stools smelling like rotten flesh. The only drug I ordered him was a small quantity of chalk-and-mercury powder at night, and some effervescing saline draughts.* You have often seen under such treatment the fetor of the stools continue, and great weakness follow, even in those fever cases that ultimately get well. But I ordered at the same time a diet of milk and beef-tea, to be taken in small quantities every hour, and a few ounces of port wine. To assist the absorption of this nutriment I gave him also a scruple daily, divided into three doses, of a powder containing pepsine; and I was curious to know what the effect would be on the digestion, for it was the first time I had given it in Low Fever. The result was most encouraging—for the stools immediately lost their putrid fetor, and the food, instead of being passed in a putrid undigested state, seemed to be entirely consumed in the bowels. In spite of several discouraging symptoms, I have never seen a case of bad Fever where the stools were so little fetid, or where there has been less consequent emaciation and debility.

My object in this lecture has been to lead you, in your clinical studies under us in the wards, and also in after life, to observe the importance of the management of the digestive organs in disease. I mean in disease generally, and not in that which specifically affects those organs alone. And in future lectures on

* I had not at that date commenced the acid treatment of Low Fever detailed in Lecture III, of the present volume.

the same subject, I intend the descriptions I give of morbid phenomena, and the simple classes into which it is convenient to divide the impediments to digestion, to apply equally, whether they are alone and give a name to the illness, or whether they are united to anatomical changes which afford ground for a more convenient generic designation.

Do not be deceived by the expression, "merely symptomatic," sometimes applied to the derangements of digestion in Phthisis, Anæmia, Amenorrhœa, Dropsy, Hysteria, &c., such as I have cited for illustration. All parts and functions of the body are so knit together to form the great circle of life, that their comparative value to individual existence is more a question of time than of power. The failure of any one shortens the days more or less. The great advantage of paying special attention to the digestive organs is that, as a general rule, they are more directly curable, and that by their means distant parts, otherwise out of our control, may be favourably influenced. The evil of neglecting them is obstinate disobedience of the disease, or rather of the body of the patient, to any drug administered; recovery rather in spite than by reason of it; and in a candid mind the development of medical scepticism.

I shall, in the five following lectures, give as concise a sketch as I can of the various modes in which the function of digestion is deranged, both alone and in connexion with other diseases, pointing out on the way what rational indications of treatment they afford. I shall afterwards comment on some of the re-agents used to effect our purpose, and point out their bearing upon rational (or restorative) medicine.

LECTURE XXII.

INDIGESTION.

Healthy digestion easy, quick, complete — Unhealthy digestion painful, slow, defective — Phenomena exhibited in unhealthy digestion — Heartburn — Acidity.

(Summer Session, 1857.)

HEALTHY digestion is *easy, quick, and complete*. There can be no excess of it. Food cannot be too easily, quickly, and completely converted into chyme and taken into the system. There is no such thing as too much health.

In ill-health digestion is impaired in one or more of these qualities—it becomes *painful, slow, defective*.

Those who wish it may use Greek words, and call the above-named erring qualities of the digestion Dyspepsia, Bradypepsia, and Apepsia. Only let them remember, that making the old adjectives into new substantives adds no whit to our knowledge, and, unless care is taken, runs some risk of impeding its progress. For when we have in this way given a proper name with a capital letter, we are apt to think we have defined an individual disease, instead of what is really the quality of a function. I shall therefore use the familiar adjectives, but first say shortly what I mean by them in this connexion.

Painful digestion may be, and often is, both defective and slow; but, on the other hand, it not unfrequently also is complete and performed with sufficient

quickness. All that is intended by the word is to express that it is accompanied by feelings varying from slight discomfort to absolute torture at some stage of its progress.

By *slow* digestion, I mean that the act in some part of the alimentary canal is not completed by the time when the convenience of the individual and of society requires that it should. The stomach, for instance, may retain so much of a former meal that it is not in a fit state to receive the new one which is absolutely required for the sustenance of the body. This is generally indicated by a want of the natural appetite which arises when the upper portion of the digestive apparatus is ready to do its work, and, in chronic cases, by imperfect nutrition, Anæmia, Debility, &c. Or, if we attempt to force food too quickly on the unwilling stomach, we have chemical decomposition and defective digestion.

By *defective* digestion, I mean that food capable of nourishing the body cannot do so from lack of certain changes which it should naturally undergo in the alimentary canal. It is passed from thence either unaltered or chemically decomposed. There are seen in the fæces, either by the naked eye or the microscope, lumps of muscular fibre, fat, starch, &c.; or else the products of their decomposition, consisting of various obnoxious gases and acids, are developed in quantity subversive of comfort.

The morbid phenomena accompanying these errors of the digestive function may be divided according as they occur during the *first* stage, that is, before the alimentary mass has passed the pylorus; in the *second* stage, that is, during its passage along the small intestines; or in the *third* stage, after the passage of the ilio-cæcal nerve. Now remark, I do not call, and I

wish you not to call, these phenomena diseases *of* the stomach, or *of* the intestines, or *of* the colon. They are not so, and must not be treated as such. The discomforts felt in the first stage, for example, may be due to organs remote from the stomach,—to the uterus, to the kidneys, to the teeth,—yet they may be called by the same names, and treated by the same remedies as when they are owing to anatomical changes in that part. So those of the second and third stage often are traceable not to anything wrong in the ilia or colon, but to excess of mucus or deficiency of pepsine in the stomach, which is above them. This is a consideration of much practical importance, for of course it influences the treatment.

In the first stage of digestion we may notice, as common phenomena, those generally known by the following names:—

Heartburn ;
Acidity ;
Weight ;
Tightness or distension ;
Oppression ;
Wearing or boring pain ;
Cramp or spasm ;
Eructations ;
Vomiting.

I should recommend you to use these words rather than any new Greek or Latin compounds, which assume to include them. As a German writer says, “I do not see why we should invent words for the use of the dead Greeks and Romans ;” and nine times out of ten the manufactured terms are not nearly so accurate as those which have grown into use.

HEARTBURN,

A sensation as of extreme heat at the cardiac orifice of the stomach, running at intervals up the course of the œsophagus.

From the effects which alkalies have in relieving temporarily this discomfort, there seems no doubt that it arises from the action of the acid contents of the stomach on the cardiac and œsophageal nerves. *The gastric mucous membrane itself does not suffer from acids*; it secretes them,* and bears them in contact for the remainder of the day without inconvenience. The gullet, too, will bear them *for a short time*; swallowing a mouthful of sour victuals or drink gives a healthy man no immediate inconvenience; but a *continued* exposure becomes painful in close proportion to its length, as may be easily tried by pouring down such articles slowly and continuously for a few minutes, whereby pain will be produced even in the most healthy.

Heartburn, or pain from the action of acids on the cardiac end of the œsophageal plexus, may arise in three ways :

* There appears no doubt about the gastric juice being *secreted* acid, and becoming neutral only from admixture with saliva. See the recent experiments of Drs. Bidder, Schmidt, Grünewaldt, and Schröder, compared in my 'Digestion and its Derangements,' chap. iv.; and 'Experiments on Digestion,' by Dr. F. G. Smith, Philadelphia, 1856. This last-named very valuable renewal of observations on the patient with gastric fistula, formerly a servant of Dr. Beaumont's, seems to show pretty conclusively that in the human subject the acid secreted is not the muriatic, but probably the lactic. The origin of the finding muriatic acid in gastric juice is that lactic acid decomposes the chloride of sodium contained in all animal secretions.

- 1st. By over-sensitiveness of the nerves ;
- 2nd. By too long exposure to the acids of digestion ;
- 3rd. By too much acid being formed.

(1st.) *By over-sensitiveness of these nerves* (=Over-feeling=Hyperæsthesis*). This is sometimes, but not always, accompanied by over-sensitiveness in other parts of the body, and is the form of Heartburn which weak, nervous, hysterical persons suffer from. It comes on almost immediately after eating, directly the contents of the stomach have begun to assume that degree of acidity which is natural and necessary to them. If vomiting does not occur, it continues till they have become neutralized either by the saliva which usually flows abundantly down the œsophagus, or by taking some alkali, or by the moving on of the mass towards the pylorus.

The worst of this neutralization, natural or artificial, is, that a good deal of the albuminoid food remains undigested. It is absolutely requisite for its solution by the gastric juice that it should be acid while in the stomach ; and if this natural acidity is prevented, because it happens to be painful to the over-sensitive nerves, the peptic solvent cannot act. Thus the digestion, from being painful, is made defective also.

A peculiarity of Heartburn from over-sensitiveness, which often is a great assistance to the diagnosis, is, that one kind of food brings it on as much as another ; just in the same way as the peculiar grinding pain of gastric ulcer (which will be spoken of in a future lecture) is frequently to be distinguished by there

* Here is a glaring example of the confusion attendant on coin-ing words. Hyperæsthesis is used now in writing and speaking, with seeming propriety, for *morbid excesses of sensation* ; but so lately as 1831 it is defined in Hooper's Dictionary, "Error of appetite."

being so little difference felt in the effect of different articles of diet. It is to be observed, also, that it is very often worse after the early than after the later meals, even though the dietary should be more sparing and more digestible. Indeed, in private practice, where one sees lighter diseases than those in hospital wards, I have notes of several patients who have eaten dinners and suppers without distress, but who invariably suffered after breakfast.

This form of Heartburn usually occurs in nervous, sensitive persons, whether their state of system is congenital, or induced by external circumstances. Any morbid or extraordinary condition of the parts supplied by the abdominal plexuses of sympathetic nerves often brings it on. Tumours of the uterus or pregnancy are a very common cause, and excessive or painful menstruation often induces it in the female; and in the male, I have known it produced by piles and by mere constipation. It not unfrequently is accompanied by vomiting in persons who have a tendency thereto. And in these cases you have an opportunity of examining the contents of the stomach, and confirming what I stated about their being in a normal condition, by no means over acid or otherwise unnatural.

Over-anxiety, watching, harassing mental emotions, and, in short, all external circumstances which bring on over-sensitiveness in general, induce this state of digestion. Local pressure on the epigastrium will also often fix the disorder in that part. It is curious that while the ordinary nerves of feeling appear blunted by pressure and the frequent repetition of excitement, the sympathetic should be made in the same way more sensitive. Such, however, appears to be the case with the epigastric plexus, from the frequency with which

this form of Heartburn occurs in shoemakers, needlewomen, clerks, and others whose ordinary occupations involve pressure on the pit of the stomach.

As Anæmia, Debility, and occupations which occasion them, induce this Heartburn, so it, too, will react, and increase them, or even bring them on. An impoverished stomach, thus unable to bear the labour of digestion, becomes poorer still from defective supply. That happens in the human body which Martial complains of as one of the vices of civilization—those most in want gather least wealth—

“Dantur opes nulli nunc nisi divitibus.”

But at the same time a slight change of habits, or slight relief from medicine, will equally react beneficially, and commence a march towards health with unexpected rapidity.

It will also, too, sometimes be associated with, and very much aggravate, the intermittent headache of marsh miasma, causing “Brow-ague” to commence after the midday meal, instead of at other times.

The suddenness with which Heartburn will come on, and the rapidity with which it often goes away, is a great help to the diagnosis of the nervous origin of this affection, and is also a great encouragement to the physician to promise relief to the sufferer.

The sketch I have given of the physiology of this disorder points out the treatment most likely to be successful in the end. The aim must be, not to neutralize the acid, but to blunt the over-sensitiveness of the nerves. This can be done, first, *directly*, but temporarily, by medicines known experimentally to have that effect on sensitive nerves; secondly, *indirectly*, by strengthening the whole system, so that

those nerves along with it may become hardier to bear the brunt of their necessary duties.

You have seen me often in the wards of this hospital begin the treatment with Hydrocyanic Acid and Bismuth, and in a few days commence the use of Steel, or Valerian, or Quinine. The benefit found from the first-named drugs is decided indeed, but it is temporary, and few cases will get permanently well unless they are followed up by the tonics. At the same time, there is a great advantage, still greater in private than in hospital practice, in commencing with a medicine whose influence is immediate, and which will gain the confidence of your patient for any future plan you may adopt.

Where Brow-ague, or any other form of Neuralgia, is concomitant or consequent, you will best treat it by four or five grains of Quinine, taken an hour and a half before the meal after which it comes on—that is to say, in most instances, the midday meal. I have found this treatment of the Neuralgia more effective than that by Iron, the Quinine curing not only more certainly, but more rapidly.

Sponging the body with cold sea-water, and the Shower-bath, are often most useful remedies, acting doubtless in a great measure through the general system. But cold sponging or douching the epigastrium, which may be easily managed sitting in a hip-bath, appears to have a special local action, and certainly does still more good.

The tonics which must follow up this special treatment may be varied according to the case and the patient's convenience; but, as a general rule, I find none do better than Iron.

(2nd.) *By too long exposure to the acids of digestion.* Many influences, which in moderation are rather

pleasant than otherwise to the sensory nerves, become exquisitely painful when long continued. For example, the immersion of a limb in water a few degrees below the temperature of the air is not disagreeable, and may be kept on with intermissions for any length of time; but it becomes absolute torture if persisted in without an interval of rest. So, in many cases, a sluggish stomach, in which the progress of digestion is too slow, causes the cardiac orifice to be so long steeped with acid that it becomes painful, though a proper exposure for the natural length of time could be borne with ease. Just in the same way, a continued dribbling of fæces will make the anus sore—a continual running from the nose excoriate the nares, &c.

This form of Heartburn never like the first comes on immediately after eating. It often does not occur till four or more hours are passed; in fact, till the period at which the stomach ought to be nearly empty, and preparing for another meal. But the most usual time is an hour after eating. Its long continuance will, however, be apt to induce that tenderness of nerves which constitutes the first form, so that it will approach nearer and nearer to the time of meals, till at last it commences immediately. It differs, though not invariably, in one important diagnostic peculiarity: that it is more common after the later than the earlier meals. It will also, like the first form, bring on nervous headache, and occasionally a decided intermittent Neuralgia, aggravated by the same causes, and removable by the same remedies, as that arising from marsh miasma. Even if the meal should be omitted, this headache will still come on; but if the *time of the meal* be changed, the time of the headache will change with it.

Though the œsophagus is relaxed so as to admit of some regurgitation, yet what comes up is seldom more than air, usually of a neutral inoffensive character, and not in the great quantities and with the explosive force which marks the formation of carbonic acid by fermentation in the stomach.

The persons in whom it occurs are active men of business, literary labourers, clerks, over-thoughtful and over-careful. But when once acquired, it is very apt to persist in spite of a change in the mode of life. I have had as patients thus affected many farmers and country gentlemen who had suffered since youth, though living with little apparent care or intellectual occupation.

As before mentioned, it may lead to the first form of Heartburn; but in symptoms, pathology, and treatment, it may be considered as a transition from it to the next in order. And I shall, therefore, postpone speaking of the indications it affords till I have brought before you the Heartburn which arises,

(3rdly.) *By too much acid being formed.* To this the name of "Acidity" is applied with propriety, because there really is an excess of acid. It comes on at a period more distant from the time of meals than the last kind, and may be considered, in some respects, as a further stage of it. The pain, however, is much less intense in general, sometimes so slight as to cause scarce any inconvenience. But the regurgitations are much greater; sometimes true vomiting occurs, distinguished by spasmodic action of the diaphragm; sometimes only a teaspoonful of intensely sour liquid comes up, roughening the teeth, and bringing tears into the eyes; sometimes a gaseous acid (acetic and butyric) is belched up spasmodically; sometimes it oozes up gradually, and its presence is

shown by the saliva and breath being sour to the taste and smell.

These peculiarities will suffice to distinguish between "Acidity" or Heartburn from real excess of acid, and those forms previously named where the excess is only apparent. A further test may be found in the action of remedies: a small dose of Alkali, a grain or two of Soda or Potash, will be sufficient to appease them; whereas, in this case, a very considerable dose is required.

Acidity is often misunderstood. I have heard it spoken of as "an excess of gastric juice," "excess of action in the stomach"—that is to say, too much of a vital act, too much life. Such a mode of speaking, if it leads to anything, must lead to faulty thinking and bad treatment.

Instead of being an excess of gastric juice, it is itself a proof of deficiency. You may prove by experiments on artificial digestion, that an increase in the quantity of the solvent secretion quickens the solution of albumen. You will find, for instance, that the amount of Pepsine contained in twenty grains of Boudault's powder will dissolve a piece of hard-boiled white-of-egg much sooner than five grains. The same thing would of course happen in the stomach; were there more gastric juice there would be quicker digestion. But in "Acidity" such is notoriously not the case; the aliments lie for a long time in the upper part of the digestive canal, and often are, after all, passed undissolved in the fæces. It is a chemical act of decomposition directly opposed to the vital act of digestion.

I call a "vital" act any which forms part of the great circle of life, such as is the conversion in the stomach of albumen, previously incapable of solution

and absorption, into peptone capable of entering the circulation. Now, when this vital act of conversion is carried on with rapidity by a stomach making abundance of gastric juice strong in pepsine, then chemical decomposition is prevented; nay, it is even arrested after it has commenced, as may be seen by putrid meat not becoming more but less putrid as it passes through the body of a healthy animal. But when the conversion is slowly or imperfectly performed, then chemical change has time to take place, and does so very soon, being favoured by the heat, moisture, and animal matter in a state of change. If the food remain too long without becoming chyme, the protein compounds putrefy with extreme rapidity under such circumstances.

Compare this white-of-egg which has been immersed in saliva at the temperature of 100° Fahr. for twenty hours, with another portion from the same egg kept the same time in distilled water. Your nose warns you of the difference directly; the first is intolerably fetid, the second quite sweet.

(Experiments shown.)

Exactly similar is the fate of undigested albumenoid matter, whether animal or vegetable, in contact with the mucous membranes inside the body. But how does that affect the case of acidity? Thus—I have in this beaker some syrup of grape sugar, quite neutral and natural. Here is some of the same which has been poured on a piece of putrefying albumen a few hours ago, and kept at the temperature of the body. You see that a piece of litmus paper I put in it is strongly reddened, showing the copious formation of lactic acid. In another beaker, the formation of butyric acid from fresh butter by the same means is shown to you.

(*Experiments shown.*)

Just so all the grape sugar and fat swallowed, when it meets in the stomach or intestines with decomposing animal food, remaining in a mass or glued to the side by a too-sticky mucus, ferments quickly throughout, and forms lactic and butyric acids in great quantity.

Remember, the grape sugar *swallowed* means something much more important than merely the grape sugar *eaten*. See this boiled starch; I heat some of it with the Potassio-tartrate of Copper, and there is no change in the blue colour of the salt. Now I put some in my mouth, and hold it less than a minute.

(*Experiments shown.*)

See! when it is again heated with Potassio-tartrate of Copper, the metal is precipitated, and shows by its brilliant yellow colour an abundant quantity of sugar. The saliva, you see, *begins* to convert starch into sugar *immediately*; very soon it will transform the whole mass. A mouthful of boiled starch which I held in my mouth for five minutes the other day showed afterwards scarce a trace of starch remaining. As, even amongst meat-eating nations, from half to five-sixths of the solid food consists of starch,* it is evident that one of the most bulky contents of the stomach must be the sugar which has been made by the saliva out of amylaceous food. Here then is ample material for the formation of lactic acid to almost any amount. Add to this the oleaginous substances which it is impossible to avoid in any diet, and which, from being insoluble in water, constitute a peculiarly acrid and concentrated acid, and you will have no difficulty in

* See the dietaries of soldiers, prisoners, labourers, and others analysed by Dr. Hildensheim in 'Die Normal-Diät,' p. 6, Berlin, 1856.

accounting for Acidity, without recurring to a theoretical excess of gastric juice. Acidity then is an evidence of chemical, and therefore of decreased, vital action, a proof of incomplete digestion, of deficient activity in the stomach.

On this rests the *rationale* of the hints for treatment which it gives. The way to cure it *temporarily* is to neutralize by alkalies the excess of acid which is formed. And this may be freely done without fear of bad consequences; for you are not likely by any reasonable dose to make it so far alkaline as to interfere with digestion. It is not in this form, where acid is really in excess, but in the first (or nervous) Heartburn that alkalies do harm, for the reasons there stated. Where it arises simply from temporary debility induced by occasional gluttony, "the remorse of a guilty stomach," it may be left to cure itself. But a *permanent* cure can only be brought about by reagents which—

(1st.) Strengthen the local power of the gastric solvent;—

(2nd.) Augment its quantity;—

(3rd.) Excite the peristaltic motions.

The local power of the pepsine secreted, although in diminished quantity, may be much increased by neutralizing the saliva swallowed and collected in the stomach and œsophagus just before the meal. In laboratory experiments on artificial digestion, you will find that saliva arrests the solvent action of pepsine in a close proportion to its amount. In the laboratory you may set the action at work again by acidifying the mixture, unless you have waited so long as to allow it to decompose. So too in the stomach, if you take it in time, you may free the pepsine from the alkaline saliva, and enable it to do its duty by adding

acids. The best to select are those to which the viscera are most used, Hydrochloric or Lactic. A few drops of these taken immediately before meals will almost always have a most beneficial effect.

The quantity of the gastric juice may be increased by supplying one of its most important constituents, Water; but in large quantity at the meal it is apt to dilute too much the sparing secretion, and hence it is better to direct the principal draughts to be taken half an hour afterwards. An artificial gastric juice, in the shape of one of the new preparations of Pepsine, may also be given if the acids are not sufficient; but I prefer to try at first and get the patient to be his own pepsine maker. The colder the water the better; for the low temperature acts as a tonic shower-bath to the local nerves, and removes the congestion of the blood-vessels, while at the same time it never quite stops digestion, and soon acquires heat enough to let it go on with full rapidity.*

Your patient will perhaps think that you are blowing hot and cold, or rendering inert your own treatment, by ordering acids at one time and alkalies at another; so you will find it a wise plan to give him a little physiological lecture on the subject, explaining the reason of your procedure. You may explain also that the acids given as medicine do something more than in the laboratory: they stimulate the mucous membrane, and so actually increase the quantity of secretion

* That cold retards the action of the gastric solvent is shown by some experiments on artificial digestion I published in 'The Lancet,' of May 23, 1857. But at the same time it does not stop it. Even the freezing temperature does not entirely do that, as is proved by Drs. Bidder and Schmidt. 'Die Verdauungs-säfte,' Exp. ix, 1, 2; x, 1; xvi; xvii. This is a comfort to the admirers of ices.

while they increase its power. You need not have the fear, which I have heard some express, that the use of these substitutes for the natural constituents of the gastric juice, or rather the supply of that which ought to exist in the gastric juice, will teach the stomach to be lazy—as doing a servant's work for him makes him less equal to doing it himself. On the contrary, the new vigour put into the system by the healthier and more copious chyme that is formed, renders the organ more active; so that it soon is enabled to go on secreting for itself what is wanted, and to do without the artificial substitute. Do not, therefore, let patients fancy that they might get into a habit of taking these medicines, so as to be obliged to continue or to increase the dose. If they derive benefit from them, they will be able soon to leave them off.

The action of the peristaltic muscles of the stomach can be excited by most of the drugs which act as purgatives. But unfortunately, in the great majority of gastric complaints, purgatives are decidedly injurious, so that the good done to the stomach is overbalanced by the injury done elsewhere. The least hurtful are Rhubarb and Aloes; but even they somewhat impede the digestion in many persons who take them as a dinner pill. A better expedient is Strychnine. Its small bulk causes it to be quickly absorbed, and to act locally on the stomach alone without affecting the rest of the system; so that where common caution is observed, I have never found it necessary to leave it off on account of the occurrence of specific spasmodic effects; at the same time its beneficial influence is most marked, and in many instances it acts as a bitter tonic also, increasing the appetite and spirits.

LECTURE XXIII.

INDIGESTION.

Local weight, Tightness, Distension—Alone—Dependent on over-secretion of mucus—Gastric Catarrh—Acute—Chronic.

(Summer Session, 1857.)

LOCAL WEIGHT, TIGHTNESS, DISTENSION, sometimes a feeling expressed as of being "blown out with wind," while on examination the epigastrium is found not more tumid than that of a healthy person digesting, are modifications of a sensation produced in the nerves of the stomach itself.

(1) *Alone*.—Where the sensation exists alone, unaccompanied by soreness, by pain on pressure, or by decided pain immediately after eating, it is possible to judge of the real meaning of the phenomenon. But in complicated cases the difficulties presented are very great. Putting aside for the nonce these latter, and looking only to simple examples, I have come to the conclusion that it denotes simply the presence of an *excessive secretion of mucus in the stomach*.

Like other mucous membranes, that of the stomach may be affected *acutely* or *chronically*. The first case may be called "Gastric Catarrh; the second, "Mucous Flux." Both are liable to be followed by vomiting, which relieves temporarily the distress, and in the acute form constitutes the most ordinary form of

"bilious attack," so called from the bile which the action of the diaphragm in vomiting causes to regurgitate along with the contents of the stomach. When not rejected by vomiting, the aliments are so enveloped in mucus, that they cannot be acted upon by the gastric juice, and are passed very little changed into the bowels, where they are liable to ferment, and by their acidity cause Diarrhœa, Flatulence, and sometimes a copious discharge of mucus from the bowels. This latter result is more common in acute than in chronic cases, where the motions are often infrequent and irregular, and exhibit unformed or scybalous fæces.

When vomiting occurs, the ejected matters are mixed with so much mucus that there is no difficulty in making the diagnosis; but where it does not, the case is liable to be mistaken for one of disease of the bowels, on account of the Flatulence and mucous Diarrhœa. Certainty of diagnosis can in such cases be obtained only by the administration of an emetic, which brings the source of the evil into the light of day.

In acute cases this excess of mucus is often accompanied by very intense headache, but in chronic it seldom goes beyond a feeling of stupidity. Flushing of the face, and heat at the back of the eyes, are also nervous symptoms dependent upon the chronic condition, and seem quite independent of any disturbance of the circulation.

"Acute Catarrh of the stomach," like all other Catarrhs, is excited by external, and often by epidemic influences. Changes of temperature are its most frequent cause. But still, as in other Catarrhs, the cause must have a special reason in the individual for selecting one mucous membrane rather than another.

And since the naturally warm position of the stomach, aided by the usual habits of dress, guard it very efficiently against ordinary variations of the weather, the idiosyncrasy of the individual has a preponderating influence in its production, and often leads the others to be overlooked. But in the prevention of the complaint more is to be done by attending to these special reasons, and by protecting the stomach against such deleterious agents as the habits of the patient expose it to, than by trying to alter the diathesis of his body.

On the other hand, the mucous flux, or "chronic Catarrh," is much less dependent on external circumstances, and much more on organic changes either in the stomach itself or some other viscus. Tubercular deposits in the lungs, Emphysema of the same organs, Chronic Bronchitis, and enlarged heart, most frequently produce it, and it is usually associated with cancerous, tubercular, and inflammatory affections of neighbouring parts, but *alone* it is very uncommon. In this it closely resembles bronchial flux or chronic Bronchitis, and like it requires more attention to be paid to the causes internal to the body than to external circumstances.*

* In 25 post-mortem instances of excess of mucus adherent to the walls of the stomach—

6 had tubercles or vomicae in the lungs as chief cause of death;

4 had diseased hearts as chief cause of death;

7 had Œdema or Emphysema observed after death, or chronic cough observed during life, as chief cause of death.

In the above 17, it may be considered as self-evident, that there was an increased secretion of mucus from the bronchi as well as from the stomach.

Of the remainder—

4 had diseased kidneys as chief cause of death;

(2.) *With soreness on pressure* (more especially if the soreness exist also when the stomach is empty), or if accompanied by a decided pain arising from the ingestion of food, it denotes that the secretion of mucus depends on some *local inflammation or ulceration of a chronic character in the mucous membrane*. Where a tumour can be felt, the probability is that it is of a cancerous nature. Where there has been bloody vomiting, the diagnosis of ulcer, cancerous or non-cancerous, is almost certain.

In all cases, I am inclined to think that the peculiar sensation here described depends on the general state of the mucous membrane, and not on the local injury to one part or another of the stomach. My reason for thinking so (a reason of practical importance) is, that it is capable of so much relief by medicines, even in patients where the spot anatomically altered is found afterwards to have been gradually progressing. You may very likely remember a man who lay in Albert Ward, during the greater part of 1854, with rapidly growing Cancer of the liver and pylorus. In spite of the continual increase of the necessarily fatal tumours, the distension and weight after food diminished, he rarely vomited his meals, and was able to eat largely. His being able to eat a great quantity of nutriment much prolonged his life, and his illness on the whole

1 Pneumonia (in both of which chronic cough was not unlikely);

1 had cancerous; and

1 tubercular disease of the peritoneum;

1, a child of four months, had acute inflammation of the bowels, and the mucus was an evidence of Gastric Fever, not of chronic flux.

(See 'Digestion and its Derangements,' by the author, p. 353, with the references to Dr. Jones's paper.)

was not one of much distress. So you see that the treatment of even necessarily fatal cases is capable of adding much to the comfort of our fellow-men, and is well worth the thought and attention of a serious mind.

It may be observed, that where distension with soreness is dependent on local inflammation of the stomach, the pain is constant, at no time entirely absent, though increased by the ingestion of food. You may see a well-marked case followed out in 'Case-book' xxxix, p. 424 (where the complete cure seems to show that there was no ulceration), and several others scattered through the books and indexed as "Hæmatemesis" (where the throwing-up of blood seemed to indicate that lesion), in all of which the discomfort is described as never quite wanting.

The excessive secretion of mucus in the stomach, whether arising from ulceration of the membrane, from chronic inflammation of it or neighbouring parts, from adhesion of the peritoneum restricting the peristaltic movements, from simple degenerative thickening of the secreting structure, from Cancer, from external pressure (as in the case of cobblers or tight-laced women), is indicated by the sense of distension above named. But the evil rarely stops here. The gastric juice that is poured out cannot penetrate the slimy layer that envelopes, as in a bag, the mass of aliment, which consequently ferments and produces all the evils arising from chemical decomposition in the stomach. And if the solvent secretion could get to them, it would be neutralized by the alkali of the mucus, and so rendered incapable of dissolving albumen. Hence Heartburn and Acidity arise, as before explained; and hence, in some constitutions, Vomiting, in others a passage of the fermenting mass into the bowels, and Diarrhœa.

Mucus itself appears singularly incapable of digestion. When children with catarrhal coughs swallow their sputa, you may often find it unaltered in the stools. If you try to dissolve it in artificial gastric juice in the laboratory, small lumps undergo no change after several days. Still more, when the extensive surface of the stomach secretes a large adherent mass of a peculiarly stringy and firm description, it is often thus passed in large quantities through the bowels, and induces a suspicion that some part of the latter organs are the seat of the evil. And the diagnosis is not easy. The best guide to it is the observation of the contents of these masses of mucus. If you find enveloped in the glairy slime merely brown granular matter, hairs, threads, the cellular tissue and husks of plants, bits of gristle or skin, bile, or anything developing the natural smell of fæces, then you may fairly conclude that the mucus comes from the bowel; but if there are bits of food uncoloured by bile—if, instead of smelling like fæces, they are putrid, or exhale an odour like vomit, it is certain that some, and probably the greater part, of the mischief lies in the stomach. Thus you see that the digestive function, in the cases we are now considering, is “painful” and “imperfect,” but by no means necessarily “slow;” indeed, in many cases, the little digestion that goes on is performed with too great rapidity.

The indication of a mucous condition of stomach is as follows:—First, It must be remembered that it is *not only the evidence of disease* (like the flow from the nose in nasal Catarrh, for example, which does no injury after it has once flowed out), but it is also *the cause of further evil. Hence it must be directly restrained by astringents.*

Secondly, *The place of the patient's own gastric juice, which cannot get at the food, must be supplied by artificial solution of the aliments, and their decomposition must be prevented.*

Thirdly, *Alterative* diet and medicines, and *local counter-irritants*, must be used to relieve the congested or degenerated state of the organ at fault; especially in cases complicated with pain.

Of astringents, I have found none act more directly than Kino; and where there is pain at the cardiac extremity of the stomach, Heartburn, or Pyrosis, the conjunction of Opium with it, as in the *Pulvis Kino compositus* of the Pharmacopœia, increases its efficiency. Larger doses of Opium, however, in quantities sufficient to produce soporific effects, cause headache. A good test of the extent to which it is desirable to administer astringents, may be found in their action over the bowels. Whilst doing good, they cause no constipation; and even, in some instances, relieve that symptom by removing the general state of irritability and discomfort, and by checking the discharge of mucus; so that it may be made a rule to continue them only so long as they do not confine the bowels.

Nitrate of Silver is a very powerful astringent. But it is of no use unless you prevent the salt from being decomposed and converted by the chloride of sodium of the mouth into the inert chloride of silver. The best mode of securing it is to cover the pill thickly with gelatine, so that it remains undissolved until it gets to the right seat of action.

The Sulphate of Iron is also a very valuable astringent, especially in anæmic cases. I have found it a good plan to commence with the Nitrate of Silver; and, when obliged to leave that off for fear of turning the complexion black, to commence the Iron, and

continue that until complete re-establishment of health. Ferruginous waters, especially those containing the Sulphate (such as the Moffat and Hartfell Chalybeates), or any others where the metal is made into Sulphate by the addition of a few drops of Sulphuric Acid, will, of course, be equally beneficial—indeed, often more so from the addition of change of air and scene.

Another form of Iron which I have found very useful in gastric cases, is "Iron Alum;" but I cannot detect any difference in its action from the ordinary Copperas above recommended.

Gallic Acid is also useful, if a variety of astringents is required. But, to say the truth, I have been unable to detect any advantage which one medicine of this sort has over another, and think the only use in having a long list is to be able to ring the changes upon them, to prevent the patient wearying of uniformity.

The arrested solution of the aliments may be partially compensated for by a diet of milk guarded from coagulation by Lime-water, so as to postpone its digestion to the intestines. The avoidance, too, of such articles as are apt to form a solid mass will do much; and for this reason pastry, new bread, and hard meat, or fish, must be strictly proscribed. But the most complete substitute for the patient's own natural secretion, is Pepsine artificially prepared. It enables solid albuminous food to be taken without distress, increases the appetite, and raises the strength. In the milder cases, lactic acid, taken before food, is sufficient.

The most efficient agent in preventing the decomposition of albuminous food (evinced by fetid evacuations, Acidity, &c.) is Sulphurous Acid combined with

Soda. There are two forms of this salt, the Sulphite and Hyposulphite. Of these, the former contains most Sulphurous Acid, and certainly does the work required of it most readily. But then, it has the bad quality of completely destroying the potency of gastric juice at the same time, so that while you are preventing the chemical decomposition you are also preventing the vital digestion. The Hyposulphite has not this pernicious effect, and may also, from its less nauseous taste, be given in larger doses, so that by its means you are able to do the good without the harm.*

By "alterative" diet I mean a restricted supply of nutriment, so that the destruction of effete tissues should somewhat exceed the supply. This for a short period seems beneficial in cases where there is an organic change in the tissue of the stomach itself. But the treatment must not be carried too far: a week is, perhaps, the extreme period to which the starving system should be carried; if it does not do the good expected in that time, it never will.

The same cases are benefited by counter-irritants, such as Leeching, Blistering, and long-continued Water-dressings to the epigastrium. The advantages of the first are, that their application is soonest over, and gives relief most rapidly, while at the same time it does not prevent the use soon after of the other local remedies. The fear that this little loss of blood will lower the patient is theoretical; for the increased power of digestion adds twice as much blood and flesh as the leeches can suck away. In 'Case-book' No. li, page 223, you will find the case of a patient of mine who was leeches on the epigastrium for some time every

* See "Experiments on Artificial Digestion," by Dr. Chambers, in 'The Lancet' of the 23rd of May, 1857.

other night, yet gained twenty-one pounds in weight during her six weeks' stay in the hospital, so great was the relief afforded in her form of indigestion. The advantage of the wet compresses as a counter-irritant is, that they do least harm, though at the same time it must be confessed that they do least good, and are scarcely adapted for severe cases. However, in the milder, especially where the person is not so ill as to be kept from ordinary business, this method of accomplishing your object is very convenient.

The use of Mercury is beneficial just in about the same degree as the alterative diet above mentioned: immediately it has begun to have any good effect it must be left off, or it will begin to do harm. It is excellent as an inaugurator or introducer of good, but it does not carry it on without the evil results showing themselves. The utmost care must be taken that it does not specifically affect the system, or purge. As a universal rule, purgatives, and especially mercurial purgatives, do harm.

"OPPRESSION" is often complained of at the same time with the Weight, Tightness, or Distension at the epigastrium. But it means something more, and is by no means identical. Indeed, in those worst cases of mucus on the stomach, which relieve themselves by vomiting or by rapidly passing on with the alimentary mass, there is no oppression at all. On the other hand, there are frequent instances of much discomfort where the patients do not at all assent to the description of a weight at the pit of the stomach. That is a purely local feeling, referred, in a former part of this lecture, to the local nerves; whereas *this* indicates a general feeling of morbid lassitude and physical incapacity throughout the whole body. There is a confusion of

ideas, sometimes an unnatural sleep, sometimes faintness, irregular nervous action, such as flushings of the face, palpitation of the heart, fidgets, twitchings, or cramp.

As I said before, these are often the accompaniments of gastric mucous Flux, but at the same time they often exist without it; and, indeed, almost anybody may bring them on by getting very tired and then eating largely. If Vomiting occurs, you see no mucus in the egesta, but simply the food last taken unaltered in quality or appearance. Digestion is more than slow, it has completely stopped.

Oppression shows an exhausted condition of the muscular and nervous system of the stomach. The peristaltic motion is null from want of power. The causes usually are those which exhaust the nervous energies without stimulating the powers of life, such as prolonged and severe intellectual labour, annoyance of mind, and overstrained attention. Temporarily, and in persons previously disposed, mere corporeal exertion may bring it on; but this form of depression usually works its own cure, and does not become a chronic habit; for the excessive bodily toil either causes a reaction of increased nutrition, or so exhausts the voluntary muscular system that it cannot be continued.

This view of the pathology of the disorder obviously suggests the appropriate treatment, which is, to tone and invigorate the involuntary muscles of the stomach. I have found no remedy do this so invariably as Strychnine. Should Anæmia be present, Iron—if Heartburn, Acidity, or Waterbrash be joined, then Bismuth can be added; but where the symptom named exists alone, or predominates above the others, still more, if Bark, Iron, or other tonics in any way

disagree, nothing affords such satisfactory results as the alkaloid principle of *Nux Vomica* above named.

WEARING OR BORING PAIN commences gradually soon after food; it is confined to the epigastrium, or extends itself over the abdomen, and does not run up the œsophagus like Heartburn. It sometimes is relieved by Vomiting, and if not, continues with more or less intensity till the stomach empties itself through the pylorus. The pain is increased by pressure, very often, however, not immediately, but in the course of a minute or two, as if the sluggish sensation of the part took some time to appreciate the injury.

This sort of pain is nearly always sufficient to establish the diagnosis of Ulceration; even Cancer does not cause it, so long as the mucous membrane be whole. The diagnosis is strengthened if weight and tightness of epigastrium be present to indicate the excessive secretion of mucus which usually accompanies chronic Ulcer; and is further confirmed by the occurrence of bloody vomiting.

This form of pain can seldom be removed by internal remedies. Those which do it most good are Bismuth, Opium, and Kino; but counter-irritants to the external surface of its seat, Leeches, Blisters, continuous Poultices, Mercurial and Opiate inunctions, are of much more marked benefit.

It is in this case especially that the failing organ requires to be spared work. The best dietetic substance is Milk made alkaline with Lime or Soda-water, given in small quantities as frequently as possible. Next to that, a mouthful of mutton chop at a time, with a dose of Pepsine to digest it. Meals are painful, your patient tells you, so advise none to be taken, but a continuous sparing supply of such food as may pass through the stomach without distending it, and

be digested by the small trickling of peptic juice which there is in the stomach and bowels. The chief object of the Lime-water is to prevent the milk forming a large curd, but it also may be a sedative to the raw surface, just as it is to a blistered or burnt skin.

CRAMP OR SPASMODIC PAIN in the epigastrium appears to arise from the pyloric sphincter. It is often accompanied by Cramps in the neighbouring and remote muscles, thus affording an indication of the tissue in which its seat is to be looked for. It occurs chiefly in old persons, during the latter period of the stay of the food in the stomach, and does not show any organic disorder of the part.

LECTURE XXIV.

ERUCTION AND VOMITING.

Anatomy and physiology of ERUCTION—Relaxation of Œsophagus—Spasm—Analyses of gases by chemists—Deductions therefrom—Secretion of air by mucous membrane (?)—Defective absorption—Decomposition of food—Fermentation prevented by Acidity—Classification of morbid states in which Eructation occurs—Indications of treatment in the several classes—Antacids—Astringents—Valerian—Ammonia—Sulphurous Acid—Charcoal—VOMITING—Causes of—Indications afforded by the contents of the vomit—Remedies for—Hydrocyanic Acid—Carbonate of Magnesia—Opium—Chloroform—Leeches—Lime-water and milk—Brandy—Creasote—Valerianate of Zinc—Ice—Possibility of starvation from Vomiting of a purely functional character—Sea-sickness and its remedies.

(Summer Session, 1857.)

ERUCTION is the passage upwards through the Œsophagus of air contained in the stomach. It must be remarked that the gaseous contents of the hollow viscera are in a different position from the liquids and solids; their great expansibility by heat, and their low specific gravity, give them an inherent force which enables them to find their way out without any aid from the muscular system. There is no fluid so light but it requires the action of the expiratory muscles to

expel it from the stomach, whereas no gas is so heavy but that, when warmed by the body, it will not rise through the œsophagus directly that tube is relaxed.

The first condition, therefore, of Eructation is the relaxed and open state of the cardiac end of the gullet. The air, instead of being retained by the natural contraction of this powerful sphincter, finds its way upwards in greater or smaller quantity. The passage of the bubble towards the mouth almost always, except in completely paralytic patients, causes a reaction, and by the time it gets to the fauces it is compressed by the stimulated muscles, and expelled with considerable force. Hence the noise is greater than is caused by the mere bubbling of air up the gullet, such as you produce in moving a dead body. There is, therefore, a compound of relaxation and reactionary spasm, the former taking the initiative.

The analyses of the gas contained in the stomach, by Chevreul and Chevillot, show that more than four fifths of it is atmospheric air and the rest carbonic acid in much less proportion than in the breath which is passing out of the mouth by expiration.* So that we have clearly not to seek far for a source of the air; it is evidently swallowed with the food and saliva in the great majority of cases. Some persons also have a trick of half-consciously swallowing air, like crib-biting horses, especially when suffering from some uneasiness in the digestive organs; and in the paroxysms of sobbing, of Hysteria, and of Epilepsy, large quantities are gulped down. And it is not impossible that gas might be secreted by the mucous membrane,

* See a comparison of the different gases of the alimentary canal as analysed by Chevreul, Marchand, and Chevillot, in the author's work on 'Digestion and its Derangements,' book i, chap. ix.

though I am not aware of any case that proves the occurrence.

Another morbid condition that helps to produce the flatulent collection of gases is Defective Absorption. In health gases are very easily absorbed by the alimentary canal. It is the normal thing for the abdomen to be dilated during digestion with several pints of air, which disappear in a short time without passing upwards or downwards. To be convinced of this fact is exceedingly easy, by observing the extent to which the parietes of the belly are distended and the descent of the diaphragm is impeded, so as to shorten the breath, after even a light meal of only a few cubic inches of victuals. In an hour or so the distension has all gone, without making any sign of sudden departure, in a healthy person. But in an invalid body absorption is not so active. The gas normal to digestion is not taken up, and remains to disturb the patient by its continued presence. Should the œsophagus be in its natural state—that is to say, equally contracted throughout—the aërial contents of the stomach may be passed on through the pylorus, to produce, perhaps, the state of Flatulence, which will be considered in a future lecture. Should, however, that tube be relaxed, then they break upwards in Eructations.

So far, the bulk of air swallowed has been supposed to be increased only by heat and expansion. But in some cases it is further augmented by gases disengaged from the decomposing organic matters of the food. The occasional occurrence of the alcoholic fermentation in the digestive canal is proved by instances of Vomiting, in which the matters ejected are seen actively undergoing this chemical change. They are frothy and tumid, continually swelling up and throw-

ing off bubbles of carbonic acid, like yeasty beer. You have lately seen a man in Cambridge Ward in whom this condition of the ejecta was very conspicuous. Half a pint of vomit, left to stand, soon frothed up and ran over the edge of a vessel holding two quarts. You can easily imagine what a disturbance in the stomach all this frothing and boiling must make, and are not surprised at the rejection of such a turbulent guest.

Fortunately, the spread of alcoholic fermentation through the saccharine contents of the stomach is a rare occurrence. Its features are so marked, and the discomfort it causes is so great, that we should hear a great deal more about it were it common. The fact is, that even where it begins and gives rise to the disengagement perhaps of some carbonic acid, it is rapidly stopped by the conversion of the sugar into lactic acid, which is more congenial to the temperature of the body. So that the "Acidity," which in a former lecture has been spoken about as an evil, is the guardian against a still more serious evil.

It will be easily seen, from what has gone before, that the morbid states of which Eructation is a phenomenon, naturally arrange themselves into three groups—(1) *where there is simply a relaxed œsophagus*, (2) *where there is an increased quantity of atmospheric air swallowed*, and (3) *where foreign gases are formed from chemical decomposition*.

In the *first* may be included many cases of Heartburn. The quantity of air brought up is small, but it seems to relieve the discomfort, probably by its stimulating the painful organ to contract—just as moving a cramped limb cures the spasm. It may be observed that these cases are made much worse by motion. I have been told by several patients that if they kept quiet after a meal they experienced scarce any incon-

venience, whilst exercise at such a time invariably brought on Eructations, Hiccough, and Heartburn. Sometimes the Eructations are the most prominent symptom, and the Heartburn is very slight.

Under the same category may be classed cerebral diseases of a paralytic kind, where the partial loss of power in the œsophagus frequently causes Eructation.

In these instances the Eructations usually occur very soon after meals, and have very little explosive character.

In the *second* group come Hysteria, Epilepsy, and Chorea. Watch a patient in an hysterical or epileptic fit, and you will see great gulps of air bolted down. In Chorea, too, you may often detect by the eye or touch the involuntary spasm of the gullet, which gulps and swallows whether any solid matter is present or not. There is often, too, at other times, especially in Hysteria, a spasm of the œsophagus, well known as *Globus Hystericus*. And less marked manifestations of the same phenomenon, uncomplained of by the patient, or called simply "Heartburn," occur constantly during the day, and fill the stomach with air.

The excessive swallowing of air is often associated with a large or dilated stomach,* but I cannot satisfy myself whether it is cause or effect; I am inclined to

* In 13 cases of Dilated Stomach which I have noted—

3 had Gastric Cancer (St. George's post-mortem book);

2 had chronic Ulcer (ditto);

2 had Dropsy and Diseased Liver (ditto);

1 had Ulcerated Œsophagus and distorted ribs (St. Mary's post-mortem book);

1 has a pendulous Tumour attached to the pylorus (alive);

3 have very Fat Omenta dragging down the stomach (alive);

3 have Albuminuria (alive).

think the latter, for the following reasons: you find these dilated stomachs principally as the result of some mechanical pressure or drag on the organ from *without*, and therefore I do not know whether repletion from *within* alone would cause a permanent increase of area, more especially repletion with a substance so easily got rid of as air; while, at the same time, it is easy to imagine that a large, heavy, empty stomach, dragging upon the cardia, should give rise to an instinctive gulping.

In this class of cases, the explosions of air occur at various times, but most markedly and most inconveniently immediately on swallowing food or drink. The air thrown up has little or no taste or smell.

In the *third* group, where the gas is really generated in the alimentary canal, the eructations occur much later after eating—sometimes not till the time when, normally, the stomach ought to be empty; and if they do come close upon the meal, they continue much longer, and do not give the apparent relief which is experienced in the other cases.

The gases thus eructated are nauseous and fetid, sometimes with the odour of sulphuretted hydrogen.

In these cases, there is almost always Mucous Flux of the stomach, sometimes from anatomical changes in some part of the organ, sometimes without. The *rationale* appears to be, that organic matters in a state of decomposition remain adherent in the mucus, and act as ferments to the newly received food. Perhaps, too, the mucus itself may decompose. You know how quickly that takes place in urine, and how soon its decomposition is communicated to the rest of the fluid in or out of the body; and the same is likely enough to happen in the alimentary canal. The decomposition of the mucus is confirmed by the frequency with which

different sorts of low organic growths (moulds) are found in it. The cryptogam *Sarcina ventriculi* is the most distinctly marked of these, and, though detected occasionally elsewhere, certainly finds its most congenial home in the stomach. In other places it has been found a floating wanderer in fluids, but in the mucous membrane of the stomach it may be seen fixed and growing in the mucus. It is not often that an opportunity occurs of proving to the eye that such is the habitat of the *Sarcina*—we frequently find it vomited, but the patients rarely die during their illness, the complaint not being a fatal one. Two years ago, however, one such opportunity offered itself in a girl of thirteen, who died in this hospital of enlarged heart. She had frequent attacks of mucous vomiting without *Sarcinæ* a few weeks before death, and at the autopsy we found the seemingly healthy great curvature of the stomach thickly clothed with a stringy mucus, very difficult to detach, in the outer layer of which a great quantity of *Sarcinæ* were imbedded.

Being fixed thus in a permanent home, as shown by the above-quoted rare case, and rapidly replacing with new growths those which are wiped away by the food, the *Sarcina* is, unfortunately, by no means idle. A great number, perhaps all, of those cryptogamous plants whose nature is to grow upon decomposing organic matter, have the property of promoting decomposition, so that they are not only the consequences, but the causes also of decay. It is found that the gutta-percha covering to electric-telegraph wires, when laid down near the roots of oaks, becomes rapidly rotten from the presence of a fungus peculiar to that tree. Put jam in a new cupboard, and it will keep much longer than in an old one, where mould has previously grown. Economical housewives have some-

times what they call a "vinegar-plant;" it is, as I show you here, a fungoid vegetable found in vinegar casks. If placed in sugar and water, it makes the whole undergo the acetous fermentation in two or three weeks, instead of the process occupying several months. The mould found in yeast, the *Torula cerevisiæ*, though not essential to alcoholic fermentation, certainly augments the rapidity of its induction; so that it is entirely in accordance with known physical laws if the presence of *Sarcinæ*, or of the yeast-plant, on the mucus of the stomach should bring on fermentation in the food before the obstructed absorbents have time to take it up. Both have been found in the contents of the stomach ejected; and it is shown by the case I quoted, that *Sarcinæ* at least may exist adherent to the mucus without being thrown up. Probably very often these plants are unseen promoters of the rapid fermentation which takes place so mysteriously in the stomach of invalids.

Besides producing Eructation, the fermenting of organic matters in the stomach is almost always followed by Vomiting; while, if it takes place in the bowels, the consequence is Diarrhœa; two phenomena which will be considered shortly in their own place.

The indications of treatment afforded by Eructation, are different in the three groups of cases in which it occurs. In the *first*, Antacids are often sufficient for temporary relief. Four grains of Rhubarb-pill, with a grain of Gallic Acid, taken before dinner, will be found still more useful, for the tone thus given to the mucous membrane prevents the recurrence of the inconvenience. In more severe cases I have found a Rhubarb draught with Gallic Acid, taken three times a day, a very efficient remedy.

In the *second* group, where excess of air is swal-

lowed, Valerian and Ammonia are very beneficial. Where there is nausea or vomiting, the Valerianate of Zinc may take their place; but it is not so certain as the infusion or tincture of the herb. Where this fails use Strychnine, which you have seen in the wards to be the most powerful agent we have to steady such irregular nervous action as Hysteria, Chorea, &c.

In the *third* group, the great object must be to prevent decomposition. In the laboratory you find that no agent is so powerful in this respect as Sulphurous Acid; and, accordingly, it is much used in various processes of the arts for the purpose. Sulphur is often burnt in casks to arrest the fermentation which is apt to be going on in the liquids soaked up by the cracks or porous parts of the wood, and the Sulphurous Acid vapours effectually do their duty. The Board of Health finds no disinfectant for fetid sewers so instantaneous in its action as Macdougall's, the chief ingredient in which is Sulphite of Lime. Meat may be prepared on the same principle, and keeps as well as when salted or dried; and you may test even on such a delicate substance as yolk of egg how fresh it keeps with any Sulphite salt. The same effect is produced by taking as a medicine Hyposulphite of Soda; the fermentation of the contents of the stomach is arrested, and the evil effects of that fermentation prevented.

Another powerful arrester of chemical changes is Charcoal. When soup has begun to turn sour in hot weather, clever cooks boil it again with a little bag of Charcoal in it, and it becomes quite sweet. The same agent will prevent decomposition in the alimentary canal. I have used it, I must say, only in cases where decomposition occurs in the intestines, producing Flatulence; but I should not hesitate to employ it in

gastric fermentation also, if Hyposulphite of Soda chanced to disagree or was not beneficial.

VOMITING seems less than any of the phenomena previously discussed dependent upon the peculiar condition of the stomach, and more upon the idiosyncrasy of the individual. There are those who, whatever may be the matter with them, never vomit; whilst others do so on the slightest occasion. Even pleasant associations will, in some people, bring on this most unpleasant consequence: a patient of mine, a healthy young lady, is frequently seized with retching on entering a ball-room where she expects an agreeable evening; whilst it never happens in going to a stupid party. On the other hand, I have had patients with Cancer of the stomach, and others with various sorts of severe Dyspepsia, who could take the most nauseating drugs without inconvenience. The mere fact of vomiting, therefore, affords in itself no clue to the local condition of the stomach. But the time of its occurrence, the circumstances which increase it, and the nature of the matters thrown up, may be most suggestive to the practitioner.

Vomiting which occurs when the stomach is empty, or which, though it occurs at other times, is most frequent and distressing then, may be safely set down as arising not from any fault of the viscus itself. Such is the morning Vomiting frequent in pregnant women, in cases of Diseased Heart, of Abdominal Tumour, and sometimes of Pulmonary Consumption. This is no doubt a reflex action of the vagus nerve excited by the irregular irritation of some of its branches; and on the same principle I can easily understand the more rare cases where Vomiting has been caused by foreign bodies in the ear or nose, by Tumours in the neck, &c.

When Vomiting occurs with a replenished stomach, it may be considered as a general rule that the smaller the quantity of food that produces it, and the sooner it takes place after eating, the nearer to the mouth is the seat of injury. Disease of the œsophagus causes rejection of the food before it has got down; of the cardia, or smaller curvature, very soon after it has got down; and disease of the pylorus, or pancreas, or liver, after an interval sometimes of as much as several hours.

When Vomiting arises from congestion of the brain, as in Apoplexy, Drowning, Concussion, or in dead Drunkenness, it is increased by the horizontal posture; when it arises from deficient supply of blood, as in Fainting, Anæmia, and Sea-sickness, that position relieves it.

The contents of the vomit, which can afford practical suggestions to the practitioner, are the following:

Mucus, if it is in large stringy masses, shows a generally diffused morbid condition of the stomach itself; if it is in small round lumps, it has most probably been secreted from the bronchi and swallowed.

Blood, when it comes from an open vessel perforated by an ulcer, always is in considerable quantities, and contains black clots; if it is mixed up with mucus, brown and shreddy, it denotes a high state of congestion of the gastric walls, with rupture of some small capillaries, or what is commonly called "exudation."

Saliva, readily distinguished by its alkalinity, and the abundance of buccal epithelium contained in it; when in large quantities, it denotes an irritable state of œsophagus and fauces; when it constitutes the bulk of the vomit of pregnant women, you will often find associated with it a sort of salivation in the mouth.

Fæces or *fæculent smell*. This is usually referred to a *reversal* of the peristaltic motion; but I do not think it necessary to resort to such a strained explanation. When we reflect that about twelve quarts of secretion are daily poured into the intestines, it is easy to see that you have only to stop the onward peristaltic wave and absorption, for the ilia to get overfilled, and for their contents to overflow upwards into the stomach. There they naturally produce vomiting, just as they would if swallowed. Such a paralysis of muscles and absorbents takes place in Peritonitis, as well as in mechanical obstruction of the ilia, and consequently in Peritonitis you have sometimes fæculent vomiting.

Fermenting matters in the vomit show the continuous retention in the stomach of some remains of the food or of vegetable growths in a constant state of chemical change. There is therefore present a quantity of adherent mucus capable of retaining them there.

Acid matters in excessive amount may arise from a similar state of things; but it appears as if simple torpidity of stomach, without the necessary presence of mucus, can occasion it.

Pure unchanged food shows that the vomiting arises from the state of the nervous system, which is either *locally* irritable, from neighbouring anatomical changes; or *secondarily*, as in pregnancy; or *generally*, as in Hysteria.

The remedial measures which I have found most useful in cases of vomiting are the following:

Hydrocyanic Acid, where it arises not from any fault of the stomach itself, but from the secondary condition of the nervous system, as in Pregnancy, Diseased Heart, in Abdominal Tumour, in Pulmonary Consumption, in Peritonitis.

Carbonate of Magnesia, in the vomiting accompanying Gastric Mucous Flux, with copious formation of acid.

Opium, in acute vomiting from Gastric Ulcer, from Malignant Tumour, in faecal vomiting from Perforation, Peritonitis, Internal Hernia—in short, wherever the vomiting is accompanied by much local pain.

Chloroform, in the vomiting at the commencement of fevers. It may be applied either on a cloth to the epigastrium, especially in choleraic Vomiting, or taken by the mouth.

Leeches.—Very often the vomiting in cases of Gastric Ulcer will not be appeased till some Leeches have been applied to the epigastrium.

Milk and Lime-water, as a sole diet, will often alone stop Chronic Vomiting. Complete rest and absence from excitement must accompany its use.

Brandy, in teaspoonful doses, is a favourite domestic remedy. It is suitable in acute cases for the nonce, and will often stop nervous Vomiting from mental causes, but is obviously not adapted for chronic disease.

Creasote.—This is an uncertain remedy, and I confess I cannot at all satisfy myself what cases it is suited to. The Vomiting certainly seems checked by it sometimes, sometimes is aggravated, more commonly is uninfluenced. The cases where it has done good have appeared to me generally dependent on nervous causes. For example, it has been beneficial in Hysterical Vomiting.

Valerianate of Zinc I tried once, in Hysterical Vomiting, with good effect. But in these patients the most powerful remedy is the *Shower-bath*.

Ice is often most useful in Acute Vomiting in Fevers,

in Chronic cases of Gastric Ulcer, and in all cases is an agreeable remedy in warm weather.

The administration of food in cases of Chronic Vomiting is a matter of much importance. You must not let your patient be starved. Even when Milk and Lime-water does not check the vomiting, it is by far the best diet. In teaspoonfuls at a time, it can almost always be kept down.

You must not suppose the possibility of being starved to death from Vomiting an hypothetical fear. A young woman came under my care at this hospital a few months ago who had been deserted by her lover. She had had violent Hysteria, and an utter inability to keep anything on her stomach for some days; the pulse was failing, and the tongue getting dry and brown. An attempt was made to retain life by means of nutritive enemata, but in vain. At the post-mortem examination every organ was in a completely normal state, and the catamenia were flowing from the uterus. Clearly she had died of starvation only.

When Sea-sickness goes to the extent of making a person seriously ill, it is worth while to stop it or prevent it, as you can generally do by a large dose of Opium. But it is very far from being worth while for healthy persons, or even invalids, in ordinary cases, to take this preventive; for a small dose is useless, and the requisite large one makes the patient endure much more discomfort afterwards than the sickness during the voyage would have caused. Chloroform does not arrest the Nausea, but it certainly does seem to control the violence of the straining. Stimulants are the most effective palliative for healthy persons. In some rough rolling weather off the coast of Portugal I once tried on myself and several companions champagne and highly devilled biscuits with complete success. But

the panacea is not always accessible ; the best imitation of it generally at hand is very frothy bottled porter: if it does not in every case prevent the Vomiting, yet the prostration afterwards is avoided, and the ejecta are not so disagreeable.

LECTURE XXV.

DIARRHŒA.

Pathology of Diarrhœa—Difference from mere frequency of evacuation—Division of Diarrhœas—Bilious—Watery—Muco-purulent—Bloody—Putrid—Their causes and indications—Supplementary and Reflex Diarrhœa—Infantile—In Fever—Ulceration of Bowels—Mucous flux—Copious solid matter—Acid Diarrhœa—Use of Opium—Riding—Cautions about travelling—Flatus in Ilia—Charcoal, &c.

(*Summer Session, 1857.*)

IN every mucous membrane there is going on at the same time secretion and absorption, but in different parts one or the other is normally in excess. Thus in the stomach it is *Secretion* that is most important for the digestion of nourishment; and all that impedes the secretions and their mixture with the viands is a prime consideration. But in the second part of digestion—that is, during the passage of the aliments through the small intestines—it is *Absorption* that most attracts our interest, and it is any impediment to that act which produces morbid phenomena.

When the absorbing power of the intestines is defective, the consequence is an excess in the *quantity* of matters which pass through them; that which ought to be taken up is carried along with the normal draught, and so constitutes a true *Diarrhœa*.

It is of great practical importance to distinguish this from the mere *frequency* of evacuation, which is

quite consistent with a natural or even deficient amount of fæces. The number of motions, or the number of times an inclination is felt to void them, is often increased when less than the average quantity may be passed in the twenty-four hours. This is of the nature of Tenesmus, and arises from an abnormal state, sometimes Ulceration, sometimes Piles, sometimes Cancer even of colon or rectum; whereas true Diarrhœa, as aforesaid, depends upon defective function of the ilia.

The prevailing contents of the stools constitute the best principle of division; and according to it we may speak without being misunderstood of Bilious, Watery, Muco-purulent, Bloody, and Putrid Diarrhœa.

Bilious Diarrhœa is the simplest form of the disorder. Bile, normally poured out by the liver to the extent of from three to four pints a day, merely requires not to be concentrated by the intestinal absorption, to add very largely to the excrements. Its presence is declared in them by its well-known smell, and by a colour exhibiting various shades of yellow, brown, and olive-green, according to its absorption of oxygen and mixture with fæces.

This arrest of the absorbing power of the intestines and consequent rejection of bile mixed at first with fæces, and when the bowels are emptied augmented by the exudation of water from their parieties, is what so often takes place temporarily from the impression of cold, from irritation of the alimentary canal by unwholesome food, and from mental emotion. It is possible also that the qualities of the bile itself may be altered in some cases, or its quantity increased. It may be changed by medicines, as by Calomel or by Senna, and so rendered incapable of absorption, and be poured through the ilia without their being in fault.

Congestion of the portal system, such as is especially frequent in Europeans resident in warm climates, causes the bile to be at one time deficient, and afterwards to be poured out in excess. Irritation of the stomach and duodenum causes it to be retained in the liver and gall-bladder till it is unfit for absorption. In both these cases it is rejected by the bowels and constitutes Bilious Diarrhœa.

You must be very careful to distinguish this symptom from a different one, often confounded with it—viz., the presence of a bright, grass-green matter in the stools. This is not bile at all, but, in reality, altered blood, and denotes congestive inflammation of the mucous membrane, of course requiring very opposite treatment. Your best aids to diagnosis are, first, *the Smell*: in real bilious stools, the odour of the hepatic secretion can always be perceived, in spite of the fæces mixed with it; and at the same time it always prevents putrescence, or even counteracts the incipient putrescence of the undigested aliments; while in the grass-green stools the smell is not of bile, but more or less cadaverous or putrid. Secondly, the *Microscope* exhibits in the mucus, which always is present, the usual globules of mucus and pus, with small shreds of fibrine and blood-globules.

In *Watery* Diarrhœa it is probable that there is increased exhalation of aqueous fluid from the blood-vessels of the intestines, as well as an arrest of its absorption. In this form, when pure, if the fæces are retained by a voluntary effort, they may be concentrated nearly to their normal condition by the removal of the water, and thus a test afforded that their state depends merely on the addition of this constituent. Thus, for instance, if you take a saline purgative, you may feel several pints of fluid rolling about in the

bowels; but if you resist the inclination to stool, it goes off at last, and you void afterwards little more than the ordinary amount of semi-solid fæces. It is not so in bilious or other Diarrhœas.

Watery Diarrhœa, when not arising from the anti-osmotic action of neutral salts, indicates a congested state of the venous plexus of the alimentary canal, and a consequent morbid proneness to exhalation and deficiency in absorption. The vitality of the mucous membrane is deficient, as is shown in Cholera and Low Fever; and if not restored, local death, exhibited in ulcers and sloughs, must be the result.

The exhalation, however, tends to become habitual, and so continues beyond the period of congestion, so that the whole mass of blood is relieved of its water, and thus dropsical swellings may be re-absorbed and passed off through the bowels.

In *Muco-purulent* Diarrhœa, water is in excess, but the characteristic is the presence of mucus or pus mixed with it; in which also there are, in acute cases, shreds of fibrine, blood-globules, and flakes of the peculiar epithelium of the bowels.

Should any of these products of inflammation be alone, separate and unmixed with the fæces, then it is probable they come from the colon or rectum; but if they are mixed up with a large quantity of watery fluid, and still more, if that watery fluid shows itself to be the serum of the blood by coagulating with heat, then there is little doubt of their source being the mucous membrane of the ilia, whose morbid condition it consequently indicates. The fluid in muco-purulent Diarrhœa is always highly alkaline, and if examined with the microscope, crystals of ammonio-magnesian phosphate are found scattered through it. If allowed to stand, it separates into two distinct parts: the one

serous, varying in colour from complete whiteness and transparency through all the shades of yellow to deep brown, or where blood is present, to red and black, in which are the flakes of fibrine, the ammoniacal crystals, and floating globules; the other *sedimentary*, consisting principally of gray, granular matter, the *débris* of food mixed with more or less of the colouring matter of the bile and half digested blood.

The degree of serosity and the proportion of the products of inflammation in the first, show the extent to which inflammation has gone in the mucous membrane; whiteness, bloodiness, putridity, alkalinity, being bad signs; yellowness, opacity, the smell of bile, and the absence of putridity, being good.

The second, or sedimentary portion proves the condition of the general system rather than that of the *ilia* in particular. If it is copious in proportion to the fluid, then the normal function of destructive assimilation is shown to be little interfered with; if it is scanty, this important process is arrested, the effete morbid tissues are not being removed from the body, and a more grave state of affairs exists. The quantity of solid sedimentary matter is the best test you can have of an advance towards health, or departure therefrom, in all cases where there is this state of bowels.

The most common examples of muco-purulent Diarrhœa are found amongst acute diseases, in Low Fever, in Cholera, Enteritis, and Dysentery, especially in the teething Dysentery of children. Amongst chronic diseases, Ulceration of the bowels, whether a consequence of Phthisis or Low Fever, is the most usual cause.

Bloody Diarrhœa, where the blood is in small streaks in the mucus, or slightly mixed with the serum, or mixed with the grass-green mucus above described,

indicates an inflammatory state. When it is in clots, either black or fibrinous, with the globules partially washed away, it shows that a blood-vessel of notable size has been opened into, probably by ulceration. Should pus be mixed with it, the diagnosis of ulceration is confirmed. Black, semi-digested blood, precipitated by standing with the sediment of fluid stools, comes from high up in the alimentary canal, as it indicates its exposure to the gastric juice. It not unfrequently comes from the stomach itself.

Putridity of the stools in Diarrhœa always shows that there is an imperfect quantity of bile in them, one of the most clearly ascertained functions of the hepatic secretion being to prevent the chemical decomposition of albuminous matters. Putridity may arise from two sources—namely, the food taken, or the albuminous secretions into the alimentary canal. A close examination of the stools will generally distinguish one from the other. If it is non-digested food which is decaying, then the solid constituents of the fæces are bulky, pale, containing large lumps of still paler substance visible to the naked eye. And if these are examined by the microscope, they will be found to consist of muscular fibre, fat, and other parts of victuals, often swarming with live infusoria and vibrios. This occurs from time to time in all cases of deranged digestion. If the fetor arises from the decomposed albumen of the exhaled serum, it will be observed to be exhaled from the more fluid part of the motions, which are like the washings of macerated flesh, while the solid part is scanty and comparatively unaffected. This shows a much more serious state of the vital powers, and in severe complaints, such as Low Fever, is usually the harbinger of death. It is often joined to a peculiar mouse-like smell in the sweat.

In some instances of mucous flux and indigestion in the upper part of the alimentary canal, the stools are acid from time to time. There is nothing special in the pathology of this. It arises simply from so much acid being formed from the decomposition of food, that it cannot be neutralized by the alkaline juices. Sometimes the acidification takes place in the stomach, sometimes in the cæcum, during the delay of the decomposing aliments there. In the latter case considerable pain is often experienced in the right iliac region, and in the course of the colon just before the evacuations.

In all forms of Diarrhœa from affections of the small intestines the evil is twofold: first, the aliment, which ought to contribute to the support of the system, is hurried through the abdomen, and so the supplies are cut off; and secondly, destruction is carried on at an increased rate by exhalation from the mucous membrane of the bowels. The stick is being cut away at both ends, and hence there is nothing which produces such rapid emaciation. Where *soi-disant* "Diarrhœa" is reported to you as existing for any length of time without emaciation, always let your suspicions be aroused; observe carefully whether the quantity of excrement is really in excess, or whether the ailment is not rather of the nature of Tenesmus, and arising from the colon or rectum. You will generally find such to be the fact, and must vary your treatment accordingly.

Sometimes Diarrhœa seems to be the transference of a tendency to exudation of serum from another tissue to the alimentary canal. Such is that which sometimes comes on of its own accord, or may be artificially induced in Ascites, and which certainly diminishes the abdominal effusion. Such is the Diarrhœa

of Uræmia, which, however, does not usually relieve Anasarca, but rather increases it from the weakening of the blood which follows. Hence it is a very bad, almost a fatal symptom in the latter disease.

The most important indication of treatment is connected with the diet. It must be such as does not require a perfect state of the digestive organs for its absorption, while at the same time it is nutritive to the patient. The best of all is Milk and Lime-water. In feverish cases it may be iced, and Soda-water may be occasionally substituted for the Lime. Keeping a person solely on this diet is often sufficient alone to cure all sorts of Diarrhœa not dependent on a permanent chronic cause; and even where there is such a cause for it, very great temporary benefit is derived, which forms a better starting-point for medicinal treatment than the previous state.

In a temporary Diarrhœa without other disease the loss of the normal supply to the body is not of so much consequence, a short starvation perhaps does good to a person otherwise healthy. But in severe acute disease, or in long-continued chronic Diarrhœa, this is an important consideration, and care must be taken to allow for it. Since food in the usual quantities at once cannot be borne, and is rejected undigested, give it very frequently and in small portions. The alkaline milk diet I have just recommended allows this to be done most conveniently. A jug of the liquid may be kept close at hand, and sipped from time to time, so that as much nutriment may be taken in the twenty-four hours as would be done by a healthy person without the alimentary canal ever being overloaded.

When there are lumps of fæculent matter in the stools, and a smell like that of normal excrement, give Purgatives. Until you get rid of these remains of

previous Constipation, you will be sure to have a relapse of Diarrhœa, though your medicines may check it for a time. When there is no normal smell present, I have never found purgatives beneficial. This is a better rule than the routine practice of always commencing the treatment with a Purgative—a plan which I have known very injurious in cases of chronic Diarrhœa.

Where the products of acute inflammation are found mixed in the stools, such as white and opaque mucus, flakes of fibrine, epithelium, blood-streaked mucus, bright green matter, &c., as above described, Leeches, Fomentations, warm Hip-baths, and Poultices to the abdomen, are the appropriate treatment, and should not be delayed. In the case of babies, the whole abdomen and loins may be fastened up in a large circumambient Poultice, which they cannot wriggle away from, one or two Leeches put on near the navel, and the bites allowed to bleed for some time. The drugs I have most trust in are Calomel, Ipecacuanha, and Carbonate of Soda. Of the first and second equal quantities, and a double quantity of the third, may be made into powders, of which from four to six grains, according to the child's age, may be given every three hours. This is a traditionary powder, but it is right to say that I have in a good many instances lately left out the Calomel, and the case has done just as well if not better without it.

Be very careful in infants to look to the teeth. The state of the bowels may very likely be dependent on reflex irritation from the dental nerves. Lancing the gums will sometimes stop a most violent Diarrhœa where the stools show evident proofs of the inflammatory condition of the ilia. The action of the lancing is probably much the same as that of Leeches, viz., a

relief to the congestion of the mucous membrane. Upon the development of the teeth themselves it can hardly be supposed to have any influence, but that it alleviates Toothache any adult can experience on himself, though it is difficult to get an account of the action of the remedy from his little patients.

In teething infants Opium is of striking utility. I begin with half a grain of Dover's powder every three hours, increasing the dose by half a grain every three hours, till a decided *excess of sleepiness is produced by it*.

But there is no doubt that the most important cure in infantile Diarrhœa is change of diet. Bringing up by hand or an unwholesome state of the breast-milk are generally at the bottom of the ailment. No remedy is equal to a healthy wet-nurse, or, where circumstances forbid that, as near an imitation as can be made of human milk by that of animals. The old-fashioned donkey's, or the cow's diluted and slightly sweetened.

In Low Fever the presence of Diarrhœa indicates to many the employment of Mercury in the form of *Mercury with chalk*. The effect of this drug is the increase of solid sedimentary matter in the stools; in other words, a restoration of the destructive assimilation going on in the body. The motions are diminished in number and in fluidity, but not in actual quantity. Thus the tissues devitalized by the typhoid poison are removed, and can be replaced by new nutriment. This increase of solid matter is taken as an evidence and test of benefit accruing from the use of Mercury, and as a prognosis of good. But I confess I prefer the chalk without the Mercury in the shape of *Mistura Cretæ*.

Where in the absence of Fever blood is passed by

the bowels, the two most powerful means of checking it I have found to be Turpentine and Acetate of Lead, especially the latter. Its direct influence as a poison on the bowels would have led to an expectation of this. If the Hæmorrhage has gone on for some time, I am inclined to think it must be sometimes due to a clot distending the bowel, and preventing it contracting upon the bleeding spot, for certainly a dose of Castor Oil, in the results of whose action a quantity of pale clots were exhibited, has several times in my experience stopped Hæmorrhage from the bowels.

The long continuance of Diarrhœa from Ulceration of the Ilia must starve the patient. It tends also to prolong itself; for the weaker the system is, the more irritable are the sore places, and the less can the morbid actions they set up be resisted. It is right, therefore, to use direct means for arresting the Diarrhœa. The best are such as blunt the sensibility of the ulcerated spots. The Milk-and-lime-water diet should be used first, then Chalk and Opium, which appear to act on the sore mucous membrane just as they do on a raw blistered surface of skin. If these fail, Sulphate of Copper should be used in doses increased from a quarter of a grain up to two grains. If no good accrues after this, I suspect an error has been made in the diagnosis.

Where there is a simple flux of transparent mucus without fever, pain, or pressure, or any fibrine or blood in the motions, the vegetable astringents, such as Logwood, Bark, Kino, and Tannin, are often of great use. In such cases, too, I have prescribed Iron with seeming benefit. I must, however, say, that I feel doubtful in the great majority of instances whether this form of flux is not rather due to the colon than to the small intestines.

Where the solid matter is copious, pale, and fetid, consisting mainly of undigested food, inspissated Bile may be given with benefit; the stools become darker, less fetid, and less frequent under its employment. This is particularly the case in children whose mesenteric glands are diseased. I am hopeful, too, that Pepsine will prove a still more efficient remedy in the same cases, as it certainly diminishes the fœtor of the motions in the best way—namely, by promoting the normal solution of the food.

Acid Diarrhœa indicates the free employment of Chalk.

The use of opiates in Diarrhœa must never be made a matter of routine. As a general rule, I have found them beneficial without consequent harm, in cases where there was Tenesmus and frequent stools; but where the fœces are bulky and copious they appear to impede the natural secretion. Where the stools also are putrid, caution is required in their use. In the Diarrhœa which so often accompanies and proves fatal in Uræmia, they check, indeed, the debilitating flux, but they are apt to bring on Coma.

In some cases of Diarrhœa from chronic mucous flux of the intestines, without ulceration or acute inflammation, I have found riding exercise very beneficial. I suppose it is the gentle agitation of the abdomen, combined with the air and amusement, that proves of use.

In recommending the recreation of travelling to invalids subject to Diarrhœa, you must be very careful where you send them to. The epidemic influence of Cholera which has overspread Europe during the present generation, visiting almost every square mile of its surface several times during the last few years, has in many places left behind it a chronic endemic poison. The natives are, indeed, insensible to it, but few

strangers escape becoming affected more or less, according to their idiosyncrasies. Strong persons find it only an inconvenience, but an invalid is put in some danger, and certainly loses all the advantage of the tour. This is especially the case in the mountainous districts of the South of France, the Pyrenees, and Dauphiny, and in the volcanic regions bordering the Rhine, the Eifel and Moselle country, as well as those in the centre of France, the ancient province of Auvergne. All these places are attractive from their picturesque beauties, and therefore it is necessary that you should be warned of this evil attendant upon choosing them as the scene of a tour. You will see sometimes the whole of the strangers at a table d'hôte obliged to leave the room at once, and cause one another no slight inconvenience by tending all together in the same direction; and in the Pyrenees I have seen powders of Chalk-and-opium put up as the regular concomitants of a day's walk. It must not be supposed that this is the result of the foreign modes of cooking. I have known English biscuits and porter, and boiled eggs, adopted as a diet without relief, though of course nothing foreign could have got into them. I believe the cause to be as I have represented it—namely, a poison left endemic since the passage of Cholera through the country, but to which the natives have become acclimatised. That it is of late years only that this Diarrhœa has been prevalent is shown both by local report and the omission of all mention of it from the work on "Climate," by Sir James Clark.

One source from which strangers contract this Diarrhœa is an evil capable of, and rightly demanding amendment: I refer to the filthy privies in continental inns. A gentleman, eminent in his profession and of

good judgment, told me that, during a Pyrenean tour lately, he entirely escaped the Diarrhœa which everybody else without exception suffered from, by adhering to a strict rule of never entering one of these disgusting holes, but worshipping Cloacina under the pure light of the stars. Invalids and ladies cannot so well manage this unless they are rich enough to travel with carriages and servants and peripatetic water-closets.

FLATUS IN THE SMALL INTESTINES is one of the most troublesome forms of wind. If it escape into the stomach, which is fortunately rare, the taste and smell are peculiarly nauseous; whilst it seems to have considerable difficulty in passing the ilio-cæcal valve. Hence it rolls about in the abdomen from the changes in position which the motion outwards of the alimentary masses involve, and causes the well-known and distressing "Borborygmi," till it can get absorbed. The abdomen will often be distended for several days with it, without its being able to escape.

The persons most liable to this troublesome affection are fat anæmic and hysterical women; it follows also the small and contracted liver of spirit-drinkers, and sometimes is very annoying in cases of dilated heart. Some persons, also, in apparent health, are habitually much troubled with it. I am inclined to attribute it under these circumstances to a naturally sluggish portal circulation, which does not so quickly absorb the contained air as a freer motion in the blood-vessels would enable it to do.

Flatus in the intestines is troublesome during the day, from the tumidity of the abdomen, and noise on motion, and pain in the side; but when it comes at night it causes still more inconvenience by preventing sleep. I cannot explain why this is; there is not enough pain or discomfort to account for it, yet a

complete wakefulness and apparent want of desire for sleep commonly prevails. It is to be remarked, also, that it is in most instances made worse by Opium. Sometimes the patient will go to sleep easily and naturally on first lying down, and will then wake up in an hour or two, finding his abdomen tumid and uncomfortable, and will remain entirely without rest for the remainder of the night ; or if he drop off for a few minutes into unconsciousness, it seems rather to aggravate than relieve the feverish restlessness, and to cause headache.

The most effectual remedy is finely-powdered Charcoal, in doses of from ten to twenty grains, and of the Aloes-and-myrrh pill just enough nightly not to act as a purgative. The air seems to be absorbed, and the peristaltic motions quickened, by this treatment. Should that not be effectual, you can employ Strychnine in small doses in the pill.

It is scarcely necessary to say that indigestible articles of diet must be avoided, if the patient would prevent a recurrence of the complaint ; and it stands to reason, also, that cold sponging and bathing, seawater, and, in short, all hygienic remedies which improve the general health, will conveniently accompany the treatment.

I have known two cases of habitual looseness of bowels cured by marriage. In one of these the change was sudden and immediate : a gentleman from boyhood to the age of thirty-five had been used to have the bowels opened at least five times a day ; a week after his wedding the number of evacuations was reduced to two, and before the year was out to one daily. I presume it is requisite for the marriage to be a fortunate one—a Xantippe would not, probably, lead to the same soothing result.

LECTURE XXVI.

COSTIVENESS AND CONSTIPATION.

Costiveness and Constipation defined—COSTIVENESS dependent on retained excernible matter—What diseases it accompanies—Cause, defective vitality—Effect on the nervous system and mind of retained excernible matter—Indications of treatment—Inconveniences of Purgatives—Sort of Purgatives to be adopted—Dietary—Water—Watering places—Cautions in use of them—Hydropathy—CONSTIPATION—Causes—Irritating food—Unabsorbable food—Remedies—FLATULENCE IN COLON—Distinguished from that in Ilia—Remedies—Slight Cases difficult to relieve.

(Summer Session, 1857.)

THE opposite states to Diarrhœa are "Costiveness" and "Constipation." In the former the quantity of fæces formed is too small; in the second, the expulsive power is deficient.

COSTIVENESS arises from deficient excretion into the alimentary canal. What proportion of the matters that ought to be thus got rid of comes from the liver we have not yet the means of ascertaining, but the main point, that they are derived from portal blood, we are justified in asserting; so that the solution of the former question is of the less importance.

That a great deal of the colour of fæces is due to bile is familiar to us from the phenomena attendant on obstructed gall-ducts. But even when there is com-

plete occlusion of the communication between the liver and intestines, the fæces by no means consist entirely of undigested food; there is in them a great proportion of a yellowish-grey granular matter which appears also in the healthy state, and still makes up the bulk of the solid excreta.

In deficiency, therefore, of the excretive powers of the intestines generally (*vulgo*, "costiveness" or "biliousness"), there is a different substance retained than is the case when local lesion of the liver or gall-bladder obstructs the passage of bile. There is a partial retention of the whole matters destined for depuration from these quarters, instead of a complete retention of one constituent.

Hence there is not, as happens in mechanical retention of the bile, the well-known stain of Jaundice communicated to the blood and skin, nor are the stools clay-coloured. But there is a dinginess and darkness of complexion, and the stools are scanty. The skin gets greasy and opaque, the countenance sometimes puffy and bloated, sometimes thin and pale, the lower eyelid especially sallow and discoloured. The sebaceous follicles on the *alæ nasi* are stopped up with black matter.

There is in the patients thus affected seldom any decided emaciation, nor is there always even loss of muscular power; but still there is great sluggishness of body and apathy of mind, and often a miserable want of decision and energy. Digestion is accompanied by a good deal of discomfort and flatulence, but rarely by actual pain, and the distress does not begin till several hours after eating, so as to be with difficulty referred to any particular meal.

In the least complicated cases of arrested intestinal secretion the stools are dark, hard, and dry; but their

appearance may be varied by several circumstances. Sometimes there is an augmented secretion of mucus, and then they are intimately mixed up with it, forming a black, slimy, almost gelatinous mass. Sometimes, from the appetite not suffering, the patients will eat largely, and then there appears irregularly from time to time a quantity of fetid, semi-digested food, constituting a sort of Diarrhœa accompanied with pain and Colic. And this Diarrhœa will not unfrequently be the occasion of your patient's first coming to you, so that you might be deceived into a false impression of the case.

The congestion of the portal vessels in the upper portion of the alimentary canal is often followed by the same state in the lower, and thus Piles are formed, which add much to the general distress.

Costiveness is a common accompaniment of Anæmia, Chlorosis, Debility in males and females, of Diseased Heart, especially where the muscle is dilated rather than hypertrophied, of Contracted Liver, and, in short, of anything which makes the abdominal circulation sluggish. Sometimes it is found in cases of Pulmonary Tuberculosis, but hardly ever before middle age. All those pulmonary cases in which I have seen it last long enough to be a marked feature have been examples of senile Phthisis. It is often the first and most characteristic phenomenon of that change of system which takes place in females at the cessation of the catamenia. The stools get gradually more and more scanty as the uterine secretion also diminishes, the pulse grows feebler, the feet and hands more liable to get cold. There is evidently lessened vitality throughout the whole body.

No persons more frequently suffer from costiveness and its attendant "biliousness" (as the general appear-

ance of the skin is named) than old Indians. Their sedentary, routine life and high feeding, are partly chargeable with their liability. But in addition to this, the endemic diseases of the country are often the exciting cause. I have traced the commencement of a costive habit of body several times distinctly to an attack of dysenteric Fever brought on by malaria. So that the Anglo-Indian who suffers in this way must not be always accused of previous excess.

The natural end of this state of things, if left unchecked, is gradual progress from bad to worse. The decrease of destructive assimilation loads the tissues with effete matter, useless for the purposes of life, and a constant source of general discomfort. This impedes the constructive assimilation of food as well—growth is arrested, the blood is not renewed, and hence progressive Anæmia, weakness, want of nervous and muscular power, and probably in the end the degeneration of one or more of the viscera, and death from that cause.

One very striking attendant on the loss of destructive assimilation, is the depression of spirits; *Melancholy* is so named from the dark, scanty stools which were observed by the Greeks to be associated with it. It appears to me a universal rule in disease that the general discomfort is proportioned to the arrest of this vital process, and I am inclined to attribute it almost entirely to the influence on the nerves of general sensation of effete matter which is retained. In all maladies, both acute and chronic, you may observe the truth of this law. Mark, for instance, the commencement of a Fever: the malaise is excessive; there are pains in the back, in the head and the limbs, or, in milder cases, a sense of what the patients graphically call "all overishness;" but when they get worse, and destruction com-

mences, the effete matter passing off as urea and increasing the specific gravity of the urine,—then no aggravation of local symptoms, however much it may alarm their physician, and make his prognosis graver, prevents the general feeling of relief. Or watch a case of Consumption; the deposit of tubercle may be insignificant, and is at all events in its first stage; yet the patient is depressed, despairing of recovery. Why? Because the skin is sluggish, the bowels costive, the urine of low specific gravity; because, in short, there is evidence of the retention of effete matter in the system. But let this patient's tubercles soften, let there be night sweats, copious expectoration, Diarrhœa—everything that prophecies ill—and who so full of hope as the poor blinded sufferer? Morbid states where destruction is in excess are the most fatal, but those where retention preponderates are invariably the most distressing.

Costiveness must be regarded as a disorder of the whole system, and not of the intestinal canal alone. The only effectual remedies are those that are advised under that conviction.

The objects of treatment must be: first, to relieve the body of the immediate presence of effete matter; and, secondly, to prevent artificially its reaccumulation till such time as a complete renewal of the tissues has taken place. Then the body ought to be able to take care of itself, and a cure may be said to have been performed. The attention to local disorders, arising from the successful study of morbid anatomy, has too much made us forget this main object of all medical advice—the replacement of morbid tissue by healthy. “*Renew my age,*” was the chief earthly blessing prayed for by the inspired prophet; and physiology teaches us it should be the motto of the rational physician; for

if he omits to rebuild the healthy, his care for the destruction of the unhealthy is all thrown away.

Purgatives, then, may very fairly begin the treatment; the immediate relief they give to the feelings of discomfort is great. But let not that relief be set down to the mere "clearing out of the bowels;" it is the cleansing of the blood which is the real object of the remedy, and the real cause of the relief. An inspection of what comes away shows you it has been newly formed; it is fresh bile and other natural constituents of recent fæces; not of those which have remained long in the canal.

Nothing is easier than thus with a vigorous Blue-pill and black dose to drive away, as with a charm, the patient's discomforts; and he is ready enough to cry out that no more medicine is required. But what is the consequence of leaving off treatment? The renewal of the blood and tissues not having had time to be restored to its original activity—there not being sufficient new-made blood to carry on vigorous life—the effete materials again collect, and the disease takes, as it were, a fresh starting-point. Again and again the coarse expedient is required, and at last fails to effect its object of giving relief.

To avoid this evil consequence it is best to give no quickly-acting complete purgatives which directly deplete the abdominal Plethora by serous exudation; but rather such as cause a gradual increase in the solid matter of the stools. Aloes and Rhubarb are the best of these; and I find it also beneficial to combine with the drug resins which act as a tonic to the surface of the mucous membrane, and prevent the exudation of serum and mucus. Four grains of Aloes-and-myrrh pill, every night, will, in a week, produce all the good effect of strong purgation; and it will

produce the good permanently instead of merely for a time.

All accessory food that has the property of arresting destruction must be left off. Wine, beer, tea, and coffee, must, on this account, be excluded from the dietary; and milk, cocoa, whey, soda-water, Seltzer-water, &c., substituted for them.

Perhaps it is on account of their arresting destructive assimilation, that general tonics, such as Cinchona and Quinine, rarely agree well in those cases. I find it better to give pure bitters, such as Oak-bark, Quassia, and Gentian, which seem to act chiefly on the mucous membrane. Their use is to increase the appetite; and, when that object is attained, I leave them off; or, if it is attained without them, I do not begin.

Water is a very accessible remedy, and certainly a very rational one, when the destructive assimilation is deficient. The conclusive experiments of Dr. Böcker and of Dr. Falck,* show the increase of all interstitial metamorphosis by this agent to be in close proportion to the quantity taken within certain bounds; and all who have heard or read of the agreeable sensations experienced by patients during the Water Cure cannot doubt its power of removing morbid accumulations of effete matter in the tissues. In this lies its strength; for, as Dr. Böcker observed, "the demand for new tissue, as expressed in the sensation of hunger, keeps pace exactly with the extent of the metamorphosis." And if this demand is rightly supplied, the result must be a complete renewal of the body.

The testimony of experience to the use of Water as

* See 'Digestion and its Derangements,' p. 217; and 'Zeitschrift der K. K. Gesellschaft der Aertze zu Wien,' April, 1854; and Vierordt's 'Archiv,' i, p. 150, 1853.

a remedial agent, is exhibited in the patronage bestowed from the earliest times upon numerous springs whose saline constituents are even less than those of ordinary drinking-water. Pfeffers, historically famous for freeing Martin Luther of his demon-haunted Hypochondriasis, is still the resort of the invalid. It is situated in a most gloomy hole; and the copious hot stream that boils out of the rock is almost chemically pure. So really it can be nothing but *aqua pura* that keeps up its reputation. The same may be said of the well-known Gastein and Wildbad, the crowded Baden, imperial Plombières, of the French Aix, and our own long-frequented Buxton; for, practically speaking, the influence of the saline particles they contain must be reckoned for nothing. It is certainly nothing compared with the effects of moderate doses of Water in Dr. Böcker's experiments.

We cannot, as physiologists, be surprised in all diseases of arrested metamorphosis at the benefit derived from the simple expedient of drinking Water beyond the demands of thirst. Taken several times a day between meals it is a most efficient remedy. Warm Hip-baths are also of great use, and can be borne even from the first by those reduced to extreme Anæmia and lifelessness. Afterwards the Cold Sponge-bath, preceded and followed by Friction to the skin, is a most active promoter of life in the skin and capillaries. The raising the specific gravity of the Water by the addition of salt prevents the chill which fresh Water is apt to impart. So that even persons with cold hands and feet, and very great sluggishness of circulation, can bear to be sponged with brine.

Alkalies and neutral salts have the same action on the moulting of effete tissues that water has. Hence the repute of many really strong mineral wells. But

care is requisite lest the same result should follow their use which is threatened by the unguarded use of purgatives. In cases where there is pure arrest of metamorphosis, without organic change in any of the viscera, I find the weaker the spring the better. Where, however, any organ is chronically degenerated, general consent seems to sanction even such waters as Vichy and Selters, with their large amount of alkaline constituents.

While pulling down the old house, be careful to be building up the new. Let full supplies of albuminous material be continuously kept up in such form as the absorbents love. Let milk, mutton, and bread be the staple diet, with the smallest quantity of anything else that human gluttony will submit to. If your patient be one of strong mind, the best and bravest thing is for him to carry out your advice himself. He will then have gained a victory, not only over the flesh, but over the spirit. But if he is no Epictetus, and cannot attain to the dignity of being his own gaoler, do not be afraid of sending him to an hydropathic hotel. You will generally find the proprietors of these establishments willing to carry out your directions, and the situations of most of them are judiciously chosen for the advantages of air and amusement.

Once for all, the principle of scientific Hydropathy—that is, the renewal of the body by water and food—the increase of growth secondary to the increase of moulting—is no quackery. It is not an underhand mode of doing nothing, like the profession of Homœopathy, but a *bonâ fide* use of a powerful agent.

I know that medical men are afraid that in sending patients to Water-cure establishments they may be abetting the pretensions which ignorant proprietors

have put forth, of their treatment being a panacea for all ailments. In my opinion a contrary effect would follow; for the very fact of regular practitioners adopting the re-agent as remedial, will show that science ranks it as a physical power; that, consequently, it will do as much harm in some cases as it does good in others; in fact, that, like all medicines, it will kill as well as cure. This is indeed the truth, and patients are as unwise to prescribe it for themselves, or on the advice of an hotel-keeper, as they would be to take Arsenic or Strychnine on the same grounds.

CONSTIPATION is often indeed added to Costiveness, but is not necessarily connected with it. In it the fæces collect in some part of the abdominal canal, and give proof of that collection by being occasionally passed in considerable quantities at a time. In the stools there are portions more dried and concentrated than the general mass—scybala of various sizes and shapes, dark brown or black, and usually with less smell than ordinary fæces.

The most obvious cause of constipation is mechanical obstruction, the nature of which, under various forms, has been fully explained to you in the ordinary courses of medical and surgical lectures.

Simple atony of the colon presents a much more frequent and more curable cause. And not rarely a mucous flux of the stomach or intestines will originate Constipation by enveloping the fæces in a slimy coat, and preventing their being moved on by the muscular contractions of the gut. Atony of the colon arises primarily in those who lead a sedentary life, and have that pale look which characterises weak muscular fibre. It is more frequent in the old than the young; indeed, a diminished propulsive force in the large

intestines may be considered as a normal consequence of advanced age. It is very usual in convalescence after Acute Fevers, and other debilitating diseases. Neglect of the natural call to evacuate the bowels, and the retention of wind in the colon, also produces this sort of torpidity by too long-continued dilatation. Hysteria and nervousness in either females or males often spasmodically contract the rectum, so that the fæces are kept unnaturally back, and thus the same state of things arises as from neglected evacuation. The irritation of Piles occasions a similar result.

Where there is a disposition in the colon to be atonic, this disposition is much aggravated, and sometimes first made evident, by some kinds of diet more than others. It is a fallacy to suppose that indigestible articles of food "irritate," as it is called, the bowels; that is, pass on quicker than more soluble substances. The contrary is the case; and, as a general rule, the gradual and regular transmission of the mass is in direct proportion to the completeness of its digestion. No sort of food is so apt to be followed by Constipation in atonic persons as that which contains a large amount of matter incapable of being acted upon by the digestive juices, such as the husks and stones of fruit, stringy half-cooked vegetables, in which, besides cellulose, there is the equally impracticable body, unbroken starch. All substances capable of being squeezed into an impenetrable mass, such as puff pastry and new bread, come under the same class of insolubles; and perhaps, too, gum and gelatine are liable to the same imputation.

The most successful practice in simple Constipation is the free use of Cold Water Enemata, and a long-continued course of small doses of Strychnine. When there are no Piles, the latter medicine may be advan-

tageously combined with Aloes. This treatment is not inconsistent with the administration of tonics, or whatever else may be necessary to relieve the disease in which Constipation occurs; which disease of course requires to be removed before the local symptom will be free from risk of relapse. It is scarcely necessary to say that no treatment will avail if the bad habits which have induced the Constipation are persisted in.

Where the Constipation arises from mechanical impediments to the movements of the bowels upon one another, such as adhesions of the peritoneum, contraction from old ulcers, from past inflammation, or compression of the area of the gut, such as arises from tumours, from retroversion of the uterus, and the like, a more soothing treatment should be adopted. Then the Enemata should be warm, and have an ounce of Olive Oil added to them. If there be localized pain, dissolve some Opium in the oil, and put some Leeches to the spot outside corresponding to the seat of pain. Hot Fomentations and Poul-tices containing fresh Laurel leaves also give great relief.

The depending position of the cæcum makes it the commonest seat of faecal collections; and if you find it difficult to fix on any other spot, it is wise to take it for granted that this is the failing one, and direct your local application accordingly.

Do not be satisfied with the one or two very copious stools which will follow your efforts; the treatment must be persevered in until the bowel has recovered its tone, or there will be great risk of relapse.

FLATULENCE IN THE COLON may be distinguished from that in the small intestines by percussion, by the

absence of Borborygmi, and by its frequently passing freely out *per anum*. It is a very usual accompaniment of Constipation, and in that case has the same pathology, being to the air what the other is to the solid fæces. If the Flatulence is a very marked symptom, a carminative, such as Extract of Rue, or a few drops of Ether, may be added to the Enema.

Milder cases of colonic Flatulence, without marked Constipation, are often found more difficult of cure than the severer. The reason is simply that which applies to all of the less inconvenient forms of disease—namely, that patients will not take the trouble to be well except under strong compulsion.

LECTURE XXVII.

THE DIETETICS OF DERANGED DIGESTION.

Theses of Dietetics based on the principle of sparing the weakest part—I. Stomach—II. Intestines—III. Increase of absorption—IV. Delay of absorption—V. Gradual return to normal diet.

(Summer Session, 1857.)

I do not know a greater comfort at a bedside, than the being able to refer a doubtful point to some broad law based on reason and experience. I question whether our knowledge is yet sufficient to enable us to frame rules of this sort applicable to special forms of disease—certainly not on a scale to constitute a *methodus medendi* of practical value. But on such a subject as the administration of food—a subject where the rational argument hangs on the most extensive range of physiological facts that we possess, and where the experience is gained, not from isolated instances, but from every patient we attend—I think we really are in a position to have some trustworthy rules of action.

As a contribution towards clearing away the mistiness of our clinical dietetics, I purpose to set before you in one lecture certain theses which are my guides in this matter, and perhaps, therefore, may help you also.

The leading idea of the first-placed and most important rules is simply that of sparing weak members

—working those that can work and resting those that cannot.

I.

When the stomach is off work, spare it, and leave the digestion as much as possible to the intestines.

This applies to cases of Weight and Pain after eating, Heartburn, Acidity, Hæmatemesis, Vomiting of unaltered food, and Fermentation. Should the conjunction of symptoms enable us more definitely to diagnose Gastric Ulcer, Mucous Flux, Cancer, or any other more definite anatomical change, the application is all the more imperative.

Spare the stomach both its *mechanical* and its *chemical* toil.

The first is the hardest, and therefore the most necessary to be avoided. A meal—that is, the laying in of victuals to avoid future rather than present hunger—is a labour, even to the healthy; so do not impose it on a sick stomach. In very bad cases, do not divide the daily allowance into meals* at all, but assign such quantity as appears enough for the twenty-four hours, and let the taking of it be spread over the whole time, as equally and with as short intervals as possible. In milder cases it will be sufficient to “*spoil*” the meals—that is, to take food between the usual times, so as to leave neither the necessity nor the inclination for eating at once as much as other people. One would be sorry to recommend to the healthy an over-care for their diet, but to invalids subject to gastric derangement, you cannot do better

* A MEAL (as in Saxon “male,” in German “mahl,” and “mal”) implies *apportionment* of food, time, or anything else. So Bacon—“the yearly rent is still paid into the hanaper in parcel meal”—that is, “in lots.”

than advise an imitation of a famous centenarian witness, examined by the scientific judge, who said he attained his great age by always "eating before he was hungry, and drinking before he was dry."

Take care, however, that your patients do not spoil their dinner and eat it too: that last error would be worse than the first. Make it a rule that the slightest sense of repletion is to be a warning to desist.

Another valuable expedient for sparing the organ, in cases only slightly indisposed, is Dilution of the meal. Copious watery drinks carry the food on quicker through the pylorus, and give great relief to over-sensitive, irritable stomachs. But at the same time it must be remembered that thus the time for the action of the gastric juice is shortened, and its chemical strength lessened, so that more is given for the intestines to do. It is better, therefore, to let this dilution be practised as long after the meal as the case admits of. It should be avoided also as a general rule where an obstructed circulation impedes absorption of the water by the portal veins. Patients with Dilated Heart, for example, and some cases of Anæmia and of Diseased Liver suffer much inconvenience from a sloppy diet. Obese persons also should avoid dilution; it washes away the albumen which they do want, and allows of the absorption of fat, which they are better without.

The chemical toil of the stomach may be spared by giving it less to digest, and more to digest with. Take care that the weak but well-meaning organ is not reduced to despair by solid lumps of albuminous food. The best form of nitrogenous aliment in these cases is whey, or milk prevented from coagulating by a copious admixture of lime-water. This fluid meat will pass through the stomach unaltered, the gastric juice will

trickle through the pylorus at its leisure after it, and with the intestinal juice will digest the casein in the intestines. Next in easy solubility comes soup, made fresh, weak, and at a low temperature—fresh that it may not decompose; weak—that it may be easily absorbed; at a low temperature—that it may not be filled with innutritious gelatine, or with hard-boiled albumen. Meat is suitable in proportion as it is soft, easily disintegrated, quickly cooked, and free from fat, which might oppose the soaking in of the gastric juice. The well-known list of Dr. Beaumont sets in the order of these qualities a great number of articles of diet. But I think it more useful for you to have the principles of selection than a mere experimental enumeration of the articles themselves.

To mix starchy food with the albuminous in cases of weak digestion is an irrational practice. It soaks up the little that there is of the valuable gastric juice, and then makes no use of it; for starch is quite unaltered by the peptic solvent. This is very bad economy indeed. Moreover, if taken in quantity sufficient to assist much as a nutriment, it is too bulky, and being converted into sugar by the saliva, turns acid in a mass, and puts a stop to further digestion. This is particularly the case if it is in solid coherent lumps, such as potatoes, soft bread, pastry and the like.

Starchy food, *unmixed* with albuminous, is a different thing altogether. There certainly are some cases of gastric disorder, which are much benefited by a temporary adoption of such a diet. It is the best during acute catarrhal bilious attacks, at the commencement of treatment of even chronic gastric cases, and whenever the dusky complexion, Hypochondriasis, and general distress, show that arrested moulting has caused a retention in the body of effete tissues. It

does good, in fact, as a temporary starvation. Hence you will see me occasionally begin the treatment of such cases by our "simple diet," and still oftener in private practice, where starvation for a time is more generally wanted than in hospitals, I give a patient nothing for two or three days but Arrowroot, Panada, Tapioca, Gruel, &c. This enables the congested portal system to disembarass itself so as to leave a clear space for the taking up fresh supplies.

As you return from a pure starchy, or pure animal diet, to that mixture of the two which is normal and necessary to the healthy condition; or if you consider that the case is not bad enough to oblige you to adopt either one or the other absolutely, you may be of use by so arranging that the two sorts of aliment shall not be together at once in the stomach. For example, let the morning and the evening diet be vegetable, and then let several hours pass before and after a mid-day meal of purely animal food.

Spare thus the stomach by giving it *less to digest*. You need not be afraid of starving your patient by diminishing the quantity eaten. A little digested goes much further than double the amount only swallowed. For example, you saw last time we went round the hospital, a girl, in the corner of Victoria Ward, who had gained four pounds in weight during six days, on the sole allowance of three pints of milk and less than twelve ounces of bread per diem. A man (No. 8 in Albert Ward) has also visibly gained flesh in the same time, though he has only a pint of beef-tea besides what I mentioned as the girl's allowance. He is too weak to stand in the scales, but the increase is apparent to the eye. Both these patients had, till their admission to St. Mary's, been trying to strengthen themselves by meat, and whatever they could get, but

having Gastric Ulcers did not digest it, and were rapidly emaciating.

Spare it also by giving it *more to digest with*. I mean by supplying an artificial gastric juice. This is a mode of treatment so interesting just now, from our being enabled to use it with novel facility, that I shall make it the subject of a separate short lecture,* and thus give fuller details of its practical working than I should have time for here.

When the functions of the small intestines are off work, spare them.

Of acute diseases, this applies particularly to Continued Low Fever (during both its height and its sequelæ), to Enteritis, Diarrhœa, and Cholera; of chronic diseases, to Ulceration, Tubercular Deposits, either in the peritoneum, Peyer's glands, or mesentery; and, secondarily, to Disease of the Liver.

What, now, are the functions of the small intestines in relation to different forms of aliment? and what colleagues have they that can be trusted to take their duties during a temporary vacation? The small intestines absorb all matters soluble in water and capable of endosmosis, and have in that work all the mucous membrane of the alimentary canal to assist them. They convert starch into sugar before absorbing it, in conjunction with the saliva and pancreatic juice. They dissolve albumen, and convert it into peptone, in conjunction with the stomach. But in the digestion of fat they have none to help them.

All ordinary *fats and oils*, then, must be rigorously excluded from the dietary of patients affected with the last-mentioned diseases. Even Cod-liver Oil, so peculiarly wanted in phthisical cases, and so easily digestible, will often become rancid in ulcerated bowels, and

* See next Lecture, p. 385.

aggravate the Diarrhœa. If it does not aggravate the Diarrhœa, depend upon it more harm than good is done by the remedy. Leave it off forthwith; the case is an unsuitable one for it at that stage of the disease. And if Cod-liver Oil disagrees, *à fortiori* do other less digestible fats. I have known the mere skimming the fat from broth make all the difference whether it were digested or not, and the leaving off such a simple article as butter render a previously useless treatment immediately successful.

Starchy food will agree only on the conditions that it is taken in small quantities, and that the saliva is in a state to do alone what generally it has the small intestines to help it in doing. If the secretions of the mouth are deficient, it will not agree. Hence, in Low Fever, where the fauces and tongue are dry, you will never see me order Arrowroot, Bread, Panada, Gruel, Potatoes, or any other amylaceous article. Where they are eaten, they will be found unaltered in the fæces, and not rarely cause considerable aggravation of the symptoms. I have particularly observed this in convalescent patients after Fever. You are often surprised by an unexpected relapse: examine the stools, and there you see lumps of potato, bits of pastry, or a mass of starch granules. The foolish friends have been disobeying orders and giving these articles, which cannot act as a nutriment, and do act as a poison.

On the other hand, a phthisical patient, with a clean moist mouth, will generally digest such things well, in spite of his ulcerated bowels, provided they are well chewed and not lumpy.

Albuminous food will agree, provided the stomach is doing its duty. But you must not forget that it has lost a potent colleague, and be careful to prepare the

food so as to require only a short time in digestion. Milk must not be passed on to the small intestines by being guarded with alkalies, but had better be soured and made into whey. Some of the curd, broken up quite small, may be taken with it. Frequent dilution with watery drinks, and the use of artificial Pepsine, are of eminent use in these cases, so as to insure the absorption of the food as quickly, and as high up in the intestinal canal, as possible.

III.

Where you wish to hasten absorption, dilute with water.

This is so obvious a consequence of those laws of Osmosis which almost every course of lectures— anatomical, botanical, physiological, medical — has occasion to recite, that I will spare you.

The rule finds its chief application in Fevers, but it must not be passed over in Ulceration of the alimentary canal and other local disorders, where protraction of the process is painful, or in emaciation and convalescence, where we would not wish to waste time, but to give a person all the nutriment possible in the day.

IV.

When you wish to delay absorption, dilute with solids.

For solids to act as diluents they must of course be incapable of absorption ; and the substance I principally refer to is cellulose in its various forms of chaff, bran, husks, skins, seeds of fruit, and fresh green vegetables. Cellulose, being incapable of chemical change there, passes unaltered through the alimentary canal, carrying with it first the chyme prepared for absorption, and then adding its bulk to the fæces excreted. Thus the

absorption is spread over a longer time and a larger surface of mucous membrane, the whole of which is brought equally into work. A collateral advantage is that the peristaltic wave acts with more regularity when it has a solid to propel, than when the contents of the tube are fluid only. The rule is useful, not so much at the sick-bed as for the prevention of sickness. Many persons are made ill by their diet being more immediately digestible than they have been used to. Scotch labourers on exchanging oatmeal for wheat-flour, Finn recruits on getting bread at head-quarters without birch-bark in it, country persons on coming to London or Paris, often suffer from this cause. The mode of prevention is obvious and cheap; Cabbages, Brown Bread, and Charcoal offering types of remedies readily altered according to taste.

In the administration of medicines, something may be learned from the same expedient. Quinine occasionally will not agree where powdered Bark or decoction of Bark will yet succeed very well; and the same may be said of the soluble and insoluble salts of Iron, of Morphia and Opium, and similar drugs identical in all but insolubility. I believe the secret is that a slower and more graduated absorption is gained.

I have elsewhere* stated reasons for suspecting that gum and gelatine may be classed amongst unabsorbable diluents of the food, and are not really nutritious; but the argument is hardly suited to a practical lecture.

V.

When the diet has been diminished, return gradually to the normal in quantity and quality.

I suppose mere instinct teaches this, for all acknowledge the justice of it as a sort of truism, and agree

* 'Digestion and its Derangements,' book i, p. 260.

that a convalescent diet should be "light" at first, and afterwards more "substantial." Perhaps in respect of quantity error is rare; but the spirit of the rule in regard to quality is often lost by misinterpreting the words "light" and "substantial." Scientific men must not think vaguely, and you must have clearer ideas than the old nurses, who so often hurt your patients by misapplying these expressions. I shall not, therefore, think I am wasting time by explaining what the rule really means.

I formerly* divided foods into such as are capable of direct absorption without change, and such as require a previous change by the digestive juices; and the same division has also been adopted by M. Bernard. By subdividing the latter class into such as require only direct chemical change, and such as require disaggregation as well, we get three groups of aliments: the first the "lightest" or most digestible; the last the most "substantial;" the second intermediate. M. Bernard observes that the first necessitate but one physiological act; the second, two acts; and the last, three;† and, consequently, in that order demand a proportionate amount of labour from the system.

Under the *first* head come Water, Essential Oils, Tea, Coffee, Alcohol, Ethers, Salts, Sugar, Whey, Gravy (containing Osmazome); Asses' milk, with its small quantity of Butter and Casein, and its large allowance of Sugar, forms a transition, through Cow's milk, to the *second* class, in which some Soups, lightly cooked eggs, well-boiled liquid Starch; in the *third* class, Tripe, Oysters, Sweetbread, and boiled Chicken

* 'Digestion and its Derangements,' book i, p. 195.

† 'Mémoire sur la Question suivante mise au Concours, par le Société de Médecine de Lyon, pour l'année 1856, &c., &c.,' obtenue par M. le Dr. Bernard, fils. Lyon, 1857.

come nearest to the second, while the power of digesting hard meats (such as Beef), or solid lumps of Starch (such as Potatoes), show that the full normal powers of digestion have been regained.

This is something definite, and with this idea you will find no difficulty in making a graduated scale up which a convalescent patient may safely mount.

LECTURE XXVIII.

ON PEPSINE.

History of the use of Gastric Juice in Medicine—Difficulties of its use obviated by preparation—Experience of its use in several cases—Limits of advantages gained—Details of administration.

(Summer Session, 1857.)

THE attempt to turn the peculiar powers of Gastric Juice to advantage in medicine dates from remote antiquity. Pliny mentions the fluids of the stomach of sucking animals as a remedy in common use for a variety of purposes, such as curing disorders of the intestines, allaying the inflammation from spiders' bites, stopping bleeding from the nose, preventing snakes attacking you, and in short against poisons in general.* Asclepiades also recommended it as a means of dissolving milk which has clotted in the stomach in dangerous excess.† Galen, arguing probably on physiological grounds, attributes a "digestive" and "drying" power to it. He mentions having experienced in his own person the relief afforded by it to the weight at the epigastrium after drinking too much milk, and advises a trial of it in abdominal disorders. He remarks that the stomach of one animal

* See the places referred to in any good index to Pliny's 'Naturalis Historia,' article "Coagulum."

† 'Galen de Antidotis,' ii, 7.

differs from another only in degree of power. He gives a warning also that the boiling temperature destroys its virtues, as we now well know; for he found that hens' and cormorants' stomachs, when cooked, were perfectly inert.*

On the strength of his rational advice the coagulated milk and fluid taken from the paunches of several young animals was a remedy sufficiently often used to retain a place in European Pharmacopœias up to the first quarter of the last century. This is the explanation given by Dr. Schröder, a Dutch pharmacologist, who wrote in 1672,† of the method of preparing, and the reason for using, "*Coagulum Leporis, ‡Hædi, Agni, Equi,*" &c.

The disagreeable nature of the remedy in this form probably drove it out of use, for the last London Pharmacopœia in which it appears is that of 1677. In the edition of 1721, the only representative of gastric juice is the mucous membrane of the hen's stomach—" *Pelliculæ stomachi Gallinæ interiores.*"§ In 1746

* 'Galen de Simpl. Med.,' x, 11; xi, 13.

† 'Pharmacopœia Medico-Chemica.' Amstelodami, 1672.

‡ The rennet of the leveret is now usually wasted, but the Roman dairymaids preferred it to that of any other animal for making cheese. Varro ranks it as the best, then that of the kid, then of the lamb. (Varro de 'Re Rusticâ,' lib. ii, xi, 4). The Roman physicians also had the same preference. Quintus Sammonicus, in a prescription for "Colus" (Colic), says, "Aut pavidi leporis madefacta coagula pota." ('Quinti Sereni Sammonici de Medicinâ Præcepta,' "De Colo compescendo.") This accounts for its being named in Pharmacopœias which omit other rennets, as, for instance, in the Vienna priced drug list of 1613 and 1646, in which its price varies from six to sixteen kreutzers the half-ounce.

§ This is another Italian expedient for coagulating milk rarely used now. Palladius recommends it for making summer cheeses,

this also had vanished, along with "*Stercus Bovinum, Humanum, Pavonis*," and various similar remedies which patients had got too civilised to submit to, without at least knowing the reason why. Thirty years later, the immortal experiments of the Abbé Spallanzani threw a bright new light into the subject of digestion, and taught the true nature of the gastric juice. With much juster views than of old, its use in medicine was again recommended. Dr. Mongiardini, of Pavia, a pupil of Spallanzani's, at his master's instance treated indigestion successfully with the gastric juice of crows. Another pupil employed it as a lithontriptic, to break down calculi by destroying the animal matter which holds them together. M. Senebier, a clerical pupil, suggested that its antiseptic power might make it useful in surgery, and advised a trial of sheep's paunch as an application to ill-conditioned wounds.* M. Boyer, of Strasburg, found that it destroyed the poison of the viper, and thought it might be an antidote to snake bites.†

But with all the obvious advantages with which the remedy recommended itself to the physician, there was the insurmountable difficulty of obtaining it in a form fit for general use internally. It was of course necessary to administer it at the same time with the food, and any nauseating substance then given does more harm than good by taking away the already squeamish appetite. Dr. Latham, who practised in Paris some years ago, informed me that Laennec had

when you cannot get leveret's rennet. (Palladius de Re Rusticâ, Mensis Maius, ix.)

* 'Expériences sur la Digestion de l'Homme, par l'Abbé Spallanzani, avec des Considérations,' &c., par Jean Senebier. Genève, 1783.

† Falck 'Handbuch der Arzneimittellehre,' vol. i, p. 275.

a preparation of concentrated gastric mucus, which he recommended with great enthusiasm; and Dr. Handfield Jones at this hospital gave in some cases a cold infusion of pig's stomach, acidulated with Muriatic Acid. In this form, however, the remedy is disagreeable and inelegant.

But the matter showed itself in quite a new light when an ingenious French pharmacien, M. Boudault, at the instigation of Dr. Corvisart, made the very elegant and agreeable preparation, now so well known to the profession as "*Poudre Nutrimentive*." It is simply Pepsine from the sheep's stomach dried on Starch, with Lactic Acid added or not according to circumstances. You have during the past winter (of 1856-7) seen me prescribe it to numerous patients in the wards, and I have also employed it frequently in private practice, so that I think we are in a position now to form an idea of its value to the practical physician.

These hospital cases in which I have administered it with advantage are, six of Phthisis Pulmonalis, one of Cancer near the pylorus, two of Gastric Ulcer, one of Hysterical Vomiting, two of Nausea, one of hysterical pain after eating, two of atonic pain after eating, one of Atonic Gout, one of Dilated Stomach, one of Gastric Flatulence, three of Low Fever, and two of Pneumonia. In these all the benefit which physiological reasoning would lead us to expect from the remedy has followed.

I have also injected it *per anum*, mixed with food, in a case of ulcerated œsophagus, and in a case of manio-hysterical vomiting and Dysphagia. But in neither did it appear to delay death. Probably the ilia are the only part of the alimentary canal capable of absorbing chyme.

Several other cases of atonic pain after eating, in

which I have given Pepsine, I have not since heard of, but probably should have done so had any harm happened.

In one case of chronic Dysentery it caused Nausea and loss of appetite. In one case of Consumption, and in one of Pendulous tumour of the abdomen, (attached probably to the pylorus,) it purged the patient. These are the only instances of inconvenience that I have been able to connect with the administration of the remedy.

The phthisical cases have been those where a progressive Anæmia was accompanied by an inability to digest meat or other albuminous food. This inability is exhibited in three ways : first, by the eating of such diet, even in very small quantities, being followed by a sense of great weight and oppression at the epigastrium, and sometimes by actual vomiting ; secondly, by the passage of loose fetid stools containing much unaltered muscular fibre, lumps of fat, and such like remnants of a recent meal ; thirdly, by entire loss of appetite and an instinctive nausea excited by the bare idea of flesh food. Often all three phenomena exist together ; but each one may be found separately, and is of itself a sufficient indication of the patient's state.

The pathological explanation of these symptoms is an excessive secretion in the upper part of the alimentary canal of alkaline mucus, which envelopes the food, and prevents the action of the gastric juice upon it. The consequence is, either its rapid ejection unaltered, or its decomposition, and the evolution of fetid gas. If vegetable food be mixed with the meat, it ferments into lactic and acetic acids, and thus you may have acid eructations from the stomach, and acid Diarrhœa arising out of the want of acid gastric juice. If this

excessive secretion of mucus is recent and moderate, the appetite may remain uninjured, nay, may sometimes be morbidly increased; but a long continuance, joined to progressive pulmonary disease, is sure to induce an anæmic condition of the alimentary canal, which results in a disgust for food.

Now this state of things it is very important to check. If it goes on, the patient cannot take in sufficient quantities the meat which should refresh his degenerating muscles and pale blood; he cannot take the Cod-liver Oil which is to replace his emaciating tissues; he cannot, from weakness, take the exercise which might renew his whole diseased system. And I do not know any remedy which more readily, obviously, and directly does what it can towards checking such a state than Pepsine. It does immediately and surely what it can; but then that is not very much. Do not raise your expectations of its power too high, or you will be disappointed. Understand clearly what position this agent holds in the rational *Materia Medica*, and then you will know what good results you may demand with reasonable hopes of obtaining them. It is an *artificial*, and, therefore, a *partial* substitute for a natural process. Gastric juice prepared by a healthy animal is mixed with the food, instead of that which the patient's stomach ought to prepare. And it acts in the body just as it would out of the body under the same circumstances of heat and motion. The chewed meat is dissolved by it just as you see the white of egg suspended in this beaker dissolved by it; and the putrefactive process is arrested by it in the intestinal canal just as you perceive the putrefactive process is arrested by it in the experiment under our eye. For you may observe that this albumen suspended in Pepsine is quite sweet, whereas that soaked

for the same time in saliva is most fetid. It is, therefore, a substitute for the natural secretion, and to a certain extent supplies its place. But like all imitations of Nature it is coarse and imperfect. The solvent, instead of being gradually and continuously poured on to the outside of the mass of food, is mixed up in the middle part of it, and acts merely chemically, without any of the mechanical and physiological helps belonging to natural digestion, and consequently soon exhausts its energies. The chyme, or albumen prepared for absorption, instead of being wiped off and swept away by the stomach, remains for some time mixed up with the Pepsine, so that the latter is not freed for the solution of a small portion. By this imperfect process only a very small quantity of meat can be dissolved at once.

Hence, if you hope that by administering Pepsine with it, you can get a full and sufficient meal eaten at once by your consumptive patient, you will fail. Give half a mutton chop with the remedy the first day; and if that is digested well, try a whole chop the next; but remember, then, you have got to the end of your tether, and that the digestion of a larger quantity will not be at all assisted by artificial solvents. Also, after a chop has been digested and absorbed twice, or even once a day by this means for about a week or ten days, the expedient has probably done all the work that can be asked of it, and the stomach has either recovered sufficient energy to digest alone, or will require different remedies to enable it to do so. Therefore, for the Pepsine to be completely successful in these cases—first, it must be given only to those who cannot digest half a mutton chop without it; secondly, more than a chop must not be given at once; thirdly, it must not be required to go on alone im-

proving the patient's condition for more than a week or ten days.

But for the time named I advise its being given alone, and the action not interfered with in general by other drugs. Many will really prevent its chemical effect, and all will confuse your judgment of the advantage gained. In this time you will generally find that the repugnance of the patient to meat has been overcome, and that a small quantity of it at a time can be relished and digested; the morbid fœtor of the stools diminishes, and the flatulence and distress arising during their passage through the bowels ceases. A renewed strength and a renewed power of assimilation commence, the sleep becomes more natural, with the diminution of night-sweats and hectic; while, at the same time, the pulmonary symptoms of Cough, Dyspnœa, &c., relax, and a step at any rate is taken in the right direction towards the cure of the disease. It is remarkable, too, what a slight improvement in the digestive powers will often enable Iron and Cod-liver Oil to be taken. These drugs are, you know, the main stays in the treatment of Tubercular Consumption, and any expedient, however temporary, which will pave the way for their administration, is a great boon.

It would not suit the plan of the present lectures to quote in detail these consumptive cases. They differ much from one another in their unessential characters—namely, in the stage and general phenomena of the disease, in age and sex of the patients; while they all closely resemble one another in essential points—that is to say, in those which I have described as indicating a mucous condition of stomach, preventing the gastric juice being poured out on the food, and finally leading to Anæmia and Atrophy of the secreting membrane.

They resemble one another also in exhibiting an immediate and uniform amelioration of limited extent. In one man, who had loss of voice, apparently from crude tubercle in the lungs, with ulcerated trachea, the amelioration of voice and cough continued so long, that I let him remain three weeks taking Pepsine alone without other drugs; but, then, he also continued to improve more afterwards on Cod-liver Oil, so that he might just as well have commenced it sooner. In another, who had tubercular ulcers in the bowels, afterwards fatal, there was an idea that the Pepsine caused a relapse of Diarrhœa; but I suspect the coincidence was accidental. These are the only cases where it appeared to do more good or less good than I have attributed to it.

The case I alluded to of Cancér near the pylorus is an instance of a disease necessarily fatal being still worthy of the careful attention of the medical man. When the patient came under my care, she was unable to keep anything at all on her stomach; every solid, even an ounce of beef-tea, was vomited unchanged within half an hour of its ingestion. She had been taking Prussic Acid, Soda, Creasote, Opium, and a variety of remedies without benefit; and, as might be expected, was dying rapidly of starvation. I ordered her immediately half a mutton chop, with fifteen grains of Boudault's "Poudre Nutrimentive," twice a day, and an ounce of Milk and Lime-water every two hours. She kept all that down; it passed the pylorus, and nourished her so far that she had a good night's sleep, and the next day was able to take a whole mutton chop. So she went on for three weeks, gaining flesh, losing her pain, and acquiring a cheerfulness about the future unwarranted by the gloomy prognosis which truth compelled me to give her. So

far all was right; reason had reasoned well. But I feel it a duty to tell you the mistakes I make, as much as the occasions on which I act wisely. And I find recorded in my note-book a warning, which I advise you to profit by, of the importance of "letting well alone." The patient had from the first Jaundice, with pale stools and bilious urine; and now, I thought, had sufficiently recovered strength to bear an endeavour to make the liver clear the blood of its bile a little more briskly. I therefore gave her some Nitro-hydrochloric Acid, which is often of great use under similar circumstances. But the result was most unfortunate. The vomiting returned with violence. The drug was discontinued, and it stopped, but not before the ground gained had been lost. Then again, contrary, I must say, to my wish, it was judged expedient to give the patient Mercury, and she rapidly sank. The Jaundice was then proved to be dependent on Cancer of the gall-bladder. Now, here it is impossible not to allow that life was prolonged by artificial Pepsine, and would have been further prolonged but for the Anglo-Saxon propensity in both physician and patient for continuous improvement.

In one case of Hysterical Vomiting, and two of Nausea preventing a due quantity of food being taken by hysterical persons, this remedy has appeared to enable the patient to swallow meat. The mere nutriment thus imbibed has improved the appetite for future meals; and the Valerian and Salt Sponge-baths afterwards administered seemed to have a more rapid effect than without it. The rational explanation of its good influence is, that both in Hysteria and Anæmia the secretion of gastric juice is apt to be irregular and deficient, and that the morbid processes here act, as is so often the case, in a circle; the non-

secretion of gastric juice still further starving the blood and aggravating the Hysteria and Anæmia, and that further aggravation again diminishing the secretion. But once breaking the magic chain, and enabling even a single meal to be well digested, begins a march towards health which it is comparatively easy to guide afterwards.

Closely connected with the last-named complaints is, in the female sex, Atonic Gastralgia. Indeed, I may say it is practically identical. At the same time that the gastric juice is imperfectly secreted, the muscles of the stomach refuse to perform the peristaltic motions with sufficient activity. Hence not only is the alimentary mass a greater inconvenience than it ought to be, but it actually lies longer than usual in the first portion of the canal, as may be found on percussion of the epigastrium. Atonic Gastralgia is a common consequence, in the educated classes, of excessive mental and sedentary labour. Where this is very great, I have found Pepsine of some use; but in the slighter cases, which more frequently come before us, I have not seen any apparent benefit accrue from it. A change of habits is here the only permanent remedy, and of drugs Strychnine is the most efficacious. I believe M. Boudault prepares a powder in which Strychnine is combined with Pepsine and Lactic Acid. I presume it is for cases of this sort that it is intended, but I do not like mixing up ingredients in that way, and prefer the Strychnine alone, as it is the real active agent.

In a case of Diarrhœa and Mucous Vomiting, occurring in an old victim of Atonic Gout, the stools became more natural and less frequent, and strength was regained, on taking Pepsine and mutton chops, instead of Opium and Acetate of Lead.

As cases of acute disease have a habit of getting well of themselves, they are not of course such good tests of the essential benefit derived from remedies. And it is only by comparisons on a large scale that one could speak of Fever and Pneumonia being benefited by Pepsine. There seemed, however, in those alluded to, an immediate improvement to take place in the appearance of the tongue and of the evacuations; and it is impossible not to think that the amelioration in the alimentary canal thus made evident would conduce to lessen the mortality of these diseases.

On the whole, then, I cannot but conclude that we have in artificial Pepsine a valuable and safe remedy, and an important aid to rational medicine.

The way in which I have given it has depended on the diet on which the patient is placed. If regular meals are eaten, then it is best taken spread as a sandwich between two thin slices of bread at the commencement of the dinner. Fifteen grains of the starchy powder is the usual dose for an adult. If the patient is so ill that the food is obliged to be administered more frequently and in small quantities, so as to keep up a continuous supply, smaller doses of the Pepsine powder may be given in a draught every four or five hours.

LECTURE XXIX.

ON THE USE OF ALCOHOL.

Experiments showing the action of Alcohol on the vital metamorphosis of the body, with a running commentary on each—Opposite opinions about the use of Alcohol—Best guide to therapeutical use is physiological observation of its action on the healthy body—What is a stimulant?—Effect of Alcohol is arrest of nervous function—How it comes to be an indirect Restorative—Rules for administration of Alcohol—Form of administration.

THE porter of our school and the late Mr. Hall Smith assisted me, in 1860, in a series of experiments on the effects of Alcohol. The melancholy circumstances of the latter's death brought them to an abrupt termination, and made the subject painful to me. But still let us try what can be done with the facts already collected, and see whether they can be utilised for clinical medicine.

I.—W. M. Age 38. Weight 254 lbs., taken at noon every day. Habits of life extremely regular. Walks half an hour before breakfast daily. Breakfasts at eight on two cups of coffee, bread and butter, and a slice of cold meat. Dines at one on beef and mutton in regular quantity, potatoes, and pudding. Has tea at five, two cups, with bread and butter. Sups at nine, on bread and butter, or cheese, with half-a-pint

of ale. Sleeps six and a half to seven hours. Has the bowels open daily.

A view of the normal amount of metamorphosis in the body is afforded by this table :—

	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.	Uric acid in grammes.
Amount of urine and its several parts made in 23 days, in perfect health and on usual diet...	24,970	23·518	728·437	174·625	51·307	44·719	...
Ditto in 15 days	...	...	...	...	...	...	2·813
Mean daily amnt.	1,085	1·022	31·671	7·592	2·230	1·944	·187

The effect of the addition of a moderate quantity of Alcohol to the daily meals is shown by the next :

Date.	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.	Uric acid in grammes.	Daily quantity of best French brandy added to meals, in ounces by measure.
Sep. 13	1,020	1·024	30·708	7·140	2·017	1·469	...	4½
„ 14	1,570	1·022	39·746	10·990	2·579	·848	...	3
„ 19	1,050	1·026	38·795	8·400	2·456	1·890	...	6 viz., 1½ at breakfast, dinner, tea and supper
„ 20	1,200	1·025	42·695	9·600	2·622	1·944	...	
„ 21	1,110	1·023	37·974	6·937	2·212	1·798	...	
„ 22	770	1·026	30·030	6·160	2·065	1·386	...	

On the next day the appetite for food was observed to be somewhat less than usual, and the experiment ceased; for any change of usual weight, health, feeling, or habits, of course would vitiate the result of an investigation conducted in this form.

These few experiments lead to the belief that the taking a moderate quantity of Alcohol with food—

(1st.) *Increases the quantity of urea daily excreted, and in a much minor degree that of the chlorides and sulphates;*

(2nd.) *It does not increase the quantity of water;*

(3rd.) *It decreases the quantity of phosphates;*

(4th.) *The augmentation is temporary, and after a time is followed by a reduction to the normal measure, which reduction is coincident with a loss of appetite.*

The increase in the quantity of urea excreted would seem to show that the renewal of the muscular tissues, the appropriation of new flesh, and the removal of old flesh, go on more actively for making a moderate quantity of Alcohol part of the daily food.

The non-increase in the quantity of water, and the decrease in the phosphates, would seem to show that this change is not merely a general augmentation of the destructive metamorphosis of the body; for if it were, the whole of the constituents of the urine would be equally affected.

In short, the circumstances seem to indicate that a moderate dose of Alcohol acts by temporarily augmenting the digestive power of the stomach, enabling it to appropriate more thoroughly the food submitted to it.

The decrease in the excretion of phosphates is an interesting observation. The chief source of phosphorus in the urinous excretions must be nerve tissue, and it is certainly something more than a mere co-

incidence when we see a re-agent, whose effects are most peculiarly manifest on the functions of the nerves, diminishing what we believe to be the metamorphosis of that portion of the body. We can hardly hesitate to call Alcohol an arrester of nerve-life, and consequently a controller of nervous action on the rest of the frame; and it would be wise to cast about for explanations which would associate this with its other operations.

II.—Letitia C., a prostitute, aged 23, had been in the habit, during the year she had been on the town, of frequent tipping to drown care. Standing by her bed on the 14th of August, she suddenly fell on to it, not from loss of sense, but from complete paralysis of the right leg and arm without apoplexy. On her admission to St. Mary's, two days afterwards, the power had returned in a great measure to the limbs, but the right lingual and facial muscles were still quite paralytic. As far as one could judge by external phenomena, all the viscera except the brain were in a healthy state. She remained in the hospital till September 6th, when she was offered a place as servant, and a slight impediment to speech which remained was considered not sufficient reason for her passing over so good a chance of bettering her social state. During the time she was under observation no drugs were prescribed for her; she rested on her bed the greater part of the day, and dawdled about the ward and garden the rest; she was kept on "Broth diet."*

The amount of urine and of its chief constituents excreted by her on all the days when circumstances

* Tea, 2 pints, with 3 oz. of milk, and sugar q. s.; Bread, 12 oz.; Butter, $\frac{3}{4}$ of an oz.; Broth, 1 pint, with 4 oz. of boiled meat; Gruel, 1 pint.

allowed it to be all collected is shown in this table:—

Date.	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.
Aug. 17	252	1·018	5·915	1·389	?	·409
„ 19	880	1·006	12·729	4·400	?	·396
„ 20	240	1·014	4·529	2·040	?	None
„ 21	270	1·007	3·429	·337	·206	·061
„ 22	360	1·011	5·280	2·340	·212	A trace
„ 23	1,000	1·007	15·353	3·500	·878	·540
„ 24	1,280	1·007	14·504	4·480	·715	A trace
„ 27	570	1·008	9·405	1·425	·436	A trace
„ 28	1,030	1·007	10·979	3·862	·596	·494
„ 29	730	1·010	9·252	3·285	·423	A trace
„ 30	1,320	1·008	13·645	5·120	1·039	?
Sept. 1	...	...	...	...	...	...
„ 2	1,650	1·008	22·027	7·425	1·358	?
„ 3	...	...	...	...	...	...
„ 4	...	...	...	...	...	...
„ 5	900	1·010	13·231	2·925	·790	·162

It will be noticed that in the last three observations there is an improvement in the amount of those solid constituents of the urine which are an evidence of the force of vital metamorphosis. This improvement was coincident with the addition of three ounces of brandy to her diet card, an ounce and a half at dinner, and an ounce and a half at supper daily.

In this case, then, we again find Alcohol appearing to aid the vital force of metamorphosis when taken with food. The quantity of urine, of solid matter in

it, of urea, of chloride of sodium, and of sulphuric acid, is augmented. The phosphates, truly, are remarkably deficient, but that probably depends on the arrest to the renewal of brain substance which the injury to her brain entailed.

III.—The first subject, W. M., at another time tried the effect of Alcohol taken in another way, namely, in small divided doses. Six ounces of brandy were drunk daily in drams of half an ounce every hour from 9 A.M. to 9 P.M.

This is a record of the results :

Date.	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of Sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.	Uric acid in grammes.
Aug. 18	1,520	1·013	30·465	5·320	2·210	1·299	·008
„ 20	910	1·025	33·077	6·370	2·375	1·474	·259
„ 21	1,070	1·022	32·945	6·687	2·246	1·637	·193
„ 22	1,000	1·021	23·735	6·750	1·897	1·440	·135
„ 23	1,310	1·015	25·097	7·205	1·649	1·061	·196
„ 24	1,530	1·021	41·867	9·945	3·064	2·203	·390

One day was an interval in the experiment, and only the usual amount of daily diet, without extra Alcohol, was taken, when the numbers stand as follows :

Date.	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of Sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.	Uric acid in grammes.
Aug. 19	920	1·026	35·88	5·750	2·374	1·904	·281

It is very clear from these observations that Alcohol

taken in the dram-drinkers' fashion, namely in small divided doses, by no means increases metamorphosis. It rather tends to diminish it, and this diminution is not sudden or immediate, but is more and more for a certain period, till the retention reaches a point, at which a critical discharge takes place in healthy persons. This discharge may take place either in consequence of the Alcohol being left off, as may be observed in the day of interval; or from an idiopathic reaction, as on the 24th of August. This idiopathic reaction was in the present instance doubtless enhanced by the excitement of packing up for a short visit to the country which began on the next day, and removed the subject from observation.

On the whole, we may conclude that *the effect of continued small doses of Alcohol is to diminish vital metamorphosis, to make it irregular, and to induce, in healthy people, the necessity for crises of evacuation. Its first action is upon the stomach, enabling more food to be digested, and increasing vitality; but if advantage is not taken of this first action, its secondary effect is a diminution of vital functions in general, and of digestion among their number.*

IV.—These opinions are further supported by the following set of experiments:

T. K. C., aged 43, healthy, though not muscular, of regular life and habits, took daily during the days averaged in the table a regular quantity of food proportioned to appetite, viz., about a pound and a half of meat, half a pound of bread, a pint and a half of tea, with milk, sugar, butter, sauces, &c., *q. s.*, half a pint of water, and from five to seven glasses of port or sherry;* care being always taken not to annoy

* Which may be reckoned to contain from 33 to 35 per cent. of proof spirit.

the temper, and so nullify the experiments, by over-strictness.

	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of Sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.	Uric acid in grammes.
Amount of Urine and of its several parts made in 15 days, in perfect health and usual diet.	18,800	15.337	493.852	137.655	...	...	...
Ditto in 14 days	...	...	...	...	26.487	27.683	3.839
Mean daily amnt	1,253	1.022	32.923	9.177	1.891	1.977	.274

The effect of taking in addition at times between meals a moderate amount of Alcohol in divided doses is shown in the following table :

Date.	Quantity in cubic centimetres.	Specific gravity.	Urea in grammes.	Chloride of Sodium in grammes.	Sulphuric acid in grammes.	Phosphoric acid in grammes.	Uric acid in grammes.	Daily Quantity of best French brandy taken between meals.
Nov. 16	1,180	1.021	30.090	11.210	1.954	1.770	Trace	3½ fld. ozs.
„ 19	1,800	1.013	28.854	9.900	1.906	1.800	.258	8 „
„ 22	1,150	1.025	32.775	12.075	...	...	...	7½ „
„ 23	980	1.025	27.930	9.310	...	...	...	7½ „
Dec. 3	1,060	1.023	28.620	9.540	1.785	1.696	.339	3 „
„ 5	1,320	1.019	30.875	9.900	1.865	1.980	.330	8 „
„ 6	1,110	1.021	30.025	9.435	1.713	1.665	.299	8 „
„ 17	1,180	1.020	30.208	9.440	1.586	1.652	.343	4 „

It is very clear from these figures that vital metamorphosis, as evidenced by the amount of the principal

solids of the urine, is diminished by thus taking more Alcohol than the healthy instinct prompts. Not only are the whole mean amounts low, but on no day do they come up to the average. The only exceptions are the chloride of sodium, which is slightly increased, by what agency I cannot tell, and the uric acid, whose augmentation is, probably with justice, considered an indication of an approaching abnormal state.

It may be remarked that a greater quantity of brandy than that recorded above spoilt the appetite and prevented the usual diet being taken with pleasure, thus nullifying the experiments.

I have often given you at the bedside reasons for administering or withholding Alcohol in special cases ; but I have been cautious about reducing these reasons to general rules without going into the subject more fully than is possible in the wards.

As you are well aware, extreme opinions may be, and have been, held about this indubitably powerful re-agent. Dr. Brown (the author of the Brunonian Theory) persuaded himself that it was a panacea for all human ills, and a direct prolonger of life ; but by dint of frequent experimenting, and lecturing with a bottle of brandy by his side, he soon succeeded in giving a practical refutation to his own words by ruining his health and shortening his existence. Others, again, would persuade us that it is a pure poison, whose degree of antagonism to life is in a direct ratio to the quantity used. I shall take for granted that your experience in the hospital has not made you advocates of either opinion ; but that you, by this

time, have seen, or seemed to see, it in many cases saving and prolonging life, in many saving and prolonging health, in many others destroying and shortening both, and, again, often conceded by indulgent doctors as an innocent luxury likely to do neither good nor harm.

The best guide to the effects to be expected from a re-agent on a diseased body is the intelligent observations of its effects on a healthy body ; and I think that Alcohol is no exception, but that a knowledge of its physiological action leads directly to its therapeutical application.

The experiments of Rudolf Masing, since repeated and confirmed by MM. Lallemand, Perrin, and Duroy, have taught us that Alcohol passes through the body unaltered in chemical constitution, and does not, so far as we know, leave any of its substance behind. It remains in the body for some hours, and during that time exerts an influence for good or for evil.

It is then not strictly an "aliment ;" but if it aids the appropriation of aliment, it may be looked upon as an "accessory food" in health, and as a "medicine" in disease.

What is the nature of the influence which it exerts ? What is its action upon life ? It is usually defined as a "stimulus to the nervous system ;" and so long as "stimulus" is held to mean only something which makes one feel comfortable, we may be satisfied with the explanation ; while upon the nervous system all experimenters, from the first patriarch downwards, will agree that it acts. But if led by the etymology we infer that it directly augments the developed force of the nervous functions, we shall fall into the error of poor Dr. Brown.

Let us be a little more particular in our inquiries, and then I do not think we shall be able to trace any *direct* increase of force to Alcohol, even in the smallest doses, or for the minutest periods of time. The sort of researches of which those detailed are an example, show pretty clearly that its continuous use (*i. e.* in small divided doses) does not add power to vitality, and I think we shall not fail to come to the same conclusion from observations made upon its more immediate effects.

In a series of experiments, conducted with another object, Dr. Edward Smith has recorded very minutely the sensations experienced after brandy, by a temperate man, with a fasting stomach.*

What are the first effects noticed there? Increased life? Increased function? No; *lessened* consciousness, *lessened* sensibility to light, to sound, and to touch.

Then there comes a peculiar sensation of stiffness with swelling of the skin, which is noticed particularly in the upper lip and cheeks, evidently due to *arrested sensation and motion*. These are very unlike spurs to extra exertion.

In a patient lately under my care the same peculiar sensation of stiffness, and also the objective phenomenon of rigidity of skin without loss of sensation, were produced by the pressure of diseased bone on the fifth nerve inside the skull.† If we call this symptom a

* 'Transactions of Royal Society,' 1859, p. 732.

† In this lady another facial characteristic of incipient drunkenness was simulated. Ordinarily the affected side had a slight diffused fixed colour, the other being pale; but when she blushed the healthy cheek was coloured quickly and deeply, while the diseased one remained unchanged in hue. This is the same physical phenomenon which is exhibited in the half-flushed but unabashed front of a toper.

partial paralysis from partial obliteration of nervous function, (to which I suppose nobody will demur,) we must call the effects of Alcohol also a *partial obliteration of nervous function*, for the phenomena are strictly identical.

Dr. Smith further records among the "early effects" of Alcohol a relaxation of the dartos and other muscles connected with the reproductive system, for which Ovid elegantly, and Skakespeare coarsely, blame the later and more obvious influences of drink. The sphincter also of the bladder was relaxed, and to this the observer lays the increased micturition during indulgence.

The pulse also is quickened. Now at first blush you might be disposed to view this as an indication of an increase of nervous force. But do not be hasty. Observe with Dr. Bedford Brown the circulation in the cerebrum, during an operation on the skull, when the pulse was quickened by chloroform; and you will see the heaving and bulging of the brain quieted, the surface becoming pale, and the hæmorrhage arrested. The quickening of the pulse must therefore have been contemporaneous with diminished force of the heart's beat.*

Again, observe—that in disease those patients especially exhibit the phenomenon of quickened pulse whose hearts are most enfeebled.

No—it would appear that in motion of an entirely involuntary character, quickness indicates *diminution* and not *increase* of force.

It is unnecessary to go through the symptoms of advanced intoxication by Alcohol: all observations agree that large doses immediately, and small doses more remotely, depress the nervous centres, and that

* 'American Journal of the Medical Sciences,' Oct., 1860.

in cases of absolute poisoning the cause of death is cessation of the muscular respiratory movements. What I wish particularly to mark is, that the *primary* as well as the secondary action is *a diminution of vitality in the nervous system*.

Life and warmth are so closely connected together in scientific as well as in popular notions that perhaps the most striking evidence of diminished vitality is the lessened capacity to generate heat. We have this evidence in the case of Alcohol. MM. Dumeril and Demarquay published in 1848 their observation that intoxicated dogs exhibited a great loss of temperature, and Dr. Boecker and Dr. Hammond find the same result from even moderate doses of spirits. This accords with and explains the experience of Dr. Rae, that Alcoholic drinks give no satisfaction to Arctic voyagers, and of Dr. Hayes, (Surgeon and Commander in U. S. second Grinnell Expedition,) that they actually lessen the power of resisting cold.* The "warming of the stomach" which tipplers speak of with delight is in fact a mere fallacy of insensibility to external influences. We may I think fairly come to the conclusion, that *Alcohol is primarily and essentially a lessener of the power of the nervous system*.†

How then can it be a restorative? How can that

* 'American Journal of the Medical Sciences for 1859,' p. 117.

† We may call it an "Anæsthetic," if it is allowed us to extend a little the application of the term, and to let it include all reagents which tend to interrupt the connection between the material and immaterial of our being, between force and visible nerve, whether our memories are conscious of the interruption or not. It is only when it is taken in considerable doses that our direct feelings note the Anæsthetic action of Alcohol. Its action on the involuntary nervous system, more important in a physiological point of view, is anterior to that, but can be traced only by inference.

which lowers one of the chief manifestations of life be a renewer of life?

In this way: in lowering the power of the nervous system, it lowers its action on destructive metamorphosis, and thus it saves the substance of the body. We know that the exercise of nervous functions, bodily or mental, increases destructive metamorphosis. We know, too, that when either bodily or mental action is in excess, there is an arrest of the constructive appropriation of food by the stomach. Our own personal experience, without the aid of Shakespeare, teaches us that passion and emotion as well as overstrained muscular labour put a stop to digestion and appetite. Well then, anything which either sensibly or insensibly interposes between this sensible or insensible nervous action and the digestive viscera must tend to restore that balance of the two in which healthy life consists. Thus Dr. Hammond, having placed himself on an insufficient allowance of food, found his mental and bodily powers deficient—the balance was overthrown. He afterwards took a small quantity of Alcohol with each meal, and then, without any increase of diet, he gained weight of body, and his mind was more vigorous. On the other hand, if he added Alcohol to a full diet, the blunting of the mental powers was very perceptible, and there was feverishness of body. We cannot doubt that the essential action of the Alcohol was identical in both cases, but in the first the blunting of the nerve force was requisite for perfect life, in the second it was not wanted and was therefore injurious.

The effect of small wholesome doses upon the mind is to blunt the sensibility to the slight half-felt corporeal pains which the want of balance had produced. It removes the chains of the corruptible body from the

soul. Hence a freedom and brightening of the intellect. But it is only the moderate man that can enjoy this luxury; the attempt to drown a care too tall for a shallow bowl, or to soothe a pain too sharp to be soothed, induces an excess. Then the scale is inclined too much the other way; the influence of the nervous system on the body is *over-blunted*, and that degree of its action requisite to perfect health is arrested.

In truth this balance is not easy to adjust. And therefore it is lucky for us that Alcohol passes so freely out of the body as Dr. Percy, Mr. Masing, and the French physiologists who have repeated their experiments have shown to be the case. It is lucky for us also that any slight harm it may have done during its sojourn is set right by a reaction of increased metamorphosis or evacuation, of which an example has been given in the experiments detailed at the beginning of this lecture.

Thus do I interpret the effects of Alcohol; and taking this interpretation as a basis, I would deduce therefrom the following clinical rules for its administration:

I. Give Alcohol whenever you find the nervous system is exhausting itself and the body by an activity in excess of the other bodily functions.

Examples:—

In delirious Fever, especially in Typh Fever. Here the high specific gravity of the urine is a warrant to you of the great amount of destructive metamorphosis going on, and the failing strength shows how low the constructive life is. Continue the Alcohol as long as the tongue is dry, and the mind raves instead of sleeping, and the hands tremble.

In Pneumonia, in surgical injuries, in Erysipelas, &c., under the same regulations. Here, however, our path

is not so clear nor so well enlightened by physiology : we must feel our way by actual observation of the effects produced on the patient under our eye.

The power of resistance to some poisons, such as *Malaria*, seems increased by Alcohol. Thus *Aguish* and *Neuralgic* cases in their Protean forms bear well and are benefited by it in very considerable quantities. Strangely enough, these patients on recovery cannot stand it, and usually of their own accord leave off the habit of taking it. So that we need not fear that we shall make them tipplers by administering the remedy.

In violent shocks produced by mental emotion, or extreme bodily labour. It may be doubted whether the prejudice felt against serving out spirits to soldiers or sailors before a battle is justifiable ; the courage given may be tinsel, but the power of resistance to wounds, mental and bodily, is something real.

Where the patient has been accustomed to excess. It will not do to let the body have to endure the natural reaction and the disease at the same time. The reaction must be postponed to a more convenient opportunity, when the body is ready for it.

II. Give it, increase it, leave it off under the guidance of the appetite for food. As long as a sick person takes and digests food better with Alcohol than without, so long it is doing good. Beyond that we have no evidence.

III. When the marked feature of the disease consists in retention of effete matters which ought to be discharged, abstain from the use of Alcohol altogether.

Examples :—

In Uræmia I have always found any effects which could be traced to Alcohol to be of an injurious character ; under its employment the giddiness, the blunted intellect, the faintings, the tendency to coma,

all increase, the urine sometimes becomes more scanty, always of lighter specific gravity; and I cannot say that even the Dropsy, for which the Alcohol is most usually administered, is often benefited.

Jaundice also seems to be aggravated by Alcohol.

The Uric Acid Diathesis also offers an objection to the use of Alcohol; but there are exceptional complicated cases which appear to receive benefit from occasional doses.

IV. Divide the daily allowance into two or three doses only, giving enough at once to produce a decided effect. The action of frequent small divided drams is illustrated by the experiments I have detailed—it is to produce the greatest amount of harm of which the Alcohol is capable, combined with the least amount of good.

In Fever I usually order three doses a day, and find that even that sometimes is too often, and that the patients do better with two.

The shape in which Alcohol is administered is in many cases not a matter of choice. The mighty force of the purse-strings often restricts us to the coarsest compounds. New whisky and gin and British brandy are better than nothing, certainly, but do not forget that they contain a very deleterious, nay almost poisonous ingredient, Foozel-oil, which is abundant in direct proportion to the youth and consequent low price of the article. Age changes this into more wholesome as well as more agreeable Ethers. Any of the full-bodied wines are better for acute cases than spirits. Port perhaps exhibits in its commoner varieties more of the good qualities that a wine should have than the produce of other grapes. But if the expense is no object, thoroughly good high-priced Champagne exhilarates more, is easier digested, and does the good without the harm better than any of its rivals.

L'ENVOI.

IN concluding I would take the opportunity of pressing upon students the importance of making Physiology the key-stone and connecting link of all their knowledge, and the arched foundation on which they base their future practice. It is an error, fatal to the usefulness of our profession, to say or do anything capable of fostering the idea that the organic laws of health and disease are different, or still worse, that they are in opposition. On the modern principle of dividing labour we have separate lecturers on Anatomy, Physiology, Pathology, and the Practice of Medicine; but your teachers and you should never lose sight of these branches of study being in truth all limbs of the same tree; those who follow them one after the other are still pursuing the same end—a knowledge of man's nature with a view to his greater physical well-being. Each special professor has no more right to claim for himself the teaching of you to be medical men, than the shepherd, the weaver, or the tailor to arrogate for himself the credit of adorning our backs.

No new modes of nature's acting are brought into play by disease; its chemistry is the organic chemistry of health; the same mechanical laws are exhibited; the relations of the material and spiritual world are the same. The difference consists in the deficiency, that is, the temporary or permanent subtraction of substance or power, and not in its novel increase or addition.

The nice balance of vital functions which is convenient for the uses we put our bodies to, is called

health or ease ; that deranged balance which is inconvenient is bad health or *dis-ease*. There are no new forces to be studied, but simply varied relations arising from deficiency of one or other of the ordinary functions of life, and a consequent want of balance between them.

Is it not, then, obvious that the best and only mode of arriving at a knowledge of the deficiencies of vital powers, or diseases, is by a knowledge of those powers of which they are deficiencies? Is not the Physiologist the only true Pathologist?

And as to the use of medicines, with which it is your duty to be acquainted, do you not see that the best guide to a knowledge of their effect upon a disordered body is the knowledge of their effect upon a healthy body, and that the most certain way of advancing the art of healing is to search out the essential actions of physical agents?

To the practitioner I will urge the necessity for having firm faith in the work he is busy upon, and in the tools he uses. Without this he can look back with no conscientious pleasure on his daily toil, his moral nature will degenerate day by day, he will have but the slighting scorn of those whose applause he would value in old age, and worse than all he will deserve it. The sooner a sceptic leaves our profession the better. He that complains of the want of something to believe in I am sure has not sought for it.

To non-professional persons I would say, see and believe that the Art of Healing is a true thing, not a set of rules, not a doctrine, but a real means of adding to life and happiness. See—for you can see if you like—that it is founded, not on opinion or traditional notions, but on a sure knowledge of God's works. And be assured that not cleverness, or knack, or habit

learned from others can be the chief virtues of the professor of this art. There is scope in it for the highest and broadest intellects, for wisdom, prudence, and judgment, as well as for the moralities of perseverance and charity. He in our profession who is first in the scale of humanity is the first and best physician.

I would call upon all to remember what a high matter it is that we take upon ourselves to handle. Man's Life!—that which makes him God's viceroy on earth; for separated dust and spirit cease to hold that lofty post. Every minute that we aid him to retain it in vigour gives him fresh hope of working out salvation for himself and others; every minute by which it is shortened damps that hope.

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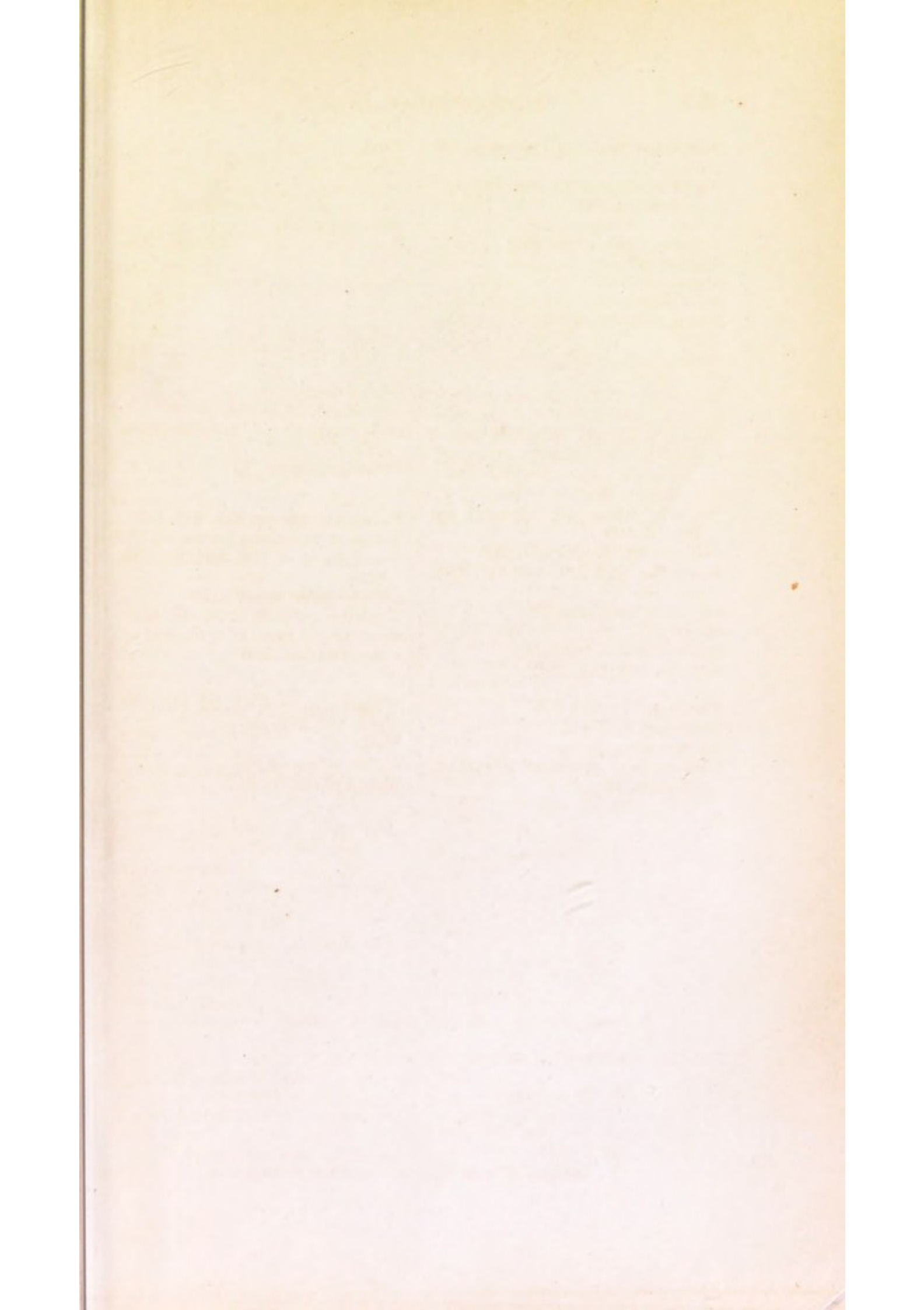
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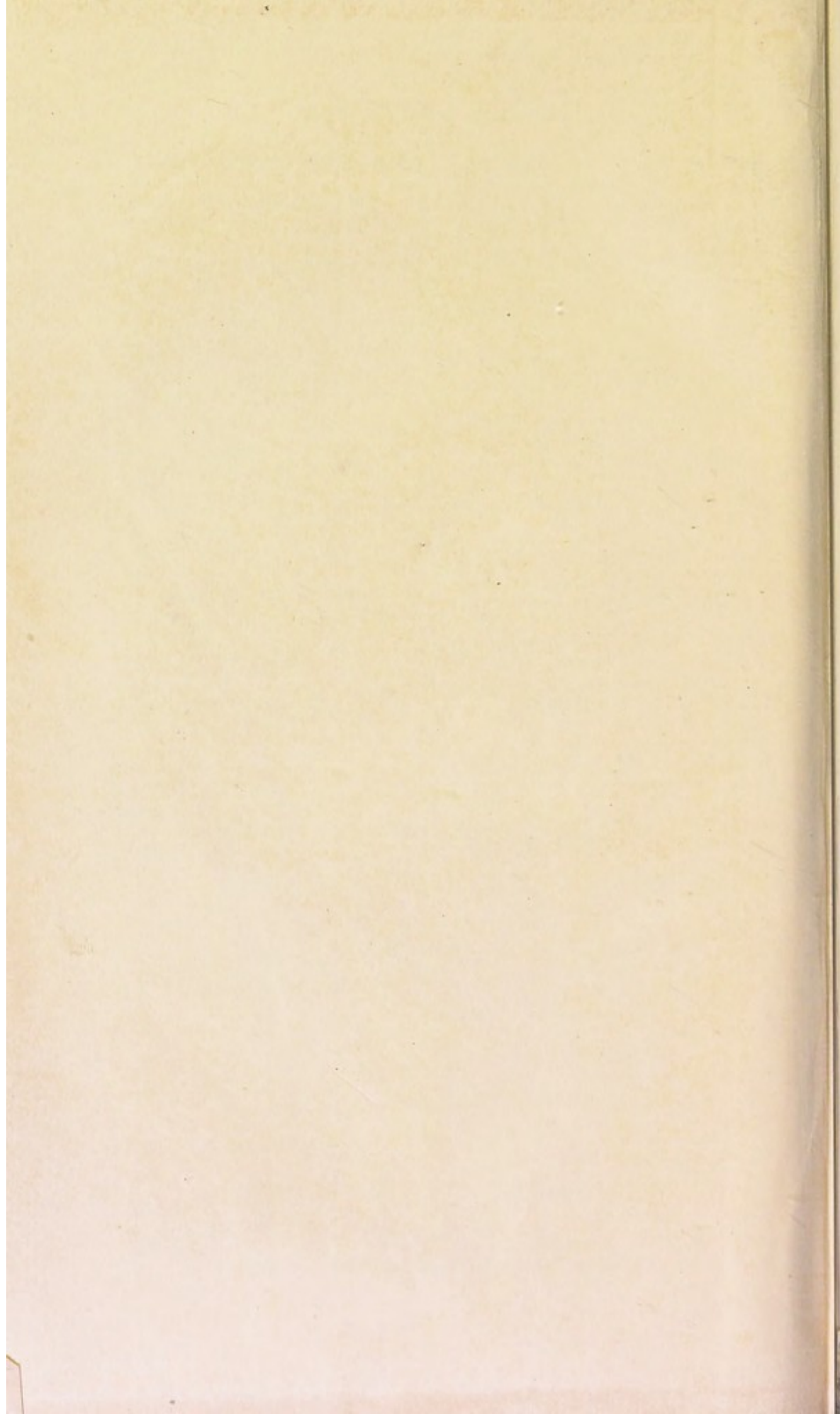
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