THE DISSECTOR.

Vol. I.] NEW-YORK, OCTOBER, 1844. [No. IV

FALLACIES OF THE FACULTY.

Hereditary Predisposition—Apoplexy-Hæmorrhages—Heart Disease—Pulmonary Consumption—Glandular Complaints—Consumptive diseases of Joints.

By Dr. Dickson.

Gentlemen:

We have hitherto derived our illustrations of the unity and *intermittent* nature of disease, almost entirely from such forms of disorder, as, by the profession of the present day, are termed FUNCTIONAL; that is to say, such as are uncomplicated with organic decomposition or any marked tendency thereto. Now, in the commencement, all complaints are simply functional. I do not of course include those organic diseases that have been the immediate effect of mechanical or other direct injury—such as the passing of a small sword through the lungs or liver. I speak of disease in the *medical* acceptation of that term—disease in which one or more constitutional paroyxsms occur before organic change becomes developed. Enquire the *Sequelæ* of those agues for which the usual routine of medical treatment may have proved unavailing. Do not these comprise every structural change to which nosologists have given a name?—hæmorrhage, or rupture of blood-vessels wherever situated,—diseased lungs by whatever termed; with all the various visceral alterations which have obtained designations more or less expressive of the localities in which they become known to us—the enlarged, softened, or otherwise disorganised heart, liver, spleen and joint; the indurations and other changes which take place in the several glands of the body, whether called scrofulous or consumptive, cancerous or scirrhous. When patients thus afflicted complain of the *ague-fits*, from which they suffer, their medical attendants too often point to the local disease as the cause, when in reality, such local disease has been a mere feature or effect of repeated paroxysms of this kind. Even John Hunter, with all his acuteness, fell into this error, when he said, "We have ague, too, *from* many diseases of parts, more especially of the liver, as also the spleen, and *from* induration of the mesenteric glands." It is only of late years that the better informed members of the profession have begun to suspect that these structural alterations, instead of being the causes of the "constitutional disturbance," are the results. But this phrase, in most instances, they use without any very definite idea of its meaning—and when questioned in regard to it, they either confuse the matter with the mixed-up jargon of incompatible theories, or frankly confess that they entertain notions which they feel themselves unable by any form of speech to impart to others. Gentlemen, "constitutional disturbance," when analysed, will be found to be neither more nor less than an *excess* or *diminution* of the healthy temperature and motions of various parts of the body,—amounting, when the disease is *recent* (or "acute") to the bolder features of INTERMITTENT FEVER—and in cases of longer standing (or "chronic") coming at last to the more subdued symptoms of that universal disease. Betwixt these two extremes you have every kind of intermediate shade,—sometimes depends upon duration, sometimes upon individual constitution.

Every child of Adam comes into the world with some weak point, and this weak point necessarily gives the subject of it a *predisposition* to disease of one locality or tissue of the frame rather than another; but many persons, from accidental causes, have also their weak points. Of this kind are such parts of the body, as after having been externally injured get so well, that while you continue in health you suffer no inconvenience; but as old age steals upon you, or when your general health gives way, you are reminded by certain feelings of weakness in the parts injured, of the accidents that have formerly happened to you, and that to keep the affected parts in tolerable strength

you must not play tricks with your constitution. Individuals so situated can predict every change of weather; they are living barometers, and can tell you what kind of a day it shall be, before they rise in the morning They obtain their knowledge of this from the experience of their feelings in their old wounds and fractures. Now, Gentlemen, this is what you ought to be prepared to expect:—the atoms of *repaired* parts must always have a weaker attraction to each other, than the atoms of the other parts of the frame,—and they must, therefore, in the very nature of things, be more liable to be influenced by external agency—by every thing, in a word, that has the power to put matter in *motion*. Whatever, under ordinary circumstances, shall slightly shake or effect the whole body, must, under the same circumstances, be a subject of serious import to its weaker parts; and this argument also applies with equal force to the atoms of those parts of individual bodies, which, by hereditary predisposition, manifest a similar weakness in the attractive power of their atoms to each other. As the child is but an extension of the living principle of the parents, its frame must naturally, to a certain degree, partake of the firmness and faults which characterised its progenitors, whether mental or corporeal—resembling them, not only in external features, but copying them even in their inward configuration. Such similitude we see extending to the minutest parts, whether such parts be fully developed, or defectively, or even *superfluously* constructed. As instances of these last, I may mention, that I have known particular families, where the frequent repetition of six fingers to the hand has taken place in successive generations, and others, where the same members have been as hereditarily reduced beneath the correct human standard. Then in regard to hereditary *mental* resemblances, you will see children, whose father died before they were born, manifesting the same facility or stubbornness of temper, the same disposition to moroseness or jocularity, which characterised the author of their being. Friends and relatives will sometimes hold up their hands with astonishment at this mental likeness of children to their parents; "he is just his father over again," is a common and correct remark of the least observant. In the doctrine of *hereditary predisposition*, then, the profession and the public, I believe, are equally united in opinion;—but whether they be so or not, is of very little import while you have eyes to look around you, and can judge for yourselves. I must, however, tell you, that in cases of hereditary predisposition, much will depend upon circumstances, whether or not such predisposition be actually and visibly developed in the individual members composing a given family. A person, for example, in whose family the heart or lungs is the weak point—by guarding himself against too rapid changes of temperature, and availing himself of a fortunate position in society as to pecuniary and other means, may so control numerous exciting elements of disease, as to pass through life happy, and comparatively healthy:—while his less fortunate brother, worn down by an accumulated weight of domestic and other trouble, shall not only suffer in his general health, but shall as surely have the weak point of his family's constitution brought out in his individual person. We are all, then, more or less, the "sport of circumstances."

Among the various diseases, which, from their frequency, we justly recognise as the most prominent and important that affect the inhabitants of these islands, I may mention, Spitting of Blood, Consumption, and Glandular disorders. The rapid transitions of temperature, so characteristic of this climate certainly predispose us to these complaints:—for while in the warmer countries of the East, Dysentery and Abscess of the Liver carry off the greater number of the various races that compose the population,—the natives of India, who have died on our shores, have generally fallen victims to Glandular and Chest Disease. Even the monkey acknowledges the baneful effects of such rapid thermal transitions on his respiratory organs. More than one half of this class of animals that come to England, die of consumption of the lungs. Diseases of the chest and glands certainly become hereditary; but under that head, you may include a great many others, —epilepsy, apoplexy, palsy, mania,—and perhaps, every purely constitutional complaint, which has obtained a name. Could the breeding of mankind be as closely watched and as easily controlled as the breeding of our domestic animals, incalculable advantages, moral, as well as physical, might be the effect of judiciously crossing particular races with each other The tendency to the particular passions and diseases, which characterise nations and families, might, in this manner, be as certainly diminished, as the beauty of the face and form might be exalted in its standard;—for both depend greatly upon hereditary conformation, or upon the particular atomic combination of certain parts of the body, which you find prevailing in families—other external modifying circumstances being, at the same time, kept in view,—such as climate, temperature, social and political relations,

&c. But be this as it may, whatever will agitate the whole frame of an individual,—whatever will in any manner touch the stability and strength of his corporeal *Totality*, must to a certainty with much more severity affect the weakest point of his body, whatever that point be. This doctrine I mean shortly to apply to.

APOPLEXY.

The great System termed the Human Economy is made up of numerous lesser systems, each having a fabric or material peculiar to itself. By anatomists, these various fabrics are termed the Tissues. Thus we have the Osseous or Bony tissue of the skeleton, the Cartilaginous and Ligamentous tissues of the joints; the Glandular tissue different in different systems of glands, but without which there could be no *secretion*—no saliva—no bile—no perspiration, and the like;—the Muscular and Tendinous tissues, so necessary to locomotion;—the Nervous tissue—of two kinds,—one to convey impressions *from* the Brain to all parts of the body, the other to convey impressions back *to* the Brain. Then there is the Vascular tissue, partly muscular in is nature, comprising the heart and its infinity of blood-vessels;—to say nothing of the Cellular tissue, which, like a web or net, invests and insinuates itself into the whole tissues of the body. The tissue of the lungs and that of the intestinal tube are principally compounded of the others; so, also, are the lining membranes of the various cavities and canals that convey the secretions—*mucous* membranes, as they are termed—for the membranes that line shut cavities, such as the cavities of the chest and abdomen, are distinguished by the term *serous*. The Cutaneous, or Skin-tissue, performs the part of an outward envelope to all. Now, as there is seldom such a thing to be seen as a man or woman, whose body is so perfectly made in its outward form as to stand the scrutiny of a sculptor or painter in all its parts,—so, in the internal configuration of all bodies, will there be parts, as we have already seen, inferior to other parts in strength and so forth. Some tissue, or portion of a tissue, may be at fault. Well, then, suppose the fabric of the *Blood-vessels* of a part to be the least strongly constructed tissue of a given individual, can you doubt that any thing which might injure that individual's health generally, would among other phenomena, develope such original weakness in that part of his Vascular tissue, even where it had not been before suspected? Suppose you were to starve a person slowly, or to bleed him day by day, would you not in that case be sure to break down his whole health? Would you not also weaken the coats of the blood-vessels generally by what so palpably weakened every tissue of the frame? Now, suppose one or more vessels of the BRAIN to be the least strongly constructed parts of an individual body, would not such starvation or such blood-letting be sure to produce so great a weakness of the coats of these vessels as to give them a tendency to rupture, the consequence of which would be effusion of blood upon the brain,—in other words, *Apoplexy*? I think you must even in theory come to that conclusion. But, Gentlemen, I will give you a fact, or rather a host of facts which you will be glad to take in change for a thousand theories. The inmates of the Penitentiary Prison, by very gross mismanagement, were put upon a diet from which animal food was almost entirely excluded—they were all but starved—"An ox's head weighing eight pounds was made into soup for one hundred people, which allows one ounce and a quarter of meat to each person. After they had been living on this food for some time, they lost their colour, flesh, and strength, and could not do as much work as formerly." The affections which came on during this faded, wasted, weakened state of body, were headache, vertigo, delirium, convulsions, APOPLEXY." Remember, Gentlemen, this is not my statement—no distortion or corruption of words made by me as a party advocate. It is *literatim et verbatim* extracted from the official report of Dr. Latham, the physician who was deputed by Government to inquire into the cause of the great mortality in the Penitentiary. If you place any confidence in its accuracy,—If you believe Dr. Latham to be an honest man, there is only one conclusion you can come to, which is this, that the apothecary practice of starving and bleeding to prevent or cure Apoplexy is the most certain mode of producing this disease in persons pre-disposed to it, and of confirming it in such as have already shown the Apopletic symptoms. Gentlemen, you seem startled at this, and no wonder—for some of you have doubtless lost relatives by the practice. How then, you have a right to demand, must apoplexy be treated? That apoplexy, like every other disease, is a development of general constitutional disturbance,—that it is a remittent disease, and in many instances curable by the remedies so generally influential in the treatment of intermittent fever, according to the various stages of that complaint. I could prove to you by a multitude of evidence.—But there is a case in the *Medical Gazette*, which bears so strongly on this very point,

that I will give it to you at length. It is from the pen of Dr. Graves of Dublin, and the subject of it was a gentleman living in the neighbourhood of Donybrook. This gentleman, Dr. Graves tells us, "had slept well till four o'clock in the morning, when he was awakened by a general feeling of malaise, shortly after which he complained of *chilliness*, some nausea, and headache.—[Here then was the cold stage.] After these symptoms had continued about an hour, his skin became extremely *hot*, the pain of the head intense, and drowsiness was complained of, which soon ended in perfect coma, with deep snoring and insensibility;—in fact he appeared to be laboring under a violent apopletic fit. He *seemed* to derive much advantage from bleeding and other remedies, and to my surprise was perfectly well when I visited him in the evening. The day but one after, at the very *same hour*, the very same symptoms returned and were removed by the very same remedies. [So at least the doctor thought.] I must confess," he continues, "that I could not explain in a satisfactory manner the perfect freedom from all cerebral and paralytic symptoms after two such violent attacks of APOPLEXY. But when a *third* attack came on, I then saw it was a case of the TERTIANA SOPOROSA of nosologists, [what jargon!] and I *prevented the return* of the fit by the exhibition of *Quinine*." The quinine, you see, proved at once an efficient preventive of the returning fits, while repeated blood-letting, whatever might have been its effect in shortening them, had not the slightest influence in that more salutary respect. But when Dr. Graves supposed that his bleedings did actually shorten the duration of the fits, may he not have been deceived by the approaching *remission* of the disease,—may he not have mistaken this natural phenomenon of all disorder for the effect of his remedies? However that be, I can say this much for myself, that since I gave up the practice of bleeding in apoplexy, I have found that disease in the young as generally curable as any other, and in the old much less fatal than when treated by the lancet. Mr. Smith of Cheshunt lately informed me that he had cured several cases of apoplexy simply by dashing cold water over the patient's head, without drawing a drop of blood. Mr. Walter, a surgeon of Dover, has successfully treated apoplexy by the same practice. "The application of your theory," he writes to me, "has lately saved me from bleeding in *two* cases of APOPLEXY, both of which did well without it." Now apoplexy as it happens, is the great stumbling-block of the vulgar. How mad Dr. Dickson must be not to bleed in apoplexy!—that is the language of every blockhead who, knowing nothing of the subject but what he has picked up "in conversation or in his schools," very wisely fancies himself an oracle. But what say the oracles of the schools—what say the men who for years and years have been preaching up blood-letting as an infallible remedy for all diseases! Dr. Clutterbuck, as you all know, throughout a long life, has advocated that kind of practice; what does Dr. Clutterbuck say of its success, in cases of apoplexy? I almost fear you will not believe I quote him rightly—but his name assuredly stands as the author of the article APOPLEXY in the *Cyclopedia of Medicine*, from which I quote—and this is what he says under that head and upon that subject:—"As mere matter of experience there is reason to believe that blood-letting does much less good, and the omission of it less injury, than is generally supposed." Only imagine my feelings when, in the course of my desultory reading, I first stumbled upon this passage. Such a confession from such a quarter! Gentlemen, I laughed most heartily, and made an extract on the instant, keeping to the exact words which I have now given you for your edification.

That you may cure the disposition to

RUPTURED BLOOD-VESSEL OR HEMORRHAGE

in other parts of the body, as well as in the brain, by cold affusion, I could give you an infinity of proofs. What is the old woman's practice in bleeding from the nose? To put a cold key down your back, and thus by the suddenness of the shock change in a moment the whole corporeal temperature. The principle is the same in both cases, and the good effects of that measure ought long ago to have suggested to medical practitioners a better practice in apoplexy and other hemorrhages than is at present the fashion with fashionable doctors. COLD WATER, Gentlemen, HAS MANY VIRTUES, BUT A GREAT DEAL DEPENDS ON THE MODE OF APPLICATION.*—

* Much is said now-a days of HYDROPATHY, which whether a novelty or not, ought rather to be called HYDRO-BATH-Y. When the words I have placed in capitals in the text were first printed, Hydropathy, or the Cold-water Cure, was not even known by name in England. Hydropathy on a right principle is only a *fragmental* part of chrono-thermal means. Practised as it is by Priessnitz and his followers, on the old erroneous *humor*-al doctrine, it must occasionally injure those who submit to it. Of this I lately had an instance in the person of a female patient who had partially lost the use of her right arm and leg. The case was of a paralytic kind, and among other means for its relief, the patient had tried a hydropathic establishment, which she declares, not only made her worse, but "all but killed her." Under a chrono-thermal course, I am happy to say, she has very nearly recovered the original power of the affected muscles. This patient was recommended to me by Major Eyles, Coleshill House, Amersham.

The suddeness of the dash is the chief thing to be attended to in cases of this nature.—So much then for the proper treatment of the patient during the fit of bleeding; but what is to be done to prevent its return? English practitioners almost to a man bleed and purge you. The following case may open their eyes; and as it is not taken from my own experience, but from a German Medical Journal of repute, it may perhaps carry more weight with it on that account. "A strong man, aged 27, suffered on alternate days from very violent bleeding at the nose, which continued from four to six hours, and could neither be stopped nor diminished by the usual styptics, nor by any of the other means commonly employed in similiar cases. Taking into account the remarkable *periodicity* of the bleeding, the treatment was changed for a large dose of sulphate of QUININE with sulphuric acid. During the twenty-one days following, the bleeding recurred but twice, and was then readily stopped. The patient subsequently continued quite well."—[*Med. Zeitung, No.* 33, 1836.]

In the case of a young lady afflicted with periodical *Vomiting* of blood, for which she had been repeatedly bled without the smallest advantage,—or rather to the great injury of *her general health*,—I effected a rapid cure with a combination of Quinine and Alum. The same disease I have again and again cured by Arsenic, Opium and Prussic Acid. A Captain of the royal navy, whom I lately attended along with Mr. Henry Smith, of Cheshunt, for vomiting of blood, got well by small doses of copper.

You will now, I have no doubt, be prepared to question the propriety of the usual murderous treatment adopted for *Spitting* of blood—Pulmonary Apoplexy, as it has been called. Is not the lancet in almost every such case, the first thing in requisition, and death the almost as invariable result of the measure? What say the older authors upon this subject? Listen to Heberden, a physician who, for upwards of thirty years, had the highest and most extensive practice in London. "It seems probable," writes this veteran in medicine, "from all the experience I have had of such cases, that where the hæmorrhage proceeds from the breach of some *large* vein or artery, *there* the opening of a vein will *not* stop the efflux of blood, and it will stop *without the help of the lancet*, when it proceeds from a small one. In the former case, bleeding does no good; and in the latter, by an unnecessary waste of the patient's strength, it will *do harm*. But if the opening of a vein be intended to stop a hæmorrhage, by deprivation or revulsion, may it not be questioned whether this doctrine be so clearly established, as to remove all fears of hurting a person who has already lost too much blood, by a practice attended by the certain loss of more?" With which reasoning, I hope you are all, by this time prepared to agree. But men who know nothing of the economy of the human system, will sometimes dispute this matter with you, by saying, that their patients make blood so fast that they must periodically bleed them, to keep down the disposition to hæmorrhage. Gentlemen, these practitioners deceive themselves; they are deluded into this false and fatal practice by the returning *febrile* fit—a fit that will recur and re-recur at more or less regular periods, while there are blood and life in the body; and the more frequent the bleeding practised in the case, the more frequent will this febrile fit come on, and with it, the very hemorrhage which it is the object of their solicitude to prevent. Does it not stand to reason, that the more you debilitate the *whole body*, the more certainly must you weaken at the same time the already too WEAK TISSUE of the VASCULAR COATS, that tissue whose original weakness constitutes the tendency to hemorrhage! Instead of being the consequence of any constitutional plenitude of the blood itself, spitting of Blood is only a natural effect of real weakness in the coats of the containing vessels of the lungs; so that not only is the theory of making too much blood absolute nonsense, but the measures which medical men have for centuries been putting in force, for the cure of hemorrhagic disease, have been one and all as fatal in their tendency, as the theory that led to them was in principle false. Look at the pale and exsanguined countenances of the unfortunate individuals, who, whether for spitting of blood, apoplexy, or other hæmorrhages, have been subjected to such cruel discipline, and tell me, if these poor creatures make too much blood?—only place your finger on the artery of the wrist, and you may feel it jerking, and compressible, like that of a female who has suffered from repeated floodings. Even during the febrile paroxysm, you may see by the circumscribed flush of the face, that this patient is actually dying of hectic or inanition. What fatal mistakes have not originated in the notion of making too much blood!—To bleed in the case of a ruptured blood-vessel, then, is positive madness. If you open a vein in the arm of any man, whether healthy or the reverse, and let blood, will the opening of another vein stop the flow of blood from the vein first opened? So far from that, both veins will go on bleeding till the patient either faint or die!—Should not this fact have long ago opened the eyes of the profession to the fallacy of their

practice? Gentlemen, how can you doubt, for a moment, that the coats of the blood-vessels, like every other tissue of the body, *must be* equally implicated in the *general debility* that cannot fail to be produced by whatever abstracts *from*, or prevents the entrance *of*, the material necessary to the healthy organization of every part of the human frame? To bleed or starve a person having a hereditary predisposition to spitting of blood or apoplexy, is the most certain method to develop these diseases in their worst forms!—Yet this is the daily practice of the most eminent physicians! one among many proofs, that in the medical profession, eminence is less frequently attained by *successful results* in practice, than by the dexterous employment of all those mean arts and petty intrigues with which mediocre but unscrupulous minds too often beat men of genius in the game of life. So far as practice is concerned, the eminent physician generally confines himself to the fashion of the day—the more especially, if that fashion be profitable to the apothecary; for in such case he is sure to become the fortunate *puppet* of those whose bread depends, not so much upon the cures they shall effect, as the quantity of physic they shall manage to sell! What a happy nation of fools must that be, which supposes that any class of mankind will put the interests of the public in competition with their own. Benighted and misguided people! you call upon men to relieve you from your sufferings, while you hold out to them the most powerful of temptations to keep you on your sick-beds! You pay for physic, what you deny to talent—for a *long illness*, what you refuse to a speedy recovery! Do you think medical men angels, that you thus tamper with their integrity? Your very mode of remunerating them forces them to be corrupt—and that too, at a moment when their numbers are so great, that could even one half of them live honestly, the other half starve! Hear Mr. Abernethy on this subject:—"There has been a great increase of medical men, it is true, of late years; but upon my life, *diseases have increased in proportion*;—that is a great comfort!"—To whom is it a comfort?—to the public or the profession?—When you call in the physician recommended by your apothecary, how can you be sure that he is not a confederate? or that, when the *farce* of a "Consultation" is gone through, you are not the dupes of a petty intrigue to pick your pockets? Uncharitable man! some of you may possibly say, how can you thus malign the members of your own profession?—Gentlemen, when so many of *my* profession, and those not always of the lowest class, descend to practices which degrade medicine into the vilest of trades; when, like the Thugs of India, numbers of them silently and secretly enter into systematic collusions and conspiracies for the purpose of inveigling and plundering under friendship's garb, the unfortunate victims who, too confidingly repose on their honour and integrity; when the editors of the Medical Journals even are forced to notice the letters they receive in their exposure,—is it not time that the too credulous public should be put upon their guard?* If any medical practitioner of your acquaintance has the hardihood to deny the existence of this terrible state of collusion now so prevalent, both in town and country, look upon that man with suspicion,—or rather set him quietly down at once in your own mind, as one of the most deeply implicated of the corruptionists. "A monarch," says Dr. Forth, "who should free his state from this pestilent set of physicians and apothecaries, and entirely interdict the practice of medicine, would deserve to be placed by the side of the most illustrious characters who have ever conferred extensive benefits on mankind. *There is scarcely a more dishonest trade imaginable than the Art of Medicine* in its present state."—[*Rhapsodien uber Medizen.*]

But to return to the subject of Ruptured Blood-vessel. You will find that in every case, except where it has been produced by mechanical or other local agency, this disease is the effect or development of general intermittent fever; the symptoms of which fever vary in their degree of severity with every case,—in one being bold and well marked, in another, so softened and subdued, as almost to escape the patient's own observation;—curable, too, like the simplest ague, by the cold dash or an emetic given during the hot fit;—and to be prevented from recurring by chrono-thermal treatment during the interval of remission. One case will yield to opium or arsenic, another to copper, quinine, or prussic acid, and some will trouble you to cure them at all—for what will agree with one constitution, may, as we have too often seen, disagree with another. I could give dozens of cases of every kind of constitutional hæmorrhage cured in this manner; but the details of one would be the details of all. Yes, Gentlemen, I repeat, by the early use of emetics, the proper application of heat and cold in the different morbid conditions of the body constituting the *febrile fit*, and by the judicious exhibition of the chrono-thermal medicines during its remission, I have successfully treated every kind of hæmor-

* See the *London Medical and Surgical Journal* and *Lancet*, passim,—particularly the former,—for a full exposure of those nefarious practices.

rhagic disease. The same system of treatment has enabled me effectually to cure many cases of Enlarged Veins—Varicose Veins, as they are termed—and the mention of this recalls to my recollection the case of an aged female who had a painful *varicose* ulcer—that is, a sore with blood-vessels opening into it—for which I prescribed the internal use of arsenic, with almost immediate relief to her pain, and the subsequent cure of her ulcer. From the happy result of that and other similar cases, the surgical *mechanic* may learn that there are other and better modes of treating "varicose veins," than by bandages and laced stockings. Well, then, I have said all I mean to say upon the subject of Hæmorrhage, and I have anticipated something of what naturally belongs to the treatment of Diseases of the CHEST. Of these I must now speak at some length.

It has ever been the policy of teachers and professors to affect to penetrate farther into a millstone than their pupils; and, seeing that for the most part such professors know as little of their particular subject as those they pretend to enlighten upon it, so far as their own reputation is concerned, they are doubtless right! The great millstone of the present day, *is the* CHEST,—and Laennec's bauble, *the divining* rod by which our modern sages *pretend* to have obtained their knowledge of it. If you believe them, a hollow piece of stick they have nicknamed "the *Stethoscope*" is the greatest invention of these times! By means of it you may discover every motion and change of motion that ever took place in the organs within the cavity of the chest, and some that never could take place in them at all.

What an invaluable instrument must it be—that stethoscope! The enchanter's wand was nothing to it! Aaron's rod perhaps came the nearest to it! But, seriously speaking, just observe how gravely your hospital tyros hood-wink and hocus each other with the phrases "hypertrophy" here, and "Atrophy" there; "Caverns" in this place, and "congestions" in that—to say nothing of "rhoncus" and "rale," "egophony" and "sybilus"—and heaven knows what other sounds and signs besides—sounds and signs which, in the greater number of cases, have as much of truth and reality as the roar of the sea with which the child deludes his fancy when holding a shell to his ear!

Let me first speak to you of

DISEASES OF THE HEART.

Do not the subject of every kind of Heart-affection tell you they are one bay better, another worse? How shall we speak of diseases of this organ?—of palpitation and temporary cessation or remission of its action?—disorders constantly misunderstood, and as constantly maltreated. Complain but of flutter or uneasiness in any part of the Chest, the stethoscope—the oracular stethoscope—is instantly produced. Astonished—in many instances terrified—the patient draws his breath convulsively—his heart beats rapidly—and the indications obtained by means of this instrument, at such a moment of doubt, anxiety, and fear, are registered and recognised as infallible. "Have we not had too much talk of Heart-Disease since the stethoscope has come so generally into vogue?" was a question asked some years ago by the late Dr. Uwins. Dr. James Johnson shall answer it; and for reasons which I shall by and bye make you acquainted with, I prefer his evidence here to that of any other physician. In one of the numbers of *The Lancet*, Dr. James Johnson is stated to have said at a Medical Society:—"It was a common error in young practitioners to consider the heart as organically diseased when its functions only were much interfered with, and *this error* has become *more general*, he was sorry to say, *since the* STETHOSCOPE *has come into use.*" Dr. Johnson confines his observation to *young* practitioners—himself not coming under that head,—but I have seen men as old as he make the same mistake, and those, too, enjoying a great reputation for stethoscopic sagacity.

Patient after patient—medical as well as non-medical,—have come to me with the *fatal scroll* of the stethoscopist—there hearts palpitating, their limbs trembling, as they gazed in my face, expecting to read there nothing short of a confirmation of their death-warrants;—yet of those patients, many are now living and well, and laugh, as I hope to make you laugh, at both the instrument and its responses. How little must that man know of his duty as a physician, who would deprive a fellow-creature in distress of the balm of hope—how little can he appreciate the influence of the depressing passions on the bodily sufferings of the sick! Yet with these eyes have I seen, in the hands of the patient, the written announcements of his doom, an announcement which afterwards turned out to be utterly unprophetic and false. How unwarrantable in any case to intrust the patient with such a document.

Let the practitioner withdraw his eye, for a time, from a mere symptom; let him observe how other muscles of his patient palpitate at times, like the heart, and act, like that, convulsively—finding these symptoms to be remittent in every case; and complicated with others, all equally remittent, would he still persist in his small bleedings, his repeat-

ed leeches, his purges,—*measures of themselves* sufficient for the production of any and every degree of organic change he already fancies he has detected! Would he not rather reflect with horror on his past treatment, and endeavour, by another and a better practice, to enable his patient to escape the sudden death to which, in his imagination, he had devoted him? How many a physician, by such a prognostic, has obtained unmerited credit for foresight and sagacity, while he only taught the patient's friends to be prepared for an event, *he himself was materially contributing to hasten!* Truly, in this case at least, prophecies do tend to verify themselves!

Gentlemen, I have seen two stethoscopists examine a patient with supposed Heart-disease, and come to the most opposite conclusions,—one declaring the organ to be enlarged, the other assuming with equal confidence, that it was the reverse! The utter absurdity of attempting to distinguish, during life, one form of Heart-affection from another by any particular sign or symptom, is sufficiently proved by this one fact, that a mere functional variation of its motions will produce every symptom of a real change in the structure of the organ itself. But even could such distinction be effected to the nicety of a hair, the knowledge of it would *not* be worth a rush for any *practical purpose*—inasmuch as the remedies for every kind of chest-disease come at last to the same agency, whether that agency be directly applied to the surface of the body in the shape of cold or heat; or be externally or internally administered in the form of medicines that electrically influence the corporeal motions through the medium of the brain and nerves. By the chrono-thermal system of practice, I have successfully treated every kind of Heart-disease which ever came, or could come, under the notice of the physician—setting aside, of course, original malformation of the organ I will give you some cases in illustration:*—

A gentleman, aged 30, had been ill for a long time, particularly complaining of his heart, the action of which organ was generally below the healthy standard, and it also palpitated occasionally. So great was his mental depression, that the smallest trifle produced tears. The temperature of his body generally was below that of health, and he suffered much from coldness of feet—remissions he of course had, being better at particular times. As he did not improve in the country, he thought he would try a London doctor, so he came to town, and consulted the late Dr. Hope, a gentleman, who though he wrote a thick tome, entitled "Diseases of the Heart," was, I am sorry to say, altogether wrong in his treatment of them! The stethoscope in this case was as usual applied to the chest, and its annunciation was sepulchral. Hope here told no "flattering tale," for not only was the heart pronounced to be enlarged, but a fatal result was prophetically expressed. The treatment prescribed was not ill calculated to verify the prediction—carscarilla and ammonia,—with aperients!! and a *bleeding* every month, or six weeks!! The patient's health, as you may readily suppose, got worse and worse daily,—he became much emaciated in his person, and completely prostrate in mind. To sum up all, he had a tendency to fainting fits; in which state, by the advice of Dr. Selwyn of Ledbury, he came to me. You already guess the practice I adopted—chrono-thermal, of course. Yes, gentlemen, I ordered him first a combination of prussic acid and creosote, which I afterwards followed up by arsenic and quinine. I also prescribed a generous diet, with wine. Well, what was the effect of this?—Why, notwithstanding the depletion to which he had been subjected, he improved daily, and in about six weeks had become so well as to be able to resume his profession—the law, which profession, at the hour I speak, he follows with ardour, and without a complaint of any kind. Indeed, a letter which I recently received from Dr. Selwyn, gave me the news of his marriage. Yet this patient, according to the stethoscope, should have been dead and buried long ago!

Gentlemen, in confirmation of the value of Arsenic in disease of the heart, the details of a case from Darwin, who wrote, be it remembered, in the last century, may not be deemed unimportant:—"A gentleman, 65 years of age, had for about ten years been subject to an intermittent pulse, and to frequent palpitations of his heart. Lately the palpitations seemed to observe irregular periods, but the intermission of every third or fourth pulsation was almost perpetual. On giving him four drops of a saturated solution of *Arsenic* about every four hours, not only the palpitation did not return but the intermission ceased entirely, and did not return so long as he took the medicine."

The cases I shall now give you are three of many such which have occurred in my own practice:—

* The Doctor is here we are sorry to say, as profoundly ignorant as the profession generally, of the magnetic symptoms, by which tubercular disease of the Heart, as in every other organ, is distinguished with facility and perfect certainty, in every case, and in any stage of the disease; and as this disease is sui-generis, or of its own kind, and therefore entirely different from functional derangement from excitement of the brain or any other cause, it is certainly a matter of some importance to be able to distinguish it.

The cases the Doctor has given in illustration are those of functional derangement, and accounts for his success in treating "diseases of the heart." *Editor.*

Case 1.—A young lady was afflicted with palpitation of the heart, occasional cough, and so great a difficulty of breathing as to be unable to sleep, except when supported with pillows. She had frequent shivering fits; her abdomen and legs were much swelled, and her symptoms altogether so distressing, as to leave her friends with scarcely a ray of hope. Nevertheless, by the employment of silver, quinine, and prussic acid, she did eventually recover, to the surprise of all who know her. Remissions were well marked in this case.

Case 2.—A young gentleman, aged 16, had violent palpitation of the heart, headache, craving appetite, and some thirst, with great depression of spirits. He was much emaciated, and had a tendency to eruption of the skin. His hands and feet, which were generally cold by day, became during the night so hot, as frequently to keep him from sleeping. By a course of cold-plunge baths, alternated with the shower bath, and by the use at the same time of quinine and iron in combination, the young gentleman was completely restored to health—every one of the above symptoms having disappeared in a few weeks. He is now serving with his regiment in India, having reached the rank of lieutenant.

Case 3.—Major M 'P———'s heart palpitated so violently at times, that you could see the motions in a distant part of the room. This was the case when I was asked to see him. I ordered him prussic acid and musk, which stopped the palpitation in about two minutes after he took it. In the middle of the night he had a threatening of the complaint, but it was at once arrested by the same medicines. A continuation of them for about six weeks cured him completely.

Before dissmissing affections of the heart, I must tell you that all of them, or almost all depend upon weakness of the Brain—as you may convince yourself by putting this question to your patient—How do you feel when anything disturbs your *mind*? The answer will almost invariably be, "Oh it brings on the palpitation at once," or the pain as the case may be. Gentlemen, strengthen the brain, and in few instances will you have any trouble about the heart. The brain is the great controller of every function—it is the true key to all good treatment.

We now come to consider

Pulmonary Consumption, or Decline.

When you see a person harassed with cough, and losing his flesh, and if, at the same time, he complains of shortness of breath and pain of the chest, and begins to expectorate a muco-purulent-looking matter, you may certainly set his disease down as *Consumptive*; for not only is his general health in that case manifestly wrong, but his lungs are more or less implicated,--and what does it signify in which of their tissues? what does it signify whether it be their mucous membrane, their glands, or th ir interstitial substance. If his general health from the time he becomes your patient, improve, he will naturally live as long as it continues to do so,—if not, and if it as progressively continue to get worse, he must die! Any further discussion of the matter, *quoad hoc*, resolves itself into the interminable question of Tweedle-*dum* and Tweedle-*dee*!

"Can Consumption be cured?" asked Mr. Abernethy, adding in his own sarcastic manner "Odd bless me! that's a question which a man who had lived in a dissecting-room would laugh at. How many people do you examine who have lungs tubercular which are otherwise sound. What is Consumption?—It is *tubercle* of the lungs—then if those tubercles were healed, and the lungs otherwise sound, the patient *must get better*; but if the inquirer shift his ground and say, "It was the case I meant of tubercles over the whole lungs," why then, he shifts his ground to no purpose, for there is no case of any disease which, when it has proceeded to a certain extent, can be cured."

The next question is what *are* Tubercles? I take this to be the true answer,—and I wish you to consider it well, for it is, or, I should rather say it *was*, until I took the liberty of enlightening the profession, totally at variance with their notions; some of them even *now* believing tubercles to be parasitical animals! Gentlemen, for the requisite lubrication of the mucous membrane of the cells and other air-passages of the lungs, there must be a certain amount of secretion. To supply this secretion, I need not tell *you* there *must* be a glandular apparatus; and accordingly a number of minute and almost imperceptible *Glands* in reality intersperse the entire tissue of the lungs—the pulmonary tissue, as it is called—but abound more particularly in the *upper portion* of it—that identical portion in which pathologists imagine they have detected the *commencement* of Consumption. But what they call the commencement is nothing more than an EFFECT or development of general constitutional disorder. If it be the beginning, it is the beginning of the end—the end of previous repeated febrile paroxysms of greater or less intensity. During such constitutional disorder, and particularly during the course of severe fevers—such as a long remittent fever, the

fevers termed small pox, measles, and the like, these minute *pulmonary glands* become diseased, there being a previous *predisposition* of course; in other words, these glands being the original weak points of individuals having the consumptive tendency. Tubercles then are diseased pulmonary glands.—How many people have traced the Consumption of their children to the smallpox or measles—but would any man in his senses say the consumption was the cause of these fevers? Here it must have been the effect, and so also it may be the effect of any other kind of fever, and in no case can it be the cause of such fever—though, as in the giving way of any other part of the body, the local disease may in the course of time aggravate and keep up the febrile state. The affected gland is in this instance at first almost microscopically minute, but as the disease advances, it swells and becomes of a reddish gray colour, or it may at once take on a suppurative action—it may become an *abscess* varying from the size of a pea or less to that of a walnut or more, or it may go on enlarging to any extent without suppurating or becoming an abscess at all—the function of the affected lung in this case being, nevertheless, as completely disturbed as if it did take on the suppurative state; but in most cases of consumptive disease both kinds of disorganization go on at the same time, one gland or cluster of glands suppurating, and sooner or later bursting and discharging their contents into the air-passages, rendering the lungs at the same time more or less cavernous and hollow—another gland or cluster of glands swelling and coalescing so as to fill up and solidify the air-cells of the part they occupy. These at least are among the principal changes to be found in the lungs of persons who die of consumption, and they are all, as I have already said, more or less gradually produced in the course of repeated paroxysms of general remittent disorder. The matter expectorated by the patient consists of the contents of the tuberculous abscess, and more or less mucous, sometimes mixed with blood; while the cough is at one moment produced by a lodgment of matter in the air-passages, at another it is an effect of the cold air coming in contact with the ulcerated surface of the diseased lungs,—though almost every patient has it *periodically* spasmodic. To understand this subject in all its bearings, you have only to observe the more palpable changes which take place in the glands of the *Neck* of certain patients. These glands in the *healthy* living subject, can neither be seen nor felt; but apply any general influence that shall excite *Fever* in an individual predisposed to glandular disorder,—such as starvation, exposure to cold, or the abuse of mercury, and what do you find? Why, these very glands gradually enlarge and form tumours, which tumours, as in the case of tubercles of the lungs, are sometimes of a solid kind, and when examined after death have the same reddish grey appearance, but more frequently like them terminate in abecesses, the contents of which, so far as mere likeness is concerned, are the identical contents of pulmonary tubercles, or *vomicæ*, as these tubercles are sometimes called. In the one case, the patient is said to have the "Evil" or "Scrofula," in the other Phthisis or Consumption;—the difference of place, and the degree of importance of this in the animal economy, making the only difference between them.—In still farther proof of the correctness of this explanation, I may mention that Louis and others have detected *tuberculous matter* in various other *Glandular* parts of the body of patients who have died consumptive. If it be objected that they have also detected it in the *bones*, I answer, bones like every other part, have a glandular apparatus.*

We now come to the question of Cure, and from what we have already said, you must be aware, that however curable Pulmonary Consumption may be in the commencement, in the later stages—that is, where a very considerable portion of the lungs is destroyed—it cannot possibly be cured, though even in this case, the disease, by proper management, *may sometimes* be arrested.—But here, instead of confusing you with fine spun differences and distinctions, the delight of the schoolmen, I shall try to explain my meaning to you by *similitudes*; for similitudes, in the words of Fuller, are indeed "the windows that give the *best light*."—Many of you doubtless have had a certain portion of a tooth slowly *consumed* by disease, which disease, [tooth-*consumption* ?] by some change in your manner of living, or otherwise, has all of a sudden stopped, and the remaining sound portion of that identical tooth has continued to be useful to you for years?—Such arrest of the consumption of a tooth, I have often myself obtained by quinine internally administered; and Dr Irving of Cheltenham, some time ago, detailed to me two cases in which he succeeded with that remedy. Well, then, with medicines of this class, and sometimes even without any medicine at all, the same thing may take place in

*We have published during the last ten years, more than 20 000 copies of different medical works, in which we have given precisely the same views of the origin of tubercles; not only in the lungs, but in every other part of the body; and the Doctor is consequently mistaken in supposing himself to be the first person who had attempted to "enlighten" the profession on this subject.—*Editor.*

the lungs; and I have known persons reach a good old age, who had portions of their lungs destroyed, but who, by proper medicine, and attention to the temperature of their chambers, preserved the sound parts from going into further decay. Such persons, at greater or less intervals of time, may even be free from the graver symptoms of consumption, and only commence to expectorate during some change of weather, when they have slight febrile attacks, but these will leave them again on the return of warm weather.

LECTURES
ON
ORGANIC CHEMISTRY;

Delivered during the Winter Session, 1844.
IN THE UNIVERSITY OF GIESSEN,
BY
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INTRODUCTION—No. IX.

Decay. Its Nature. A Slow Combustion. Relation of Decay to Fermentation and Putrefaction. Its use in the Arts. Bleaching. Manufacture of Vinegar by the quick process. Suggestions for improvements in the Fermentation of Beer and Wine.

The immediate and most energetic cause of all the alterations and transformations which organic atoms undergo, is, as I have already stated in the preceding introductory remarks, the chemical action of oxygen. Fermentation and putrefaction manifest themselves only in consequence of the commencement of a process of decay; their completion is the restoration of a state of equilibrium. Whilst the oxygen is in the act of combining with any one of the elements of an organic substance the original state of equilibrium of attraction in all its elements is destroyed, the substance decomposes, resolving itself,—all the molecular attractions being again equalised,—into a series of new products, which undergo no further change in their properties unless further causes of disturbance or alteration are brought to operate upon them.

Although the chemical action which the elements of organic atoms exercise upon each other in fermentation and putrefaction balances itself, inasmuch as a state of rest is induced between the attractions of the new formed products, yet this equilibrium does not exist with respect to their attraction for [illegible] chemical action of oxygen upon organic substances ceases only when the capacity of the elements to combine with oxygen is exhausted. That action consists in nothing more than the affinity, or tendency of the oxygen to combine with those elements. A perfect equalisation of this tendency, therefore, can only ensue when the elements, by combining with oxygen, have formed such products as are totally incapable of absorbing any additional amount of oxygen. It is only then that the attractions of the elements of organic substances attain a perfect equilibrium with the attraction of oxygen.

Fermentation or putrefaction represents the first stage of the resolution of complex atoms into more simple combination; the process of decay completes the circulation of the elements by transposing the products of fermentation and putrefaction into gaseous compounds. Thus the elements constituting all organised beings, which previously to participating in the vital process were oxygen compounds, such as with carbon and hydrogen, reassume the form of oxygen compounds. *The process of decay is a process of combustion taking place at the common temperature,** in which the products of fermentation and putrefaction of plants and animal bodies combine gradually with the oxygen of the atmosphere.

No organised substance, no part of any plant or animal, after the extinction of the vital principle, is capable of resisting the chemical action of air and moisture; for all that power of resistance which they temporarily possessed as the bearers of life, the media of the vital manifestations, completely ceases with the death of the organism; their elements fall again under the unlimited dominion of the chemical forces.

The clearing of the primeval forests of America, and the facilitated access of air to that soil, so rich in vegetable remains, alters gradually, but altogether its constitution; after the lapse of a few years no trace of organic remains can be found in it. The soil of Germany in the time of Tacitus was covered with a dense, almost impenetrable forest; it must, at that period, have exactly resembled the soil of America, and have been rich in humus, and vegetable substances, but all the products of vegetable life in those primeval forests have completely vanished from our perceptions. The innumerable millions of molluscous and other animals,

* In order to avoid the ambiguity attached to the word decay, from its being in vernacular language applied to several processes which it is desirable to distinguish, the author proposed to substitute the term ERMACAUSIS, and this has been very generally adopted in scientific treatises, being a convenient mode of expressing the relation of decay to ordinary combustion.

whose remains form extensive geological formations and mountains, have, after death, passed into a state of fermentation and putrefaction, and subsequently, by the continuous action of the atmosphere, all their soft parts have been transposed into gaseous compounds, and their shells and bones, their indestructible constituents, alone remain.

It is only in localities, under peculiar circumstances, where the access of oxygen was limited or altogether precluded, that we still find distinct remains of primeval vegetables in a state of retarded or impeded decay, as for example, in beds of turf and brown coal.

The presence of water and a suitable temperature are indispensable conditions of the oxidising process of decay, just as they are necessary to putrefaction and fermentation. Perfect dryness, or a temperature below the freezing point, suspends all processes of decay and fermentation. The transmission of decomposition from one particle to another presupposes a change of place; it requires that the particles should possess mobility or the power of free motion, and this is imparted to them by the presence of water. In decay it is more especially a certain elevated temperature which increases the aptitude of the elements of organic substances to combine with the oxygen of the atmosphere.

A great number of organic bodies, when in a moist state are capable of absorbing oxygen, whilst many, and indeed most of them, are *per se* entirely deficient in this property.

If we place wet saw-dust, or moistened fragments of wood, into a vessel filled with atmospheric air, all the properties of the contained air become in a very short time completely altered. If a lighted splinter, which, of course, would burn in the atmospheric air, is introduced after the lapse of two or three hours, its flame will be immediately extinguished. The air confined in the vessel, if examined, will be found to have lost all its oxygen, and to have acquired an equal volume of carbonic acid gas. If a fresh supply of atmospheric air is made to replace this, the same process again occurs, all the oxygen becomes converted into carbonic acid.

In the process of bleaching in the open air, or, as it is called grass-bleaching, we have the process of decay applied to an important purpose in the arts upon a large scale. Linen or cotton textures consist of ordinary woody fibre, more or less colored by extraneous organic substances which were either contained in the plant whence the fibre has been derived, or have become mixed with it during the processes of preparation.

When linen or cotton fabrics are moistened with water and exposed to the light of the sun, a slow process of combustion, or decay, immediately begins upon the whole surface; the oxygen of the atmosphere in immediate contact with the linen or cotton is incessantly converted into carbonic acid. The weight of the fabric diminishes every second, precisely because it is in a state of combustion; all the coloring matters gradually disappear and with them a considerable amount of woody fibre, their elements being converted into oxygen compounds. If this action of air and light upon the linen or cotton continues for a considerable time, these substances lose their cohesion and become converted into a matter similar to that used in the manufacture of paper, and this matter still continues to decay as long as the essential condition of this change, that is the absorption of oxygen, proceeds.

The nitrogenous constituents of plants and animals comport themselves towards oxygen in a manner precisely similar to the behaviour of the non-nitrogenous principle we have spoken of, namely, woody fibre. Fresh meat, as well as the first products of the decomposition of the nitrogenous constituents of plants, by fermentation, that is, beer-yeast or wine-yeast, withdraw oxygen from atmospheric air, and, like woody fibre, yield in return an equal volume of carbonic acid.

When the Cemetery of the Innocents at Paris was removed from the interior of the town to the outside of the barriers, the buried corpses, which had accumulated to a depth of sixty feet, were found to a great extent apparently converted into fat. The substance of the skin, muscles, cellular tissue, and tendons, all the soft parts, and even the bones, had completely disappeared, leaving only the fat, which resisting longest the influence of decay, remained in the form of stearic acid. This human fat was employed to the extent of many tons by the soap boilers and tallow-chandlers of Paris, for the manufacture of soap and candles.

If meat be suspended in running water, or buried in moist earth, nothing of it will remain after the lapse of some time except the fat which it contains.

All substances susceptible of decay, when in a moist state, and exposed to the air and light at the common temperature, undergo precisely the same change as they would if exposed to a red heat, in a dry state, that is, they absorb oxygen,—they undergo combustion.

Alcohol, one of the products of the fermentation of saccharine vegetable juices, is altogether incapable of undergoing the process of decay; when exposed to the air, wether

in its pure state or mixed with water, it evaporates without combining with oxygen. Alcohol is readily inflammable at a higher temperature, and in burning is resolved into carbonic acid and water. It is obvious that its elements have a powerful affinity for oxygen; the high temperature is, however, a necessary condition of the manifestation of this affinity. Hydrogen gas and many other inflammable substances, are, in this respect, precisely similar to alcohol, their affinity for oxygen manifests itself only at certain high temperatures.

In the process of decay it has been likewise observed that a substance undergoing this state of elementary transposition exercises a remarkable influence upon the particles of an adjacent substance, which *per se*, would not be capable of passing into the same state of change, decay or transposition.

Many substances, when in contact with another in a state of decay manifest, at common temperatures, an affinity for oxygen; that is, they enter into combination with this element, at this low temperature, whilst under other circumstances such a combination can only be effected by a far higher degree of heat.

The active absorption of oxygen, the combustion of the decaying substance, is transmitted to the particles of other substances in contact with it; they assume its characteristic state of activity; they like it, combine with oxygen, as if undergoing a real combustion; but how this is effected does not appear to admit any further explanation.—Contact with a substance in decay is the chief condition of decay for all organic substances which do not possess the power of combining with oxygen at common temperatures. In consequence of the ensuing combination of its elements with oxygen the temperature of the decaying substance rises above that of the surrounding medium; but great as the influence in which heat exercises in accelerating the process, it is not in this, as in other chemical processes, the cause of the manifestation of the affinity for oxygen.

If, in a vessel filled with common atmospheric air, to which a certain amount of hydrogen gas has been added, a linen bag be suspended, filled with wet saw-dust, vegetable mould, &c. the process of decay will continue just as it would if they were exposed to the open air. They will convert the surrounding oxygen into carbonic acid. But what is very remarkable in this case, the hydrogen also participates in the process, it undergoes decay; that is, from being in contact with decaying substances it acquires the power of combining with oxygen at the common temperature there be a sufficient amount of oxygen present all the hydrogen gas is converted into water.

Other inflammable gases, both simple and compound, are affected under these circumstances in exactly the same manner as hydrogen. The vapour of alcohol, for example, when in a vessel containing wood or other substances in a state of decay, absorbs oxygen from the atmosphere, and becomes transformed into aldehyde, and subsequently into acetic acid, which upon assuming a fluid state, is withdrawn from the further influence of the oxygen.

It is upon this power of substances undergoing decay, to increase the attraction of all organic substances for oxygen, and especially the affinity of alcohol for this element, that a speedy process for acidifying alcohol is based, which is termed the "quick vinegar process."

The transformation of fermented liquors into vinegar formerly required weeks, and even months to accomplish, in consequence of the imperfect access of the air; we can now convert alcohol into vinegar in less than twenty-four hours, and this is effected mainly by making brandy diluted with water, or any other weak spirituous liquor, trickle slowly through casks filled with wood shavings, and at the same time causing a slight stream of air to circulate through these shavings. This method exposes to the air a surface of alcohol capable of absorbing oxygen by many thousand times more extensive than the old method, and consequently the time which alcohol, under ordinary circumstances, requires for its acidification is abridged in the same proportion. At the commencement of this process it is usual to add to the dilute spirit a small quantity of some substance containing matter capable of undergoing the process of decay, such as beer-wort, honey, vinegar, &c., but after the lapse of a very short time the surface of the wood shavings passes into a state of oxidation, and from that moment effects the transformation of the spirit into vinegar without the further co-operation of extraneous decaying matter.

The application of our knowledge respecting the phenomena attendant upon decay, to the manufacture of beer and wine, is easy and obvious. The property of beer and wine to be converted into vinegar when in contact with the air, depends invariably upon the presence of foreign matters which transmit their own inherent aptitude to absorb oxygen to the particles of alcohol in contact with them. By removing completely all such substances from wine and beer, these lose altogether the property of acidifying, or of being converted into vinegar.

In the juice of grapes pour in sugar there remains, after the completion of the process of fermentation, that is, after the resolution of the sugar into carbonic acid and alcohol, a considerable amount of nitrogenous constituents retaining the same properties which they possessed in the juice previous to fermentation. This does not happen with the juice of the grapes of southern climates. These grapes are rich in sugar, and a considerable amount of this substance remains undecomposed after all nitrogenous matters have completely separated in an insoluble state, as yeast. Such wines alter very little when exposed to the air; the red wines of this kind, however, acidify because their colouring matter is of ready mutability, and performs, when in contact with the air, the part of the nitrogenous constituents.

The nitrogenous constituents of the grape-juice which remain in wine, after fermentation, are those ferments or excitors of fermentation in the sugar, of which I have already spoken in previous papers. After the complete transformation of the sugar they exercise upon the alcohol exactly the same effect as the decaying wood, they are the exciting causes of the ensuing process of acidification.

The affinity of these substances for oxygen is very powerful; during the short space of time necessary to transfer wine from one cask into another, they absorb oxygen from the air, and induce a state of acidity in the wine, which goes on irresistibly if it be not checked by artificial means. It is well known that this check is practically effected by sulphuration. A piece of sulphur is burned in the cask destined to receive the wine, the contained air is thus deprived of its oxygen, and an amount of sulphurous acid is formed equal to the volume of the oxygen. This newly-formed sulphurous acid is rapidly absorbed by the moist internal surface of the cask. Sulphurous acid possesses a stronger affinity of oxygen than the excitors of acidification in the wine. The acid is gradually diffused from the internal surface of the cask through the wine, and withdraws from those substances, as well as from the wine itself, all the oxygen they have absorbed from the atmosphere and thus reconverts the wine into the state in which it existed previous to being transferred into the new cask. The sulphurous acid in this process becomes converted into sulphuric acid, and exists as such in the wine.

When the wine is strored up in casks to ripen, a constant, although very slow diffusion of air takes place, through the pores of the wood, or, what comes to the same thing, the wine is incessantly in contact with a minute amount of oxygen, by means of which, after the lapse of a certain time, the entire quantity of the excitors of acidification, that is, the nitrogenous substances present in the wine, oxidise and separate in the form of a sediment, or dregs, termed under-yeast.

The separation of yeast from wine or beer, during the fermentation of grape-juice or of wort, takes place in consequence of the absorption of oxygen, or, in other words, a process of oxidation, occurring in the fermenting liquid. The nitrogenous constituent of barley is in its primary state insoluble in water, but in the process of malting, or whilst the grain is germinating, it becomes soluble in water, it assumes the same condition or nature which belongs to the nitrogenous constituent of grape-juice originally.

Both these substances lose their solubility in wine, or in beer, by absorbing oxygen. According to analyses in which we may confide, made with regard to this point, wine-yeast, and beer-yeast are far richer in oxygen than the nitrogenous substances from which they are derived.

As long as any particles of sugar, in a state of fermentation, are present in the fluid together with these nitrogenous matters, the fluid itself supplies the oxygen required for their transformation into yeast by the decomposition of a small amount of the sugar or of water. This oxidising process within the fluid itself, which causes the nitrogenous constituents to become insoluble, ceases with the disappearance of the sugar; but it is renewed if the fluid is reconverted into a fermenting state, by the addition of new portions of sugar, and it ensues also when the surface of the fluid is exposed to the free access of the atmosphere. In the latter case separation of the nitrogenous constituents is effected by the atmospheric oxygen, and is thus a consequence of their decay or slow combustion.

I have already stated that the presence of nitrogenous matters in alcohol causes the transformation of the alcohol into acetic acid when there is a sufficient supply of air; now it is owing to the inequalities in their relative affinities for oxygen, that during the maturation of wine in the storehouse when the access of air is extremely limited, that the nitrogenous substances alone oxidise, and not the alcohol. In open vessels, under these circumstances, the wine would become converted into vinegar.

The preceding remarks render it obvious that if we possessed any means of preventing the transformation of alcohol into acetic acid we should be able to preserve wine and beer for an unlimited period, and to bring these liquors into a state of perfect maturity; for,

under such circumstances, all those substances which cause wine and beer to acidify would become insoluble by combining with oxygen, and separate from the liquid, and with their perfect removal the alcohol present would altogether lose the property of absorbing oxygen.

Experimental art has discovered a means of accomplishing this purpose perfectly. It consists in maintaining the fluid at a low temperature when undergoing fermentation. The method based upon this principle, and employed in Bavaria, is one which the most perfect theory could scarcely have surpassed in certainty and simplicity, and it seems impossible to devise one more in accordance with science.

The transformation of alcohol into acetic acid by contact with a substance in a state of decay occurs most rapidly at a temperature of 35° (=95° Fahrenheit.) At lower temperatures the affinity of alcohol for oxygen decreases, and at from 8° to 10° C. (= 46° 50° Fahrenheit) no combination with oxygen takes place under these circumstances, whilst the tendency of nitrogenous substances to absorb oxygen at this low temperature is scarcely diminished in any perceptible degree.

It is, therefore, obvious that if wort is fermented in wide, open, and shallow vessels, as is done in Bavaria, which afford free and unlimited access to the atmospheric oxygen, and this in a situation where the temperature does not exceed 8 to 10 degrees (= 46° to 50 Fah.,) a separation of the nitrogenous constituents, *i.e.*, the excitors of acidification, takes place simultaneously on the surface, and within the whole body of the liquid — The clearing of the beer is the sign by which it is known that these matters are separated. A more or less perfectly complete removal of these nitrogenous substances, however, according to this method of fermentation, depends upon the skill and experience of the brewer. It may be easily conceived that an absolutely perfect separation of them is attained only in rare and extremely happy instances. Nevertheless, the beer obtained in this manner is invariably far superior in quality and stability to that brewed according to the common method.

The exceedingly favourable influence which the adoption of this principle must exercise upon the manufacture of wine is indisputable. It is too evident to admit of a doubt that it will lead to the adoption of a more rational method than has hitherto been employed. The reason that it has not long since been in use, and that the growers of wine have not derived from it the great advantages it is calculated to afford, is obviously their imperfect knowledge respecting it; nay, I may say the total ignorance of the great majority of wine-growers and manufacturers upon this point.

Wine prepared by this method will, of course, bear the same relation to the wine prepared in the ordinary way, as Bavarian beer bears to common beer, in the fabrication of which the same amount of malt and hops has been employed. In the shortest possible time the same quality, the same maturity, may be attained by the wine which, under ordinary circumstances, result, only after long and protracted storing. If it be borne in mind that the period for the manufacture of wine is the end of October, just at the cool season which is peculiarly favourable to the fermentation of beer, and that no other conditions are necessary to the vinous fermentation than a cool cellar, and open, wide, shallow fermenting vessels; and further, that under all circumstances the danger of acidification being much less with wine than with beer, it is evident that the best success may confidently be expected from the application of this method.*

The method employed at most places on the Rhine proceeds upon principles the very reverse of this The wine is left to ferment, not in cool cellars, but in rooms, situated much too high and too warm; the access of air is completely precluded during the process of fermentation by tin-plate tubes, confined with water. These tubes certainly exercise an injurious effect upon the quality of the wine; they are, in every respect, futile— the invention of some idle brain; they serve no object, and yet they are used by people who are too idle to inquire into the matter, and who are wholly incapable of assigning any reason for their adoption.

M. Beau has never witnessed a case of spontaneous acute peritonitis in old age. When the chronic disease has been observed at this period of life, it has generally been the consequence of cancerous (not tuberculous) productions within the abdomen.

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* One of the most intelligent agriculturists and wine-growers of the Grand Duchy of Baden, Baron von Babo, remarks, in a letter to me, dated April, 1843, "With respect to the application of the Bavarian method of fermentation to the manufacture of my red wine last autumn, I am happy to inform you that it answered excellently. Our wine-makers cannot understand the matter, clear and obvious as it is, that the method which it is universally acknowledged yields most excellent results in the manufacture of beer, should be equally advantageously applied to making wine.

An experiment made with red wine in the autumn of 1841, by the same nobleman, had afforded the same favourable results, especially as to the colour of the wine. Before these successful experiments it might have been thought that red wine was the rock upon which this method would founder, but we are now assured of its universal adaptation to the manufacture of wines.

Cures of various Diseases with Mesmerism, by different Gentlemen.

To the Editor of the Zoist.

Sir.—I send you the following accounts of the utility of mesmerism in diseases treated not by myself. The first is written by myself; the others by the gentlemen who did the good. I remain, yours, &c.,

London, June 26th 1844.

JOHN ELLIOTSON

Allow me to quote the following passage from Mrs. Romer's charming work, called the *Rhone, Darro and Guadalquiver*:

"Shall I not be hailed with a shout of derision when I declare, that I verily believe Petrarch to have been (all unknown to himself, and, as innocently ignorant of his powers as Moliere's Bourgeois Gentilhomme was, who had been making prose all his life *sans s'en douter*) a most expert magnetizer?—I ground my belief upon a passage in his life, which has been dwelt upon by one of his biographers as demonstrating the errors into which a romantic imagination will hurry even a mind like Petrarch's, and the fond credulity with which he made complete abnigation of his powers of reasoning whenever any chance incident occurred of a nature to corroborate his assertions of a mystical sympathy existing between himself and her to whom his affections were exclusively devoted.

"The anecdote sets forth, that, one day at Avignon, Petrarch, who was in the habit of reciting his compositions to Laura, read to her a poem, in which, under suppositious names, the history of his passion, and the misery which the inflexible virtue of its fair object had inflicted upon him, were described with a truth and pathos which left no possibility of misapprehension in the mind of his listener. Laura understood him but too well, yet she abstained from uttering any remark to that effect. When the poem was finished, a long silence ensued; during which the eyes of each were fixed upon the other with an expression of tenderness so intense that their very souls appeared to have become transfused in that absorbing glance. At that time Laura was suffering from a slight opthalmia; and it so chanced, says the biographer, that, on the following day, her eyes were completely restored to a healthy state, while, by an extraordinary coincidence, those of Petrarch were painfully attacked by the distressing malady under which she had suffered. Her lover, however, firmly believed that the force of sympathy, and, more especially, the ardent desire he had felt, while gazing upon her the preceding day, to relieve her from her sufferings, had given him the power to transfer them from her to himself; for such was his faith in the strength and purity of his love for her, that he believed it capable of performing miracles in her favor.

"Was not this miracle, however, the simple agency of animal magnetism, directed by those two most powerful engines *the eye and the will?* I have no doubt in my own mind on the subject; and I have so frequently seen magnetizers affected by the identical symptoms from which they had relieved their patients, that the circumstance of Petrarch having gained the opthalmia of which Laura had so suddenly been cured is to me an additional and convincing proof, that the occurrence which he had fancied to be a miracle, and which his historian had attributed to the delusions of an overwrought imagination, was neither more nor less than one of those physical phenomena of which I have seen more than one example in the practice of animal magnetism, and which form the most extraordinary and perhaps inexplicable characteristics of magnetic attraction and sympathy in the human frame.

Let those who are inclined to smile at the opinion of this accomplished lady, read the following narration.

I have just been attending a young lady for an affection of her lungs, in conjunction with Dr. Ashburner. The outer half of the white of the right eye became slightly inflamed, and grew very gradually worse for a fortnight. It then got much worse in three days, the aching being changed into sharp pains both in the eye and the temple; and the inflamed portion became of an intense and uniform red, with a palish elevation at one spot as though a pustule would form. We had been anxious to distress and weaken her as little as possible, but were now compelled to take some measure for arresting the disease, and prescribed a blister, and mercurial medicine.

She was so agitated at hearing of our prescription, that neither the blister was put on, nor the mercurial taken. Mr. Atkinson, being a friend who was frequently at the house, mesmerised the eye the same night, (Friday June 21 st.) In the morning I found she had for the first time during three days been free from the darting pains, had slept all night—a thing she had not done for a considerable time, and that the eye was to my view less inflamed. He mesmerised it the next night, and on Sunday she was still free from all the darting pains and had slept all night, and the eye was decidedly better. He mesmerised it again with all the same results, and on Monday she had lost even the aching which she suffered for a fortnight before the darting pains. On Tuesday, the last night's mesmerisation had almost dissipated the inflammation; and to-day (Wednesday) all I see is that the eye has been inflamed—there is just a vestage left. This is as decided a cure by mesmerism as ever I have witnessed. No means but mesmerism were employed; the disease was severe, and had increased up to the moment of mesmerisation; and declined immediately after the first mesmirisation, and cleared off with a rapidity which was astonishing: and the instantaneous relief of the pain was what could not have been accomplished by any other means so admirably, for the remedy, unlike others, neither caused pain, inconvenience, or weakness.

COROLLARIES.

1. "During health the system is animated by a *spiritual, self moved vital power* which preserves it in harmonious order."

2. "It is only by means of the *spiritual* influence of the morbific agent, that our *spiritual vital power*, can be diseased, and in like manner, only by the *spiritual* (dynamic) operation of medicine that health can be restored."

3. "The homœpathic healing art developes for its purpose the INMATERIAL (DYNAMIC) VIRTUES OF MEDICINAL SUBSTANCES, and to a degree previously unheard of, by means of a *peculiar* and HITHERTO UNTRIED PROCESS. By this process it is that they become penetrating, operative, and remedial, even those that in a *natural or crude state*, betrayed not the *least medicinal power* upon the human system."—

HAHNEMANN

It was the magnetising process by which Hahnemann increased the power of his medicines, and the same as that directed and practised by Clairvoyants, in the mesmeric state.

At one time, men would make for themselves an imaginary incorporeal something, which guided and ruled the whole system in its vicissitudes of health and disease (Van Helmont's *Archæus*, Stahl's *Animal Soul*,) ; at another, they could flatter themselves they had discovered the secret of physical constitutions and temperaments, as well as of the origin of particular diseases and epidemics, in the constellations of the stars, in an influence emanating from the heavenly bodies, many millions of miles distant ;—or (according to the modern wide-spread notion, based on ancient absurdities), the human body, in agreement with the primeval mystic Trinity, developed itself in triplicity, presented a miniature of the universe (microcosm-macrocosm); and thus, by means of our knowledge of the great whole, miserably defective as it is, was to be explained, to a hair's-breadth. That which had baffled clear chemistry and physics, dim, self-unintelligible mysticism and frenzied fancy were to bring to light: where young natural philosophy had failed, old astrology was to succeed.

Thus did the leaders of the medical sects and their followers, whenever they sought to analyze health and disease, and its cure, deviate more or less widely from the truth; and the only use of piles of folios, quartos, and octavos, which cost a lamentable expenditure of time and energy, is to frighten us from indulging in a like explanation-mania, and teach us that all such immense exertions are nothing but pernicious folly.

HAHNEMANN.

According to theory founded upon an innumerable number of corresponding facts the magnetic forces pervade all space; are innate in, and produce motion in every kind of matter. In the air ; in odors ; in fluids, and solids ; in the solar system, and in the vegetable and animal kingdoms.

These forces which the ancients called male and female spiritual forces, are generally imbued more or less with minute or evanescent portions of different kinds of matter of the bodies with which they are connected, and which apparently modifies their action in some degree, under certain circumstances, and hence the modern names of electricity, galvanism, and electro-magnetism, &c.

Besides these evidences of the ignorance of the moderns upon this subject, they call these forces a fluid. They never it seems can have any conception of any thing finer than a fluid—of spirit, without attaching to it the idea of a fluid, which has in fact no character in common with it. The following article from the Columbian Magazine, may, however give them some new and important views of this interesting subject.

MESMERIC REVELATION.

BY EDGAR A. POE.

Whatever doubt may still envelope the *rationale* of mesmerism, its startling *facts* are now almost universa ly admitted. Of these latter, those who doubt are your mere doubters by profession—an unprofitable and disreputable tribe. There can be no more absolute waste of time than the attempt to *prove*, at the present day, that man, by mere exercise of will, can so impress his fellow as to cast him into an abnormal condition, whose phenomena resemble very closely those of *death*, or at least resemble them more nearly than they do the phenomena of any other normal condition within our cognizance ; that, while in this state, the person so impressed employs only with effort, and then feebly, the external organs of sense, yet perceives, with keenly refined perception, and through channels supposed unknown, matters beyond the scope of the physical organs ; that, moreover, his intellectual faculties are wonderfully exalted and invigorated ; that his sympathies with the person so impressing him are profound ; and finally, that

his susceptibility to the impression increases with its frequency, while, in the same proportion, the peculiar phenomena elicited are more extended and more *pronounced.*

I say that these—which are the laws of mesmerism in its general features—it would be supererogation to demonstrate; nor shall I inflict upon my readers so needless a demonstration to-day. My purpose at present is a very different one indeed. I am impelled, even in the teeth of a world of prejudice, to detail without comment the very remarkable substance of a colloquy, occuring not many days ago between a sleep waker and myself.

I had long been in the habit of mesmerising the person in question, (Mr. Vankirk,) and the usual acute susceptibility and exaltation of the mesmeric perception had supervened. For many months he had been laboring under confirmed phthisis, the more distressing effects of which had been relieved by my manipulations; and on the night of Wednesday, the fifteenth instant, I was summoned to his bedside.

The invalid was suffering with acute pain in the region of the heart, and breathed with great difficulty, having all the ordinary symptoms of asthma In spasms such as these he had usually found relief from the application of mustard to the nervous centres, but to-night this had been attempted in vain.

As I entered his room he greeted me with a cheerful smile, and although evidently in much bodily pain, appeared to be, mentally, quite at ease.

'I sent for you to night" he said, "not so much to administer to my bodily ailment as to satisfy me concerning certain psychal impressions which, of late, have occasioned me much anxiety and surprise. I need not tell you how skeptical I have hitherto been on the topic of the soul's immortality. I cannot deny that there has always existed, as if in that very soul which I have been denying, a vague, half sentiment of its own existence. But this half sentiment at no time amounted to conviction. With it my reason had nothing to do. All attempts at logical inquiry resulted, indeed, in leaving me more skeptical than before. I had been advised to study Cousin. I studied him in his own works as well as in those of his European and American echoes. The "Charles Elwood" of Mr. Brownson, for example, was placed in my hands. I read it with profound attention. Throughout I found it logical, but the portions which were not *merely* logical were unhappily the initial arguments of the disbelieving hero of the book. In his summing up it seemed evident to me that the reasoner had not even succeeded in convincing himself. His end had plainly forgotten his beginning, like the government of Trinculo. In short, I was not long in perceiving that if man is to be intellectually convinced of his own immortality, he will never be so convinced by the mere *abstractions* which have been so long the fashion of the moralists of England, of France, and of Germany. Abstractions may amuse and exercise, but take no hold upon the mind. Here upon earth, at least, philosophy, I am persuaded, will always in vain call upon us to look upon qualities as things. The will may assent—the soul—the intellect, never.

I repeat, then, that I only half felt, and never intellectually believed. But latterly there has been a certain deepening of the feeling, until it has come so nearly to resemble the acquiescence of reason, that I find it difficult to distinguish between the two. I am enabled, too. plainly to trace this effect to the mesmeric influence. I cannot better explain my meaning than by the hypothesis that the mesmeric exaltation enables me to perceive a train of convincing ratiocination—a train, which in my abnormal existence, convinces, but which, in full accordance with the mesmeric phenomena, does not extend, except through its *effect*, into my normal condition. In sleep-waking, the reasoning and its conclusion—the cause and its effect—are present together. In my natural state, the cause vanishing, the effect only, and perhaps only partially, remains.

These considerations have led me to think that some good results might ensue from a series of well directed questions propounded to me while mesmerized. You have often observed the profound self-cognizance evinced by the sleep-waker, the extensive knowledge he displays upon all points relating to the mesmeric condition itself; and from this self-cognizance may be deduced hints for the proper conduct of a catechism.

I consented of course to make this experiment. A few passes threw Mr. Vankirk into the mesmeric sleep. His breathing became immediately more easy, and he seemed to suffer no physical uneasiness. The following conversation then ensued. V. in the dialogue representing Mr. Vankirk, and P. myself.

P. Are you asleep?

V. Yes—no; I would rather sleep more soundly.

P. (*After a few more passes.*) Do you sleep now?

V. Yes.

P. Do you still feel the pain in your heart?

V. No.

P. How do you think your present illness will result?

V. (*After long hesitation and speaking as if with effort.*) I must die.

P. Does the idea of death afflict you?

V. (*Very quickly.*) No—no!

P. Are you pleased with the prospect?

V. If I were awake I should like to die, but now it is no matter. The mesmeric condition is so near death as to content me.

P. I wish you would explain yourself, Mr. Vankirk.

V. I am willing to do so, but it requires more effort than I feel able to make. You do not question me properly.

P. What then shall I ask?

V. You must begin at the beginning.

P. The beginning? but where is the beginning.

V. You know that the beginning is God. [This was said in a low, fluctuating tone, and with every sign of the most profound veneration.]

P. What then is God?

V. (*Hesitating for many minutes.*) I cannot tell.

P. Is not God spirit?

V. While I was awake I knew what you meant by "spirit," but now it seems only a word—such for instance as truth, beauty,—a quality, I mean.

P. Is not God immaterial?

V. There is no immateriality—it is a mere word. That which is not matter is not at all, unless qualities are things.

P. Is God, then, material?

V. No. [*This reply startled me very much.*]

P. What then is he?

V. (*After a long pause and mutteringly*) I see—but it is a thing difficult to tell. [Another long pause.] He is not spirit, for he exists. Nor is he matter, *as you understand it*. But there are *gradations* of matter of which man knows nothing; the grosser impelling the finer, the finer pervading the grosser. The atmosphere, for example, impels or modifies the electric principle, while the electric principle permeates the atmosphere. These gradations of matter increase in rarity or fineness, until we arrive at matter a *unparticled*—without particles—indivisible—*one*; and here the law of impulsion and permeation is modified. The ultimate, or unparticled matter, not only permeates all things but impels all things—and thus *is* all things within itself. This matter is God. What men vaguely attempt to embody in the word "thought," is this matter in motion.

P. The metaphysicians maintain that all action is reducible to motion and thinking—and that the latter is the origin of the former.

V. Yes; and I now see the confusion of idea. Motion is the action of *mind*—not of *thinking*. The unparticled matter, or God, in quiescence, is (as nearly as we can conceive it) what men call mind. And the power of self-movement (equivalent in effect to human volition) is, in the unparticled matter, the result of its unity and omniprevalence; *how*, I know not, and now clearly see that I shall never know. But the unparticled matter, set in motion by a law, or quality, existing within itself, is thinking.

P. Can you give me no more precise idea of what you term the unparticled matter?

V. The matters of which man is cognizant escape the senses in gradation. We have, for example, a metal, a piece of wood, a drop of water, the atmosphere, a gas, caloric, light, electricity, the luminiferous ether. Now we call all these things matter, and embrace all matter in one general definition; but in spite of this, there can be no two ideas more essentially distinct than that which we attach to a metal, and that which we attach to the luminiferous ether. When we reach the latter, we feel an almost irresistible inclination to class it with spirit, or with nihility. The only consideration which restrains us is our conception of its atomic constitution; and here, even, we have to seek aid from our notion of an atom, possessing in infinite minuteness, solidity, palpability, weight. Destroy the idea of the atomic constitution and we should no longer be able to regard the ether as an entity, or at least as matter. For want of a better word we might term it spirit. Take, now a step beyond the luminiferous ether—conceive a matter as much more rare than the ether as this ether is more rare than the metal, and we arrive at once (in spite of all the school dogmas) at an unique mass—at unparticled matter. For, although we may admit infinite littleness in the atoms themselves, the infinitude of littleness in the spaces between them is an absurdity. There will be a point, there will be a degree of rarity, at which if the atoms are sufficiently numerous, the interspaces must vanish, and the mass absolutely coalesce. But the consideration of the atomic construction being now taken away, the nature of the mass inevitably glides into what we conceive of *spirit*. It is clear, however, that it is as fully *matter* as before. The truth is, it is impossible to conceive spirit, since it is impossible to imagine what is not. When we flatter ourselves that we have formed its conception, we have merely deceived our understanding by the consideration of infinitely rarefied matter.

P. But, in all this, is there nothing of irreverence? [I was forced to repeat this question before the sleep-waker fully comprehended my meaning.]

V. Can you say *why* matter should be less reverenced than mind? But you forget that the matter of which I speak is, in all respects, the very "min'" or "spirit" of the schools, so far as regards its high capacities, and is, moreover, the "matter" of these schools at the same time. God, with all the powers attributed to spirit, is but the perfection of matter.

P. You assert, then that the unparticled matter in motion, is thought?

V. In general, this motion is the universal thought of the universal mind. This thought creates. All created things are but the thoughts of God.

P. You say "in general."

V. Yes. The universal mind is God.—For new individualities, *matter* is necessary.

P. But you speak of "mind" and "matter" as do the metaphysicians.

V. Yes—to avoid confusion. When I say "mind," I mean the unparticled or ultimate matter; by "matter," I intend all else.

P. You were saying that "for new individualities matter is necessary."

V. Yes; for mind existing unincorporate, is merely God. To create individual, thinking beings, it was necessary to incarnate portions of the divine mind. Thus man is individualized. Divested of corporate investiture, he were God. Now, the particular motion of the incarnated portions of the unparticled matter is the thought of man; as the motion of the whole is that of God.

P. You say that divested of the body man will be God?

V. (*After much hesitation.*) I could not have said this; it is an absurdity;

P. (*Referring to my notes.*) You *did* say that "divested of corporate investiture man were God."

V. And this is true. Man thus divested *would be* God—would be unindividualized.—But he can never be thus divested—at least never *will* be—else we must imagine an action of God returning upon itself—a purposeless and futile action. Man is a creature. Creatures are thoughts of God. It is the nature of thought to be irrevocable.

P. I do not comprehend. You say that man will never put off the body?

V. I say that he will never be bodiless.

P. Explain.

N. There are two bodies—the rudimental and the complete; corresponding with the two conditions of the worm and the butterfly. What we call "death" is but the painful metamorphosis. Our present incarnation is progressive, preparatory, temporary. Our future is perfected, ultimate, immortal. The ultimate life is the full design.

P. But of the worm's metamorphosis we are palpably cognizant.

V. *We*, certainly—but not the worm.—The matter of which our rudimental body is composed, is within the ken of the organs of that body; or more distinctly our rudimental organs are adapted to the matter of which is formed the rudimental body; but not to that of which the ultimate is composed. The ultimate body thus escapes our rudimental senses, and we perceive only the shell which falls in decaying from the inner form; not that inner form itself; but this inner form, as well as the shell, is appreciable by those who have already acquired the ultimate life.

P. You have often said that the mesmeric state very nearly resembled death. How is this?

V. When I say that it resembles death, I mean that it resembles the ultimate life; for the senses of my rudimental life are in abeyance, and I perceive external things directly, without organs, through a medium which I shall employ in the ultimate, unorganized life.

P. Unorganized?

V. Yes; organs are contrivances by which the individual is brought into sensible relation with particular classes and forms of matter, to the exclusion of other classes and forms. The organs of man are adapted to his rudimental condition, and to that only; his ultimate condition, being unorganised, is of unlimited comprehension in all points but one—the nature of the volition, or motion, of the unparticled matter. You will have a distinct idea of the ultimate body by conceiving it to be entire brain. This it is *not;* but a conception of this nature will bring you near to a comprehension of what it *is*. A luminous body imparts vibration to the luminiferous ether. The vibrations generate similar ones within the retina, which again communicate similar ones to the optic nerve. The nerve conveys similar ones to the brain; the brain, also, similar ones to the unparticled matter which permeates it. The motion of this latter is thought, of which perception is the first undulation. This is the mode by which the mind of the rudimental life communicates with the external world; and this external world is limited through the idiosyncrasy of the organs. But in the ultimate, unorganized life, the external world reaches the whole body, (which is of a substance having affinity to brain, as I have said) with no other intervention than that of an infinitely rarer ether than even the luminifer-

ous; and to this ether—in unison with it—the whole body vibrates, setting in motion the unparticled matter which permeates it.—It is to the abscence of idiosyncratic organs, therefore, that we must attribute the nearly unlimited perception of the ultimate life.—To rudimental beings, organs are the cages necessary to confine them until fledged.

P. You speak of rudimental "beings".—Are there other rudimental thinking beings than man?

V. The multitudinous conglomeration of rare matter into nebulæ, planets, suns and other bodies which are neither nebulæ, suns, nor planets, is for the sole purpose of supplying *pabulum* for the idiosyncrasy of the organs of an infinity of rudimental beings.—But for the necessity of the rudimental, prior to the ultimate life, there would have been no bodies such as these. Each of these is tenanted by a distinct variety of organic, rudimental, thinking creatures. In all, the organs vary with the features of the place tenanted. At death, or metamorphosis, these creatures, enjoying the ultimate life, and cognizant of all secrets but *the one*, pervade at pleasure the weird dominions of the infinite.

As the sleep-waker pronounced these latter words, in a feeble tone, I observed upon his countenance a singular expression, which alarmed me, and induced me to awake *him* at once. No sooner had I done this, than, with a bright smile irradiating all his features, he fell back upon his pillow and expired. I noticed that in less than a minute afterwards his corpse had all the stern rigidity of stone.

Observations in Midwifery.

By Tyler Smith, M. B., London.

Sketch of the Physiology of Parturition.

"At the time of labour *a new principle* supersedes those of ascension and descent. This gives a disposition to the uterus to exclude whatever is contained in its cavity, and the effect produced is in proportion to the energy of the *principle*, and to the power of the uterus. A perfect intelligence of this *principle*, and of the mode of its operation, would probaly be of infinite use in practice, as we might be enabled to suppress the action thereby occasioned when premature, moderate it when too violent, strengthen it when too feeble, and regulate it in a variety of ways conducive to the welfare of our patients On the knowledge we at present have of the manner in which this *principle* operates, and the circumstances by which it is influenced. the assistance which science and dexterity can give in cases of difficult parturition, and in preventing abortions, very much depends."—*Denman.*

Up to the present time it will be acknowledged that the parturient function of the uterus has been an *unwritten* chapter in physiology. The nature and causes of the motor forces which expel the fœtus have been in great measure lost sight of, obstetricians having chiefly occupied themselves with an examination of the mechanism of labour,—in defining the mensuration of the different diameters of the pelvis and of the fœtal head,—and in settling the precise axis along which the child passes. These are points of practical moment, inasmuch as by a knowledge af them we judge if the passage of the head can be accomplished without artificial assistance; but they are not capable of more extended application to the management of labour.

The motor power exerted in natural parturition is of a mixed kind, being in part *voluntary*, partly dependent on *emotion*, and partly *excito-motor*. Volition is generally exerted in the latter part of labour, especially in labours subsequent to the first, the voluntary effort being similar to the voluntary part of the act of defecation. In primipara little voluntary effort is made unless the patient has been mal-advised.

Emotion is chiefly of importance as *modifying* reflex motor action. It is matter of experience that confidence, hope, fear, anger, or despair, may either increase or diminish the voluntary and reflex actions concerned in parturition. The motor forces dependent on *emotion*, and on the *will*, are intended to be *accessory*, but they are not *essential*, to the exbulsion of the child. The evacuation of the gravid uterus can be performed perfectly by reflex motor action alone, as a function of the true spinal system. Delivery may take place during the coma of puerperal convulsions, during sleep, paraplegia, or even after the death of the mother, when the functions of the cerebrum are either suspended or annihilated.

It may be stated briefly that labour consists of positive dilatation of the os uteri and the vagina, the action of the muscles of expiration, and contraction of the uterus and the vagina; all excito--motor phenomena, which are *aided* by volition, and *modified* by emotion.

To give the proofs that the act of parturition is excito-motor:—

1. The abdominal segment of the dragonfly lays eggs after its separation from the other part of the body of the insect.

2. If the border of the cloaca in the hen be irritated with a few grains of common salt,

parturient action is excited, and the egg expelled.

3. Irritation of the os uteri produces abortion by inducing contractions of the uterus.

4. The coal water douche upon the abdomen excites contractions of the uterus in uterine inertia and in uterine hæmorrhage.

5. But the most positive and conclusive proof, and one which can alone be accounted for on the principle of reflex action, is the fact recognised by experienced accoucheurs, that the application of the child to the breast excites distinct uterine contractions.

6. Equally conclusive, if proved, is the reflex action between the stomach and the uterus. It has not been noticed hitherto as such, but I believe that irritation ofthe gastric division of the pneumo-gastric nerve during labour excites distinct uterine contractions. This subject I propose to treat of in a separate paper.

I reserve, too for another occasion, the inquiry into the immediate causes which give to the nerves and muscles of the uterus, and the other parts concerned in the expulsion of the fœtus, the tendency to be excited in such manner as to produce labour at a particular time; and shall now proceed to examine the phenomena of excito-motor action as they acturlly occur.

In the present place I insert a division of natural labour into three stages, in accordance with the physiological action of the parts engaged in the act of parturition. My readers will be enabled to judge, from the argument that follows it, of the propriety of such an arrangement.

First Stage.

Dilatation of the os uteri. Commencement of the dilatation of the vagina. Contraction of the fundus and body of the uterus.

Second Stage.

Closure of the glottis. Closure of the cardia. Forcible contraction of the muscles of expiration. Contraction of the uterus. Complete dilatation of the vagina.

Third Stage.

Closure of the glottis. Closure of the cardia Contraction of the muscles of expiration. Contraction of the uterus. Contraction of the vagina. *Probable* contraction of the levatores ani. Dilatation of the sphincter ani.

For some days before the accession of the regular pains which are recognised as constituting labour, the fundus and body of the uterus contract upon its contents in an equable and continuous manner, so as to force the head of the child low down into the pelvis, and thus the patient's size is considerably diminished. This contraction of the uterus is caused by the presence of the fœtus. The same kind of uninterrnittent contraction is observed in certain labours where, in lieu of regular pains, the uterus remains for many hours firmly contracted round the fœtus without any remission. In consequence of this kind of contraction, and the gradual disappearance of the cervix uteri in the latter months of pregnancy, the head of the child becomes placed directly in contact with the os uteri, the portion of the uterus most sensitive.—in fact, most *excitor* of all the parts concerned in parturition. At the same time, or nearly so, that the fundus and body of the uterus contract, the os uteri commences its dilatation.

I do not, on the present occasion, attempt to decide how much of this continuous action of the uterus, which precedes, and mingles with, the regular pains of labour, is dependent on the direct action of the *vis nervosa;* or, in other words, on the irritability of the contractile fibres of the uterus. Nor shall I attempt to define the modifications of true spinal action produced by the development of the ganglionic nerves of the uterus during pregnancy, as described by Dr Lee. The continuous and periodic contractions ought to be arranged under different heads, and we must probably attribute the periodicity of uterine action to the influence of the ganglionic system.

When labour has actually commenced the whole internal surface of the uterus, the cervix and os uteri, and the vaginal passage, are in high degree excito-motor. The incident spinal nerves proceeding from these parts are the principal excitors of the reflex actions in natural labour. Impressions on any part of their extensive surfaces produce reflex-motor action in the uterus itself, or in the other muscles associated with this organ during parturition.

The motor phenomena of labour are, as I have already stated, of two distinct kinds, namely, *contraction* and *dilatation*. Contraction of the uterus and of the abdominal and other muscles, so as to increase the action of the uterus, and dilatation of the outlet of the uterine cavity and the whole vaginal passage, to permit the exit of the child. Subsequent to the dilatation of the vagina, contraction of this part occurs to expedite delivery; I proceed, in the first place, to treat of the mode in which the dilatation of the parts is affected—a novel and important subject.

Positive Dilatation of the Os and Cervix Uteri, and of the Vagina, during Labour.

Accoucheurs have noticed, as remarkable facts, that for some time before the accession of labour and during its first stage, the os uteri is sensibly dilated, and that the vagina dilates long before the mechanical pressure of the head of the child can possibly have had any share in the process. No satisfactory attempt has hitherto been made to explain these curious phenomena. The study of reflex-motor action appears to afford a clue to the solution of the difficulty, and to point out the source of the discrepancies of midwifery writers on this point.

Let us examine other physiological actions which resemble the dilatation of the vagina and os uteri. We may observe that in the process of defecation, at the same time that the abdominal and other muscles contract so as to lessen the cavity of the abdomen (and thus exert pressure on the rectum, which has besides its own independent contraction) there is a *positive dilatation* of the *sphincter ani*. The fæces could not, in fact, be extruded unless the sphincter opened during the instant of the action of the other muscles. This positive dilatation takes place in the involuntary action of the bowels, when it is purely a reflex act, or the sphincter may be dilated by a voluntary effort. Thus, what do we direct in the severe pains produced by the impaction of internal hæmorrhoidal tumors within the contracted sphincter? We recommend the patient to strain as if at a stool, and immediately the sphincter dilates, the tumor may be returned and the pain departs. The old explanation of this action of the sphincter was that the longitudinal fibres of the rectum dragged the sphincter open by their contraction, though the sphincter is infinitely the more powerful of the two.

Dewees, Sir C. Bell, and Rigby have thus explained the dilatation of the os uteri. The latter says, "it does not dilate merely by the mechanical stretching which the pressure of the membranes and presenting part exert upon it; it dilates in consequence of its circular fibres being no longer able to maintain that state of contraction which they have preserved during pregnancy; they are overpowered by the longitudinal fibres of the uterus, which, by their contractions, pull open the os uteri in every direction." There is here no recognition of the *positive dilatation* of the cervix uteri for which I am contending. Dr. Ramsbotham, though he perceives the fallacy of a mere mechanical distention of the os uteri is exceedingly vague in his explanation of the matter. His words are, "Some physiologists would teach us to believe that dilatation in labour is *entirely a mechanical act*; that, as the uterus contracts, it propels the head first through the os uteri, by dilating it mechanically, then through the vagina, and lastly, through the external parts, solely by the same forcible distention. It is evident from the structure of the organs that a mechanical dilatation to such a great extent never could take place unless a corresponding disposition to relax were given them at the same time; therefore we must consider the dilatation of the passages *not entirely dependent on mechanical distention*, but that it is in great measure to be referred to that institute of nature which induces them to become relaxed and softened when the uterus is about to commence contraction." The "disposition to relax" is a *positive dilatation*, the "Institute of nature," the reflex-motor function, now first applied to this subject.

To give another illustration. In the case of deglutition, the act of swallowing consists of contraction of the constrictors of the pharynx, with a simultaneous dilitation of the cardia. The cardia *dilates* to receive the food in deglutition, while in defacation it *contracts*, otherwise the contents of the stomach would be expelled at the same time with those of the rectum. The dilatation and contraction of the cardia may either depend on reflex action or on volition. In swallowing, in defacation, and in vomiting, the action of the cardia is purely excito-motor; but there are many persons who can voluntarily open the cardia so as to allow of the passage of gas from the stomach to the pharynx. Some can even imitate the ruminants, and return the food to the mouth in the same manner.

To apply these physiological facts, all of which are entirely deduced from the researches of Dr. Marshall Hall into the physiology of the true spinal system, to the explanation of the process of parturition:—

It has been already remarked that before the commencement of actual labour the os uteri sensibly dilates and softens. The dilatation at this time can neither depend on any expulsive force brought to bear against it, nor on any contraction of the longitudinal fibres. It is confined to the os uteri, and must be essentially positive. It is also without doubt reflex in its nature, closely resembling the opening of the cardia from the presence of food in the pharynx, though it takes place in a more gradual manner. The whole of the uterus is composed of the same contractile tissue, and let us observe what would be the result if the whole organ contracted at the same time.—The fundus and body of the uterus would contract, and undoutedly the os uteri would close firmly if there were any contraction of the circular fibre. Let those who think the

body and fundus of the uterus could overpower the contraction of the os uteri, consider for a moment that the united force of all the respiratory muscles is sufficient to force the small muscles which closes the glottis.

During the recession of a pain the os uteri is in some degree closed, even when its dilatation has considerably advanced. There is an alteration of action in the two parts. When the expulsive pain comes on, and the head of the child is pressed downward by the contraction of fundus and body of the uterus, at this moment the os uteri is most widely opened. In fact, this dilatation during a pain is held to be a diagnostic mark of the true labor-pain. If the uterus contracts forcibly without any distention of its mouth, the pains are said to be false. Nothing can be more conclusive than this as evidence of *positive dilatation*.

Thus, then, we have a simple physiological explanation of the opening of the os uteri previous to the commencement and during the continuance of uterine contractions. This function continues throughout the process of natural labor, under the influence of reflex-motor action, and is a beautiful provision against the rupture of the uterus.

The *dilatation* of the vagina before the head has passed through the os uteri, frequently considered the result of pressure or *passive* dilatation, is of the same *positive* kind. It is one part of the concatenation of events by which delivery is effected. At the same time that active contractions are going on in the uterus, a *positive dilatation* is going on in the passages through which the fœtus has to be expelled. When the second stage of labor has commenced, and the abdominal muscles are acting forcibly, this dilatation of the vagina is increased by the effects of mechanical pressure. I shall have to revert to this point hereafter. The dilatation commences at the os uteri, and gradually proceeds downwards to the vulva; but in its whole course it distinctly precedes the mechanical pressure of the child upon the parts.

On a future occasion I propose to examine whether there is not during pregnancy, in addition to the constrictor vaginæ, a development of the cellulo-fibrous sheath which envelops the vagina, and which, at its upper part is continuous with the fibrous structure of the uterus; similar in kind, though not in extent, to that which takes place in the uterus. We know that in the early months there is contraction, but afterwards a dilatation and even protrusion of the vagina; and during labor not only is its diameter increased, but its length becomes greater. These would form *a priori* reasons for believing in the growth of the part, but during labor the contractile power of the vagina is also considerably increased. The exclusion of the placenta by the action of the vagina alone, is a proof of this.

Excito-motor Action of the Uterus.

The action of the uterus is usually periodic, consisting of intervals of contraction and relaxation. The fœtus is the natural stimulus of the uterus, but all the reflex acts which constitute labor may be excited by any other irritation of the uterus; such for instance, as the presence of polypus or hydatids. I have known the uterus ruptured by the violence of its own contractions when thus excited. The power of irritation of the mucous surface of the uterus to produce reflex action of the organ, is seen when the hand of the accoucheur is introduced in the operation of turning. The introduction of the hand to promote the exclusion of the placenta, or to arrest hæmorrhage, by causing contractions of the uterus, are other familiar instances of excito-motor action, though they have not been accurately recognised as such.

The os uteri is an excitor of reflex action to a greater extent than any other part of the uterus. The pains of labor are more violent when the head of the child is pressing on the os uteri, or passing through it, than they are before. It is well known that if the membranes are broken early, and the water evacuated so as to permit the head of the child to press on the os uteri, the pains are much increased in severity and frequency, though the labor is often tedious in consequence of the motor force being expended in the evacuation of the amniotic fluid. It is on this principle that premature labor is induced by perforation of the os uteri. Some obstetric authorities have recommended the introduction of a plug into the upper part of the vagina, so as to irritate the os uteri, as a mode of procuring delivery in certain cases. Very recently it has been observed that even the *ballottement*, if rudely performed, is sufficient to cause abortion.

In natural labor the presence of the child only excites the action of the uterus itself during the first stage of labor; no other motor effort of an expulsive kind takes place, either voluntary or reflex. Those cases must be considered complicated in which the muscles of the abdomen are excited to contractions, or in which spasmodic actions of other muscles occur in this stage.

The Excito-motor Actions caused by the presence of the Child in the Vagina.

When the second stage of labor, as it is termed, has commenced, and the head of the

child has entered the vagina, the muscles of the respiratory system become powerfully excited, in addition to the action of the uterus. Accoucheurs have held the most contradictory opinions concerning the muscular efforts made in this stage of labor. Many look on the extra-uterine contractions as entirely voluntary, while others hold exactly the contrary opinion. Thus, Dr. Ramsbotham says that "the auxiliary muscles which assist the uterus in its contractions are, in a great degree, voluntary." Dr. Lee, on the other hand, is of opinion that there ought to be no voluntary action in parturition. I would maintain that the greater part of the extra-uterine muscular action is as purely excito-motor as that of the uterus itself, though patients frequently mix up voluntary exertions with the true reflex actions, so as, in some measure, to confuse them. It will, however, be found that during severe pain they have no power to arrest the contractions of the abdominal muscles, though they can increase their intensity by an effort of the will.

That the action of the respiratory muscles is involuntary and reflex, I have no doubt, and I may here instance an illustration of the wisdom of such an arrangement. If the tremendous efforts made by women in labor, often for many hours successively, were voluntary, they would necessarily produce excessive fatigue; whereas Dr. Marshall Hall has shown that the reflex motions are of greater energy than the voluntary motions, and continue without causing the same degree of weariness. It is perfectly wonderful to see delicate and emaciated females, with little muscular strength, after twenty-four or thirty six hours of severe labor, appear calm and refreshed immediately their delivery is accomplished.

During the severe pains produced by the presence of the head of the child in the vagina, the glottis is *closed*, so as to fix the chest, and the cardia and sphincter ani are also *shut*, while all the respiratory muscles are acting as in forcible expiration. Closure of the glottis is an important feature; but in severe pains, it is as perfectly involuntary as it is in deglutition, in vomiting, or even in epilepsy. When the glottis is closed, the patient by voluntary effort, assists in fixing the chest by grasping with the hands and planting the feet against some fixed body. Dr. Ramsbotham supposes that the diaphragm acts during the expulsive effort. A moment's consideration will show the fallacy of this. The action of the respiratory muscles, those of the glottis, the intercostals, and the abdominal muscles, is that of forcible *expiration* with the glottis closed. Now, the diaphragm is the great muscle of *inspiration*; it can only act in filling the chest. During the parturient efforts it must, therefore, be in a state of relaxation floating between the cavities of the thorax and abdomen, so as to render them, in effect, as one, precisely as in vomiting.

These, then, are the true distinctions between the first and second stages of labour. In the first the excito-motor action is confined to the uterus, or nearly so; in the second it is more extensive. The only obstetricians whom I can discover to have held any thing approaching to this opinion are Wigand, and after him, Dr. Rigby; but they refer to *mere* sympathy between the vagina and the abdominal muscles. Dr Rigby is the most explicit. He considers "there is the same relation between these muscles (the abdominal) and the vagina, as there is between them and the rectum." Dr. Rigby is, however, silent about the more extended muscular actions excited through the vagina, and their excito-motor nature. On the other hand, Dr. Fleetwood Churchill, one of the most recent writers on midwifery, expresses himself thus: "It is not easy to explain the change in the character of the pains, nor why straining should only occur in the second stage. Wigand attributes it to the sympathy between the abdominal and other muscles. *It certainly cannot be merely owing to the presence of the fœtal head in the vagina.* "Besides the support afforded to the uterus in the parturient process, by the action of the expiratory muscles, it is of essential service in another mode. While the irritation of the vagina excites the action of the abdominal and other muscles, the straining thus occasioned tends to dilate the vagina itself. This seems the most probable explanation of the mode in which the *positive* dilatation of the vagina of which I have spoken, as independent of mechanical pressure, is chiefly produced. Women can themselves feel, even before the head has entirely descended into the vagina, that at each pain there is a straining, a sensation of muscular effort, in the vagina itself. Manual examination demonstrates that in the first, and more particularly in the second stage of labour, this action is dilatation, and not contraction.

In the first stage of labour, when the head of the child is wholly within the uterus, and the reflecto-motor action is confined to this organ, the patient is generally timid and irritable, manifesting considerable impatience of her sufferings and alarm for the result But when the second stage has commenced, and the descent of the head into the vagina calls the respiratory muscles into action, the woman is no longer irresolute. She exhibits a remarkable change from timidity to confidence and determination. In the one case her cries

are frequent and distressing, in the other she remains silent, or, at most, only a slight cry escapes her on the subsidence of a pain. Yet her sufferings in the latter are equally acute. Her silence may be said to depend on the closure of the glottis, but the change of mind is evident in her whole physiognomy. Dr. Marshall Hall has shown, that whatever may be their seat, the manifestations of passion and emotion, are invariably made through the medium of the true spinal system; and it is remarkable that the purely involuntary, or reflex-motor efforts, made in the second part of labour, exactly represent the change which has taken place in the mind of the patient. The involuntary and reflex workings of the muscles of expression are precisely those which would be called up to pourtray the most intense degree of mental energy and resolution. I am not here attempting to place these facts in the relation of cause and effect, but merely marking their coincidence.

When the dilatation of the os uteri, the vagina, and the external parts is accomplished and while the respiratory system and the uterus unite in energetic contraction, a new series of actions commence and facilitate the final expulsion of the child and afterwards of the placenta. This though an innovation I have ventured to call the *third* stage of labour. It consists of contraction of the vagina itself; retraction of the perineum over the head of the child, assisted probably by contraction of the levators ani, and dilatation of the sphincter ani, which in the previous stages remains closed. The head of the child is generally expelled with considerable force at once, but the trunk remains for a short time, if allowed to do so, in the vaginia. I believe that when in this situation it has, in great measure, escaped from the action of the uterus, and is expelled by the contractions of the vaginia. It is well known that when the placenta has descended into the vagina, it has the power of excluding it without assistance. Indeed, Denman recommends that this practice should be followed in order to diminish the intensity of the after-pains. This action of the vagina would certainly favour the idea of the development of its fibrous covering during pregnancy, as its contractile power is very slight in the unimpregnated state.

In certain cases, irregular, or as they have been termed, metastatic pains occur, and prove embarrassing to the practitioner, and are a real impediment to the progress of labour. They sometimes affect the bladder, at other times the abdominal muscles, but not synchronously with the uterus; or the rectum, the thighs, and other parts, the uterus being either little or only irregularly affected. They are generally dependent either on the *vis nervosa* being reflected from the uterus in irregular arcs, or the irritation, instead of proceeding from the fœtus, is caused by fatigue, general irritability, a loaded state of the stomach, the rectum, the large intestine, or the bladder, according as the case may be.

TABLE OF THE ACT OF PARTURITION IN FIRST STAGE.

I.

The Excitors.

The incident nerves proceeding from the inner surface of the uterus, particularly the os and cervix uteri.

II.

The Centric Organ.

The medulla spinalis.

III.

The Motors.

1. The motors which *contract* the fundus and body of the uteris.
2. The motors which *dilate* the os uteri and the vagina.

TABLE OF THE ACT OF PARTURITION IN THE SECOND STAGE.

I.

The Excitors.

1. The incident nerves proceeding from the inner surface of the uterus.
2. The incident nerves proceeding from the vagina.
3. In numerous cases the gastric branches of the pneumogastric and the incident nerves of the rectum and bladder become excitors of parturient action. It remains to be decided whether these facts should be classed with physiological or pathological phenomena.

II.

The Centric Organ.

The medulla oblongata and spinalis

III.

The Motors.

1. The motors which *close* the glottis.
2. The motors which *close* the cardia.
3. The motors which *contract* the uterus.
4. The motor nerves of expiratory effort.
5. The motors which *dilate* the vagina.

TABLE OF THE ACT OF PARTURITION IN THE THIRD STAGE.

I.

The Excitors.

The same as in the previous table.

II.

The Centric Organ.

The medulla oblongata and spinalis.

III.

The Motors.

1. The motors which *contract* the vagina.
2. The motors which *dilate* the sphincter ani

3. The motors which *contract* the levatores ani.
4. The rest, the same as in the previous table.

The foregoing does not pretend to be more than a sketch of this interesting and hitherto unattempted subject. Future opportunity and observation will, I trust, enable me to fill up and correct this imperfect outline, and draw numerous practical deductions from the facts I have detailed. Now that the physiological *principle* which presides over the function of parturition, which Denman and others anticipated, is discovered to be a part of the function of the true spinal marrow, of the principle which presides over all the acts of ingestion and egestion:—the detection of which we owe to Dr. Marshall Hall, though the profession has been tardy in appreciating its importance, or I should not at this late period, twelve years from its discovery, be engaged in the first attempt to apply it to the whole obstetric art; now that this principle is recognized, the entire phenomena of natural pregnancy, from the act of conception (itself excito-motor) to the return of the uterus after delivery to the unimpregnated state, inclusive with many other cognate subjects of equal importance, must inevitably be treated of as the physiology of the uterus, and as one branch of the physiology of the true spinal system.

Bolton-street, Piccadilly, May, 1844.

THE PERIODS

REGULATING THE RECURRENCE OF VITAL PHENOMENA.

Being a General Summary of Previous Contributions to Proleptical Science.

By THOMAS LAYCOCK, M. D., Physician to the York Dispensary.

The communications I have made to THE LANCET from time to time on the laws of periodicity, as exhibited in the recurrence of vital phenome a, have been published at considerable intervals, and extend into two or three volumes. I have thought it would be well to give the readers of my previous papers such a general view of the whole as may assist them in appreciating the importance and extent of the subject, and guide them in any further remarks they may be inclined to make.

While it is the prerogative of reason to look both "before and after," man has always manifested the most earnest desire to look before and know the future. Two means have been adopted, in all ages, to attain this end, namely, divination, or the consultation of supernatural beings, real or supposed; and the observation of natural phenomena, and of the times of their recurrence. It must have been soon found that there was a regularity in the latter. Day constantly followed night, and night day; spring succeeded winter, and summer succeeded to spring; the ebbing tide changed into the flood, and the flood-tide fell to the ebb. And so, also, with physiological phenomena; the infant grew into youth, the youth became a man, and manhood sunk gradually into the decrepitude of old age. Hence, man has learnt to predict a variety of events in nature and society with absolute certainty. He knows that the storms of winter will surely pass of way and be succeeded by the warmth a-spring; that the flood tide will assuredly, in a few hours, be at ebb; and so, also, with a variety of phenomena implicating the individual, as the duration of pregnancy, the recurrence of the hour of sleep, &c. Now, all natural phenomena being finite, must be periodic, because the time within which they are circumscribed is itself a period and capable of division into less periods. The science which investigates the laws of recurrence of events involving individuals and societies of men, measures their periods, and applies the knowledge thus obtained to practical uses in connection with the sciences of medicine and of political and social economy, is the science which I have termed PROLEPTICS,—an anticipation, to anticipate, seize before.—Proleptics, then, is the science of anticipating events.

Of course the science of proleptics recognises no mysterious or supernatural agency more than is recognized in astronomy, or any other natural science; it is founded altogether on the observation of phenomena, with special reference to the order in which they arise. That order may be ascertained by pure observation, or may be calculated from principles and laws already known, or may be inferred from the relations of cause and effect

In predicting proleptically the return of an ague-fit we are guided by pure observation; from this source we know that if the fever be a quotidian the febrile paroxysm will return next day, at the same hour, as surely as the sun will rise after having set, and we anticipate it accordingly. In like manner we know that in a malarious district we may expect to have bilious remittents in summer, quotidians and tertians in spring and autumn, and quartans in winter.

Proleptics is not limited to periods of any particular duration; it applies itself alike to periods of hours or of thousands of years.—

It is within its provence to investigate the changes induced in the earth and in society at the completion of grand cycles, as well as the changes induced during a single revolution of the earth on its axis or round the sun. It concerns itself with all astronomical phenomena, because they are eminently periodic; it traces the laws of recurrence of cosmic and telluric changes with special reference to the influence of those changes on man, either as an individual or in society.—Proleptical science is not confined to circular phenomena, for it sees polarity and oscillatory movements in regularly recurring events. The impulse given to human society by an exoteric force, as, for example, when meteorological changes induce destructive epidemics, may continue long after the cause has passed away, just as a pendulum swings backwards and forwards after the hand that put it in motion is removed. What happens to societies will occur also to individuals.

It will be seen, from this brief outline, that proleptics, being eminently a practical science, hesitates not to draw its data from every available source. It watches the progress of geological science, that from what has happened it may deduce what terrestial changes will happen in future, and when.—It cultivates meteorology to find out the law of recurrence of meteorological phenomena, knowing how much the latter influence man's condition under all circumstances,—his health food, personal comfort, relief if diseased, or his social prosperity and progress. It considers man as a part of the great whole of organized beings, and seeks a knowledge of the laws of recurrence of vital phenomena in all nature, that it may apply that knowledge in administering to the relief and cure of man when sick, and to his comfort when well.

Having premised these explanatory observations I will subjoin a summary of the contributions I have made to the science. I would wish to observe, however, that these contributions were made principally with the object of placing it on a true foundation, and of constituting a nucleus round which future observations might be arranged. It will be seen, in reference to the paper alluded to, that I have divided periodic vital phenomena into three classes, namely, the exoteric, esoteric, and endexoteric, the first comprising those resulting from causes internal and proper to the organism; the second those resulting from causes external to and independent of, the organism; and the third those compounded of the two.

The esoteric series of periodic changes commence with conception and the first development of the ovum, and goes on until death,—the major periods involving and being constituted by the minor. They are marked by the evolution of the teeth in the embryo and fœtus, by the reproduction or shedding of the latter in infancy and youth, and by physiological changes recurring at larger intervals—the septenary periods—in after life. After birth the periods become, in a great measure, endexoteric, the exoperiodic influences coming then into operation, and complicating the esoperiodic changes. They are marked in animals by a variety of phenomena, and the periods are of diversified length, just as we observe in the recurrence of meteorological changes. The primary unit is a day of twelve hours, comprising one barometic maximum and one minimum. A tabular view will best illustrate the order of the minor periods, deduced from a multitude of observations.

I.—*The Esoteric and Exoteric Periods.*

1.	Two minor periods, including a maximum and minimum	=	A lunar, barometric, or meteorological day.
2.	Two barometric or lunar days.	=	A solar day.
3.	Seven solar days	=	A lunar week.
4.	Four weeks	=	A lunar month.

II.—*The Endexoteric Periods.*

In marking these I shall take the periods of fevers as the most familiar example, although *all* periodic physiological phenomena illustrate them.

Let a = the barometric or lunar day.
Then a = the term of a bi-quotidian and of certain physiological acts.
$2a$ = the diurnal or quotidian period.
$4a$ = the tertian period.
$6a$ = the quartan period.

As in agues the *interval* is calculated from the beginning of one paroxysm to the beginning of the next, the unit of the second series must comprise the time occupied by the last paroxysm, as well as the period of intermission, so that we have $6\,a \times a = 7$ a, or one week of seven days of 12 hours; let b represent this period.

Then b = the half-week of physiological periods and the fourth day of fevers.
$2\,b$ = one week, and the seventh day of fevers.
$4\,b$ = fourteen days, a physiological period, and a critical day in fevers.
$6\,b$ = a minor menstrual period, and the limit of a "twenty one day fever."
$6\,b \times 2b$ = the menstrual period, and its analogue in hæmorrhoidal and neurotic patients.

Thus, then, the minor periods may be considered to be multiples of four basic units.—1. The day of twelve hours; 2. The day of twenty-four hours; 3. The week of twelve hour or lunar days; 4. The week of solar days. If any of these be multiplied by 2, 3, or 4, or by 4, 6, 8, the products yield all the observed periods of menstruation, four weeks being the normal period. Of course the catamenial excitement is only indicative (as I have elsewhere shown, —Treatise on the Nervous Diseases of Women, p. 44,) of a nisus in the ovaria, and marks the period when an ovum or ova are expelled. In fact, the processes of generation and development display throughout the most striking examples of periodicity. Similar multiples give the periods of mixed fevers, the cycle of paroxysms observed in intermittents, gout, &c.

The preceding are the minor periods of development, the esoteric series commencing with conception, and so regularly on unless broken up, and a new series be begun, by some powerful influence on the system. It is by these periods that we can theoretically explain the period of incubation of contagious and epidemic diseases. It is by these, too, that we can understand the "singular coincidences" observed in families, as to death, time of sickening from contagious fever, &c., the period of conception of the mother being a common point to which the esoteric periods of the offspring can be referred in virtue of these periods being precisely alike as to the date of conception, and the circumstances of their life undergo similar vital changes at the same time, because they are equally exposed to the same exoteric agencies, and undergo the same series of esoteric changes. The coincidences of this kind have been attributed to animal magnetism, and adduced as a proof of the reality of the zoo-magnetic force.

The seasonal and annual changes and the period of utero-gestation and of fœtal life, are intermediate between the preceding and the major periods of development. The term of fœtal life is composed, both as regards the parent and offspring, of minor esoteric periods, consisting either of the week of seven lunar days, or the week of seven solar days, but generally the latter. The analogous process in insects occupies the whole life, from the vivification of the ovum to the imago state, and its minor periods are marked by the evolution of the animal from the ovum the successive moults, and the chrysalis state. This period of embryonic and fœtal life is of varying length in insects, reptiles, fishes, birds, and mammals, but is always a multiple of a lunar or solar day, and always heptal, or referrable to 7.

The intermediate periods above alluded to pass insensibly into the major, and the major periods complete the whole period of life.—The primary unit of the latter is a solar year, subdivided into four portions, by the equinoxes and solstices, which constitute two means, one maximum, and one minimum.—All the preceding have reference to the individual, and the minor have reference to the individual exclusively. The basic unit of years has, however, a bearing upon man, as constituting society, and is the unit limiting the periods of those esoteric causes which influence the spread and mortality of epidemics, and induce physiological mutations on a large scale, as well in man as in animals, and vegetables, through their action on the atmosphere, and the crust of the earth.

To recapitulate, according to the facts previously stated, the periods upon which others must be calculated are the following:—1. The barometric or lunar day; 2. The solar day; 3. The lunar week; 4. The solar week; 5. The lunar month; 6. The solar year, with its four subdivisions; 7. The week of years, or septenary period; and, lastly, the lunar cycle of eighteen years, with one maximum and one minimum. Probably others will be added to these, as, for example a lunar year, with five or six subdivisions, a large cycle of years, &c. I think, however, facts sufficiently numerous have been stated to point out those just enumerated, as the periods round which future observations should be grouped.

CASE OF OVARIAN DROPSY
In which
Tapping was performed Seventy-eight times.
By J. C. Atkinson, Esq.

Of late there has been much discussion on the subject of ovarian dropsy or tumour; some practitioners contending for the extirpation of the diseased ovary and others for palliative and constitutional measures, as less likely to endanger the patient's life. The following case will go some way to prove how often the operation of paracentesis abdominis may be performed without in any way interfering with the ordinary duties of domestic life, or its enjoyments. The subject of the present paper was always prepared, five or six days after tapping, to go about her usual avocations with cheerfulness, and to frequent places of amusement, and this she preferred to leading an inactive life.

Mrs. Herapath, aged fifty-three, of Johnson-street, Westminister, came first under my care in the latter part of 1836; she had previously consulted medical men of authority, and had followed their prescriptions, but with no diminution of bulk. Eventually it was thought advisable to tap her, and from that time till May last she had been operated on no less than *seventy-eight times*, by me *seventy-two times*. The fluid at first abstracted was grumous, opake, and highly charged with albuminous matter,as proved by the common test and the quantity averaged about *six gallons*. For the last twenty times the fluid had been nearly one-half less, its specific gravity considerably diminished, nearly colorless and transparent, and almost wholly void of albumen; and I would observe that her health seemed to have been better when the quantity of discharged albumen was larger. I must here remark that the treatment employed by me to moderate the effusion of the liquid in the ovarian sac,—acupuncture, friction, diuretics, mercurials, pressure, change of air,—were one and all attempted at various times, according to circumstances, but with no definite results. There was an interval of nearly five months from the first operation to the second; from this to the last the period gradually lessened, till three weeks were as much as it was possible for the patient to endure the distention of the abdomen; and owing to the great inconvenience in the epigastrium, and the constant rejection of all food, it was found imperatively necessary to evacuate the fluid at the above mentioned period.

The part of the abdomen commonly selected by me for the operation of paracentesis abdominis was midway between the umbilicus and the os pubis, and the area within which it was performed was six inches by four, supposing the length to lie between the iliac bones. From experience of its propriety I always carefully avoided wounding the external epigastric arterics or veins, and through this precaution much of the hæmorrhage which usually follows the incision of the lancet was prevented, and which, on several occasions at first, entailed on the patient needless fatigue and faintness.

On the post-mortem examination it was found that the left ovary alone was diseased, enlarged, and full of cysts, about an inch in length, and filled with gelatineous matter the right being in its normal condition The abdominal viscera generally were healthy, and the only cause of her death, in my opinion, appeared from mechanical obstruction offered to the food by the rapidly-accumulating fluid, and the excessive exhaustion consequent thereon. There was great emaciation of the whole body. The weight of the tumour was five pounds, and perfectly unattached. At a future time I will enter more minutely into the comparitive value of the plans of treatment pursued in this case.

Romney House, Westminister.

"New Magnetic Fluid."

M. M. Thilorier and Lafontaine have presented to the academy a memoir containing the result of a series of experiments which they have lately made, and which, they say, establish the existence of a new imponderable fluid. This fluid, which they call *nervous*, is classed by them between electricity and magnetism. M. Arago has undertaken to go through the experiments with the authors, and to report on them to the academy. The experiments quoted were made with a galvanometer.—*London Lancet.*

The smallest wonders in science are so thankfully received in Europe by the grasping multitude who have to depend upon a certain school of *savans* for a supply, that the latter are induced to resort to every species of ingenuity to furnish it. They will take old discoveries, "familiar as their garters" and, with scarcely a change of pattern, envelope them in new pretensions, label them with new names, and pass them off as profound and invaluable originalities! "*A new Magnetic Fluid!*" Why not discover a new kind of day light? "*A new Nervous Fluid!*" Why not announce an entirely new sort of blood, in the whole ancient creation?

It seems extraordinary that professional men, of the slightest claims to character,

should descend to such puerilities, and scarcely less so that any work of reputation should announce them, unaccompanied by ridicule. There cannot be a man of science, or even of general reading, in the whole civilized world, really ignorant of the fact that the magnetic influence, in some modification or other, has long been adduced by a host of experimenters, in almost every country, as the influence (clumsily called "fluid") which operates upon the nervous system, and endows it at once with sensibility and motive power. The claim is at least as old and as notorious as the demonstrations of Galvani, and while it has been maintained by innumerable applications of electricity and electro-magnetism, the abstract identity of every form of magnetism, called electricity, and electro-magnetism, with the old and simple forces of metallic-magnetism, is now scarcely disputed. Yet these learned Frenchmen crown themselves with wreaths and plumes for having ascertained the existence of this nervous fluid by the ordinary galvanometer! They say it is neither electric nor magnetic, but something intermediate.—Since they discovered it by the galvanometer, perchance it is galvanic!—and if they should pursue their discovery to this brilliant conclusion, they may next favor us with a luminous distinction between the three "fluids" here contending for the honor of their patronage.

It is well known that, for more than thirty years, the Editor of this Medical Journal has pursued a system of practice based entirely upon the fact, more clearly understood and explained, which these gentlemen have now the excessive modesty to submit to the world as a recent discovery of their own. We have asserted, exemplified, and demonstrated it, in various distinct works upon the subject, of which tens of thousands of copies have been circulated in this country and in Europe. It has been diffusively illustrated in every number of this Journal, which is read both at home and abroad; and for the most overwhelming proofs of this fact, collected within brief limits, we need only refer the reader to the masterly "lecture on the magnetism of the human body," by Professor R. W. Gibbs, M. D., of South Carolina, published in the 2nd and 3d numbers of this Journal.

MESMERISM.

A Young Lady of this city was magnetized a few evenings since by a young gentleman who had very little knowledge of the art, and after exciting the organs of combativeness, destructiveness, self-esteem, and firmness, at short intervals during an hour and a half, he attempted to awake her, but his success was only partial. He could not awake these organs, or calm the storm he had raised; for she continued the pugilistic exercise of her arms through the night. The next morning she was induced to accompany a young Lady to our office for the purpose of trying the power of the Rotary Magnetic Machine upon her. On an examination of the case we found the spasmodic actions of her arms very strong. The positive button was then placed on the back of her neck, and the negative held in her hand under the full power of the Machine during a few minutes, but it produced little or no effect upon her. A clairvoyant happened to come in at this time, and we instantly put her into the somnicient state, and directed her attention to the young Lady, when the Clairvoyant placed her hands on the same organs in her own head, and observed that the brain appeared to be diseased in those places; and when we inquired how diseased? she observed "the brain looks darker, or higher colored in these places."

Her magnetiser at our suggestion now attempted to put her other organs to sleep again, but failed. On the evening of the second day after she was mesmerised, the spasms of her arms were observed to be less violent, and on the third day they disappeared.

INFLUENCE OF OPIUM ON THE CATAMENIAL FUNCTIONS.

Dr. M'Cune Smith records in the *New-York Journal of Medicine*, five or six cases in which the habitual use of opium seemed to cause a suspension of the menstrual functions, without producing constitutional disturbance. He hence infers that its use is indicated when such effect is required.

ON THE INORGANIC CONSTITUENTS OF PLANTS.

By Drs. H. Will and R. Fresenius.

In pursuing the investigations sketched out in his works on Animal and Vegetable Physiology, Professor Liebig has entrusted to the able hands of his assistants in the Giessen laboratory the task of devising a method for the qualitative and quantitative determination of the inorganic constituents of vegetable substances. The question to be determined is what are the essential, indispensable ingredients and what are the substances which, being present in the soil, enter into the organisms of plants, and are left in the ashes, and yet are unnecessary to the vital processes of the plants? In order to obtain an answer to this question which shall be satisfactory to the physiologist and the agriculturist, analyses must be made of the acids of plants grown under every variety of circumstance and condition. Before these analyses could be made it was very desirable that a method, simple and sure, should be in the hands of chemists, and as a preliminary to the interesting investigations into the ashes of particular plants and parts of plants in which Drs. Will and Fresenius have been engaged, they have presented such a method to chemists. The following is an abstract of this valuable paper:—

"The analysis of De Saussure and others, inasmuch as they were not in possession of means sufficiently accurate to determine the quantity of many elements present, are no longer trustworthy. De Saussure first pointed out the necessity for such investigations, and Berthier discovered that the composition of the ashes of plants depends in a measure upon the properties of the soil, but while the latter found that the ashes of the same kind of wood grown upon different soils varied, he also discovered that the ashes of different kinds of plants grown upon the same soil are dissimilar, and that plants, either of the same or related species, when grown upon the same soil, yield ashes either identical or very similar.

Plants take up all the soluble constituents of the soil, but to subserve their vital processes they select the suitable materials, so that vegetable organisms take up and appropriate the necessary elements. Hence in analysing ashes, substances will be found which have not entered into the composition of any organ or part of the plant, but are only accidentally present in the juices; we cannot, therefore, prevent such matters from being found in the ashes, together with that capable of assimilation.

Nature has provided in the seeds of plants as in the eggs of birds, and the milk of animals, every thing necessary for the development of the infant being, so long as it is incapable of deriving its sustenance from without. The indispensible mineral food of plants, therefore, will be found almost pure in seeds.

The ashes of the seeds of the *cerealia*, the *leguminosæ*, the *cruciferæ*, and the *coniferæ*, consist almost exclusively of phosphates of the alkalies and earths, with variable quantities of silicia and sulphates. But these ashes do not effervesce with acids, and contain only mere traces of chlorides.

The ashes of the seeds of *the oak*, the *chesnut*, and other trees, of which the seeds abound in starch, but contains no fat, effervesce strongly with acids. They contain a large proportion of carbonates which have been formed during the combustion, from salts of vegetable acids, and they contain also phosphates. The amount of chlorides, silica, and sulphates, is very small in these ashes.

From these facts it must be concluded that the alkaline and earthy phosphate are indispensible to the *cerealia*, and that the oak and the chesnut require, besides these phosphates, alkalies and earth not combined with mineral acids.

It is not possible at present to distinguish between essential and non-essential constituents of ashes. Various mineral substances and variable amounts of them are required by plants during the several stages of their growth. Nothing found in the ashes of plants can be deemed unessential, but we can distinguish between those constituents which have been already assimilated by the plant and those which exist in its juices unassimilated. Some of the latter, however, only await the further progress of growth in order to subserve their proper purpose. Thus, alkaline chlorides and sulphates, are always present in ashes; they always exist as soluble compounds in vegetable juices; they do not themselves enter into the composition of the organs, but they yield some of their elements. The bases of the salts of vegetable acids are probably derived from chlorides, the latter being decomposed. But their electro-negative element being unimportant, these chlorides may probably be replaced by other compounds of the same bases, provided the latter be equally soluble, and not injurious to the vital textures of the plant. The quantities of chlorides are very variable, and this without their being replaced by any other substance; they are, therefore, probably unessential. The quantity of sulphates found in the ashes depends in some measure upon the preparation of the ashes. The sulphur of the nitrogenous constituents of the plant

may, by a strong heat and free access of air, be converted into sulphuric acid during the combustion. On the other hand, an insufficient heat, with the subsequent addition of an acid, may evolve sulphuretted hydrogen In order to make a quantitative analysis of ashes we must heat them until all the sulphurates are completely oxidised.

Carbonic acid and charcoal are generally accidental constituents of ashes, having their origin in the combustion. Some seeds, however, contain carbonates. The amount of carbonaceous matter and carbonic acid in ashes depends upon the nature of the bases. present, and the degree of heat employed.

Bases.	*Bodies combined with Bases.*
Potass.	Chlorine.
Soda.	Iodine.
Lime.	Bromine.
Magnesia.	Fluorine.
Peroxide of iron.	*Acids.*
Oxide of manganese.	Silicic acid.
Alumina.	Phosphoric acid.
	Sulphuric acid.

All these acids and bases, except iodine, bromine, fluorine, and oxide of manganese, are found in almost all ashes of plants. Alumina is said by many chemists to be found in vegetable ashes. De Saussere states that the ashes of the bilberry, the pine, and the oleander, contain 17.5, 14.8, and 28.8 per cent. of alumnia, but he mistook the phosphates for alumina, because when he made other analyses to determine the amount of phosphates, he found no alumina, or only a trace. Pure alumina is insoluble in solution of phosphoric and carbonic acid. The phosphate of peroxide of iron found in plants which is equally insoluble with alumina, is probably taken up as phosphate of protoxide which is soluble in solution of carbonic acid. The traces of alumina found in ashes of plants, are probably derived from some adhering dirt not having been carefully removed previously to combustion. This, no doubt, also gives rise to the presence of sand.

In some parts of Germany grain is steeped in solution of sulphate of copper, in order to prevent blight; this accounts for the presence of oxide of copper in the plants; it may also be derived from the presence of salts of copper in the soil, but is only an accidental constituent of vegetable ashes.

A large number of analyses are necessary ere a classification of plants, according to the constitution of their ashes can be accurately made. For the present purpose they may be arranged into three groups.

A. *Ashes rich in alkaline and earthy carbonates;* to this belong woods, lichens, since these contain salts of organic acids.

B. *Ashes abounding in the phosphates of alkalies and earths,* as the ashes of seeds.

C. *Ashes rich in silica.* The gramineæ, equisetaceæ, &c., belong to this group.

This classification is not to be considered more than an approximation. The ashes of mistletoe (*viscum album,*) the ashes of the seeds of the oak, and chesnut contain both carbonates and phosphates. Those of *milium sativum* (millet,) oats, and barley, abound in silica, and might, with equal propriety be placed in either the second or the third class.

According to the beautiful law of substitution established by Professor Liebig the predominance of potass or lime in the ashes of a plant depends upon the bases existing in the soil. Tobacco would generally be considered to belong to the lime plants, but recent analyses, which are highly interesting in relation to the law of substitution, prove that when grown in a soil abounding in potass, tobacco would equally belong to the potass plants.

ROYAL MEDICO-BOTANICAL SOCIETY.

Thursday, June 27th, 1844.

HENRY COPE, JR., Esq., in the Chair.

After some discussion, a communication on the atropa belladonna, from MR. LEY, was read.

In this essay, MR. LEY endeavoured to point out that belladonna was not of so deadly a nature as its name, and the dread entertained of it by the profession and the public would lead one to suppose, and he quotes several cases to show that a fatal result rarely attends its ingestion. He observes that its effects are rapid and constant, therefore if understood, most highly valuable. The difficulty is in seeing and describing them so clearly that future observers shall recognise the same results from medicinal doses. For this purpose the variety of the observations recorded, and even the varieties of language in which the narratives are clothed, become useful information for future observers, to test and reject that which is least precise and perfect. In testing the medicinal influence of a medicine by which we seek to relieve pain, spasm, and irritability of system, and to procure sleep, its approximation to or secession from opium in its action on the system, will form a very good standard to judge

of its effects, and tried by this test, Mr. Ley has found that the action of opium and belladonna is very similar. He has himself taken belladonna, and has given it frequently, in doses of from half a grain to a grain, and in describing its action, instead of saying that it diminishes sensation, irritability, and arterial action, in the first stage of its influence, he believes that it increases them all, and that the peculiar action of the remedy being exhausted, reaction takes place and its effects, to wit, diminution of sensation, irritability and arterial action follow. He observes, that soon after taking a grain of the extract, there is a peculiar taste in the mouth, and a diffused, novel sensation over the whole body, which excites the attention forcibly and unpleasantly. Saliva is secreted in diminished quantity. The nervous excitement becomes absolutely painful, with restlessness, and with the attempt to move, giddiness, with an affection of the cerrebrum, become evident. There is difficulty in swallowing, and the voice becomes hoarse; it is as if the action of the parts were impeded by great loss of the lubricating moisture of the mucous membranes. The sight is affected and indistinct, and the eye has the same sensation (perhaps of coldness) that is felt over the body The lids become dry, and the general sensation is similar to that experienced after long watching. Pain in the bowels may occur, and perhaps an evacuation may take place, but neither purging nor diuresis is caused by it. Sore-throat and redness of the skin, resembling scarlatina, is sometimes produced, and inordinate menstrual discharge may occur suddenly in females. The attention is so entirely absorbed by the peculiar sensation, and the irritability of system, that no pursuit can be followed; the eye can see, but is indisposed to maintain attention to the object, and the ear has sensation, and hears peculiar noises. The disposition to withdraw from all the excitements of passing influences becomes active, and the retirement-like weariness brings repose. In this stage of excitement Mr. Ley observes, it is not difficult to trace an increased arterial action approaching inflammation; and this being the first and immediate action of the remedy, we ought to reckon the rapid subsidence or evanescence of these effects among the virtues of the medicine. In Dr. Pereira's opinion belladonna is not fitted for plethoric constitutions, nor for febrile and acute inflammatory cases, in which Mr. Ley coincides, but he thinks it may be rendered so by combination with other medicines, or by preceding its use by blood-letting. It has been his habit, he says, to produce the excitement, and to allow the reaction to go on undisturbed for a day or two. He expects more benefit in the second or third day of inaction than from the immediate effect of the drug. In this way relief is experienced in scrofulous ophthalmia, in toothach. &c., when the state of excitement has passed away. A decided astringent effect is produced by the exhibition of belladonna in some chronic discharges from the mucous membranes, and the secretion in ulceration of the trachea is diminished, and the cough relieved by it; various vesicular eruptions on the skin is also removed by it, and when the contents of the vesicle have become semi-purulent, the true skin ulcerated, the ulcer being deep and devoid of healthy granulations, the edges being under the influence of the creeping vesicle, a single grain of the extract of belladonna will annihilate the eruption, and the ulcer will immediately assume a healthy appearance. This influence is well exemplified by that affection of the finger where the cuticle is raised by a semi-purulent fluid round the nail. The cuticle being removed the circle will still be enlarged by the separation of fresh cuticle, and the denuded surface pours out a copious discharge. The effect of one dose of belladonna is to dry the denuded surface, so that the disease no longer exists, and this is effected with so much rapidity as almost to seem like magic.

Mr. Ley quotes two cases from Mr. Liston's practice in University College Hospital, in one of which minute doses of belladonna cured an attack of erysipelas in two or three days; and in the other, a case of small ulcerations on the legs, aggravated by a scald, and attended by much inflammation and fever, after the fever was subdued the belladonna also speedily effected a cure. In conclusion Mr. Ley adverted to the difference presented by the extracts as met with in the shops, and stated that he had found a scaly black, tobacco-smelling extract, most efficacious for external application. This, he considers, may be owing to the mixture of the fruit with the leaves, or to the adulteration of the extract with some other drug, and in that case he thought it would be advisable to try the adulterated drug itself.

ANALYSES OF BLOOD IN DISEASES.

Dr. Scharlau, of Settin, having sent to Professor Liebig some specimens of blood drawn from patients suffering from various diseases for the purpose of having their amount of carbon and hydrogen determined, Professor Liebig entrusted the investigation to Dr. Herman Hoffman. The specimens, as sent to Giessen, were inclosed in waxed paper, having been dried and coarsely powdered. They were examined by the usual meth-

od of organic combustion with oxide of copper, the following results were obtained.

		Ashes.	Carbon.	Hydrogen.
1.	Blood from a patient laboring under pneumonia which was drawn from the arm and exhibited a buffy coat (1st bleeding) . .	4.365	57.428	8.615
2.	Do. do another specimen (2nd bleeding)	4.081	52.280	——
3.	Do. another specimen (1st bleeding . .	3.880	51.966	8 543
	(2nd bleeding)	3.784	51.149	7.832
4.	Typhus	3.901	54.954	8.542
5.	Tubercular phthisis; no buffy coat	4.026	53.734	7.451
6.	Typhus abdominalis, fifth day; from the arm	3.209	50.901	8.925
7.	Do. do. second day, from the arm (1st bleeding)	3,108	54,184	8,493
	(2nd bleeding)	3,479	55,295	7,945
8.	Do. from the head	4,702	——	——
9.	Do from the venacava	3,509	49.281	7,217
10.	Do. do. do.	3,960	45,575	7,897
11.	Do. from the aorta	4,184	——	——

—*Liebigs Annalem.*

Tabular View of One Hundred and Eighty Cases of Tubercle of the Lungs in Children, with some remarks on Infantile Consumption.

By P. Hennis Green, M. B.

The author commences his paper by observing that the remarks appended to the tabular view are rather intended to point out a few of the peculiarities which distinguish infantile consumption from phthisis of adults, than to give any complete history of phthisis in the young subject.

The main character which distinguishes the phthisis of children from that of adults is this,—in children the tubercular deposit occupies a much larger surface of the lung, is more rapidly secreted, and complicated with tubercular disease of the organs more frequently than in the adult.

Having briefly described the varieties of tubercular deposit in the lungs of children, the author gives some statistical results relative to crude tubercle and caverns, as deduced from his table.

The complications of pulmonary tubercle in the child are numerous and varied. The author compares his own results with those given by M. Louis for the adult, and shows the proportion in which various other organs were affected with tubercular disease.

The symptoms are referred to two varieties, one occurring in children of from ten to fourteen years of age, and resembling the disease in adults; the other affecting younger children, and presenting several peculiarities. In the acute form of this latter variety the patient is often cut off long before the disease has arrived at the stage of cavern, while the widespread and rapid diffusion of tubercular deposit may excite in the head hydrocephalus, or meningitis; in the chest, pleurisy; in the abdomen, peritonitis; and in the intestinal canal, tubercular ulceration. In the chronic form of this variety the author remarks that the signs of cavern are very frequently absent altogether, and that this absence may depend on the seat of the cavity (middle or lower lobe,) or the small calibre of the bronchial tubes.

The author next examines, successively, the rational symptoms, and indicates the peculiarities which may attend each. With regard to hæmoptysis, he observes that it is not so rare a symptom as many eminent authorities assert.

The question of diagnosis having been discussed, the author concludes with a brief description of bronchial phthisis. The mechanical and physiological effects produced by the enlarged glands on the neighbouring tissues and organs are first pointed out; the symptoms are then indicated, and the author sums up with some valuable remarks relative to the diagnosis of its variety.

The author does not enter into the question of treatment, which he regards as merely palliative, but he states his belief that under favorable circumstances we have a much greater chance of arresting the progress of incipient tubercle in the child than in the adult.

The Society adjourned until November next.

On the Exclusion of the Atmospheric Air in the Treatment of Certain Local Diseases.

Some years ago I attended a fatal case of peritonitis. On a post-mortem examination I was struck with the florid red appearance of those parts of the intestines which were contiguous and adherent to the abdominal parietes, and the perfectly pale condition of those other parts of the intestinal canal which were contiguous and adherent to each other. Both surfaces were equally covered with a layer of rather opake and moderately-consistent coagulable lymph. I could only account for the difference in the appearance of these two portions of the same intestine by supposing that one was affected by the absorption of oxygen from the atmospheric air, whilst from the other this gas was excluded.

It is usual in the Parisian hospitals to trust the treatment of pleuritis greatly to the application of cataplasms. I confess that when I first heard of this mode of treatment I thought it trifling. I have since considered that these cataplasms may entirely exclude the influence of the atmospheric air, and thus prove of real efficacy. But whatever may be the *rational*, the fact remains as I have stated it, and where the treatment of pleuritis consists greatly in the application of mere cataplasms, a post-mortem in this disease is scarcely or not to be obtained, so generally do the patients recover.

I have now to add a fact from my own personal experience. I have recently seen the most satisfactory result, both in pleuritis and peritonitis, from the assiduous application of cataplasms of powdered linseed.

It is probably by the exclusion of the atmospheric air that other remedies for imflammatory diseases act; the various plasters, the nitrate of silver, even blisters have this effect. I do not, however, mean to insinuate that they have no other. Cataplasms may further act by their warmth and moisture. The nitrate of silver possesses some extraordinary power over the actions which constitute or coincide with inflammation. But certainly, more adhesive plasters have an efficacy in cases of chronic chest affection, in lumbago, sciatica, and other forms of rheumatism, in neuralgia, and even of scirrhus, which cannot be easily explained.

One of my patients, a martyr to extensive sciatica, was disired to envelope the limb in adhesive plaster. He was a joiner and an ingenious man He prepared the common stocking material with glue, dissolved in the proportion of one ounce to two pints of water. and had it spread over, when dry, with galbanum plaster, and if this exuded it was dusted with flour. By the steady application of this plaster his severe rheumatism was cured.

I was once informed by a celebrated physician that he had prescribed adhesive plaster to be applied over a scirrhous tumour of the mamma. It remained adherent for years, and the disease remained stationary. The plaster then separated, and from that period the disease pursued its devastating progress.

Certain modes of the treatment of burns consist in excluding the influence of the atmospheric air.

Some affections of the face are remedied by applying a layer of gelatine. Isinglass is dissolved in water, and the solution is applied with a camel's-hair pencil. and allowed to dry. I have just witnessed some very remarkable effects of this mode of treatment, which I will communicate hereafter.

On the Microscopical Characters of Milk and the use of the Microscope in the choice of a Nurse.

Recent inquiries have shown that human milk, examined by the microscope, presents different characters :—

1. Large globuled.
2. Small globuled, generally "pulverulent" milk.
3. Milk of medium-sized globules.

None of these are found in this fluid to the complete exclusion of the others. The first variety is the most nutritive, and the others in proportion to the size of the globules. The microscope, then, will enable us to determine, in doubtful cases, whether a given milk be of a strong or weak class, and will guide the physician in the choice of a nurse whenever the question turns on the advisability of one or other of these kinds. Milks differ not only in respect of the size of their globules, but also of the abundance of these; high or low amount of globules signifies richness or poorness of the milk generally.—*British and Foreign Review.*

Mineral Marmoratum, or Paste, to fill Hollow Teeth.

Take *Anhydrous phosphoric acid*, forty-eight grains;
Pure caustic lime, forty-two grains; finely pulverised. Mix rapidly in a mortar.

The powder soon becomes moist; it must therefore be brought as quickly as possible into the cavity of the tooth, which has been cleaned and dried; the powder is to be well pressed into the cavity, smoothed off, and moistened on its surface.

TOOTH POWDERS.

Take *Powder of red bark.*
Bole armeniac, sifted, of each one ounce;
Powder of cinnamon, half an ounce;
Bicarbonate of soda, half an ounce;
Oil of cinnamon, two or three drops. Mix.

This is an excellent tooth-powder, unobjectionable in every respect.

Carbonate of magnesia may be substituted for the bicarbonate of soda, or precipitated carbonete of lime; but the solubility of the bicarbonate of soda renders it preferable.

Cases reported for the Dissector by A.H.—M.D.

MONTGOMERY, ORANGE, Co., N. Y
17*th April*, 1844.

Dr. H. H. SHERWOOD,

My Dear Sir,—I was called on the 20th of February, 1842, to visit T. K. of Ulster County, in this State. He was a young man

of sanguine temperament, good physical and mental endowments, and up to the time of he present sickness, had enjoyed uninterrupted good health. He was 18 years of age, and by avocation a farmer.

His illness commenced Sept. 3d, 1841, with swelling in the left knee, and after a few weeks in its fellow also, both joints being very painful. These swellings continued for a few weeks and then subsided, leaving stiffness, languor, &c. Seven weeks after the swelling of the knees had subsided, the shoulder and hips became similarly affected.—Chills, fevers, and head-aches immediately followed. The family physician being called pronounced the disease *Rheumatism*, and placed the patient under the usual antiphlogistic treatment. Notwithstanding this, however, the disease continued, but was erratic in its character, sometimes attacking the chest, then the head. In July, the throat and tongue became swollen, pus formed under the tongue, afterwards the chin, and then the cervical glands swelled and suppurated. The pain in the left knee and hip, at length gave way to counter irritation, blisters, &c. and from the use of porter, the strength gradually augmented, enabling him to sit up. But thus far the use of the left limb was not recovered, at the same time at this period, great tumefaction and edema took place; in this state bandages were applied, and in September the formation of pus was discovered; on the 15th, the abscess was opened, by incision in the thigh, about midway, on the outside; on the 23d, another abscess which had formed on the opposite side broke; on the 20th of October he was again able to sit up, and on the 1st of November, could walk with the aid of crutches.

On the 15th of November, while walking he had the misfortune to fall, by which the thigh was fractured 6 inches above the knee. As a matter of course, the limb was placed in splints, the ulcer continuing to discharge.

About the 1st of January 1842, the patient exhibited all those symptoms that indicate the ebbing of the tide of life, and that usually follow suffering from a protracted, and painful disease. He had a dry hacking cough, the hectic fever appeared, the frame was emaciated to a skeleton, and two additional abscesses had formed, and become running ulcers. The usual remedies of blistering, creating counter issues, and prescribing Iodine, Hydriodate Potassa, Extract of Sarsaparilla, Blue Pill, Spanish Rob !!—Swain's Panacea, &c., &c., constituted the treatment until February, at which time I was called in.

When *I first* saw the patient he was subject to colliquative sweats, his cough was obstinate, and his pulse seldom varied from 120. The whole left limb displayed the presence of great tumefaction, particularly the illiac region. The tubercular character of the disease was plainly indicated by these symptoms which were exceedingly unfavorable. He was also subject to great pain, which continued without any visible abatement, or interval of ease. Large doses of morphine were administered to quiet him, and as he and his friends remarked "to smooth the passage to the grave." For 17 weeks he had not left his bed, the pain of moving being too great to be endured. He had availed himself of the services of several experienced surgeons and physicians, some of whom had pronounced him beyond the reach of art.

From the condition of the patient when I was called in I felt the responsibility to be almost terrible; however I entered upon my duty, trusting for success solely on those principles, which for many years past you have been laboring to establish.

Upon a careful examination, I found the diagnosis to be tubercula of the left knee, (white swellings,) half the former implicated with tubercula of left lung, liver, throat, heart, stomach and mesentery, accompanied with a total loss of appetite.

On the patient being placed under my charge, all former prescriptions were thrown aside. The diseased limb was bandaged smoothly from the instep to the knee, and wetted, with a strong solution of Sal Ferri, Capsia &c., at the same time fermenting poultices were applied to the thigh every evening. I prescribed a pill morning and evening, and covered the whole thigh with a plaster. I also placed one on the lumbar region, to be taken off at night, however, and the poultice applied.

Under this the magnetic treatment, 12 days from its commencement, the appetite returned, the palpitations ceased, and the pulse assumed a healthy standard. In three weeks the cough and expectoration ceased, the tumefaction subsided, pus of a more healthy character was discharged, and in one week more the patient was able to sit up. In July he could walk with the aid of sticks, and continued to improve steadily. In December last the ulcers, four in number, gradually closed up, and swelling with some pain followed. To alleviate this, one of the ulcers near the knee was re-opened, and serous matter with exfoliation of carious bone was discharged.

Since the re-opening of the ulcer near the knee the patient has improved rapidly. At this time he is able to walk without inconvenience, and labor at his business although

not so well as before his illness. Indeed this was not to be expected. The patient when I was called in, was in an almost hopeless state, diseased in his entire system, and emaciated to a skeleton, therefore the cure must necessarily be very slow, almost as much so as is the growth from infancy to manhood. I have deemed it proper to be thus explicit, in order to show the error in judgment that occured at the commencement of the disease, as well as the mistakes in treatment that followed. He owes his life to your remedies."

"Mr. M. R. of Orange County, New-York, had been out of health two years, during which time he had received the professional services of 8 or 10 different physicians from whom he obtained little or no relief. About the first of last February, I was called in to see him, and on examination detected tubercula,—

1st—in the left lung. 2nd—in the stomach. 3d—in the kidneys. 4th—in the spleen, and 5th—in the large intestines. 6th—in the brain.

"In addition to this wretched condition of the body, he was also affected with Hypertrophia of the heart, liver, &c. The actio- of the heart was very much diseased, the most gentle exercise being followed by a prostration nearly approaching to absolute exhaustion. The most trifling emotion of the mind, the least surprise, as the entering of a stranger into his room, was attended with the most violent and painful palpitations, so great at times as to threaten immediate dissolution.

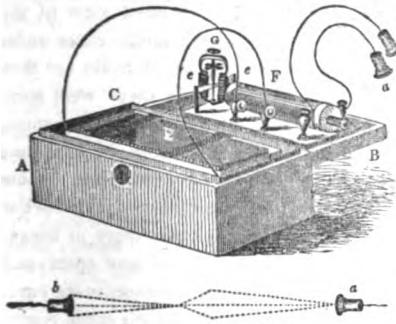
Nor was this all the disease from which the patient suffered; his spine was curved laterally, with an excavation on the left side, owing to paralysis of the abdominal and intercostal muscles, with perfect immobility of the left side, as indeed, could not be otherwise; this state was accompanied with an extreme derangement of the digestive organs, so great, in fact, as to prevent the exercise of their functions. The offices of nature were entirely suspended, except under the influence of medicine. The patient was in continual pain about the region of the pleura, and sleep could only be procured by large doses of morphine. In addition to this, for more than a twelvemonth, he suffered from headache without intermission. In this state he had been confined for nearly two years, seldom leaving his room, and was emaciated to the last degree, when I was consulted. The gentlemen who had preceded me, and who are the most eminent in that section of the country, and deservedly so, had placed him under the antiphlogistic treatment; indeed, the first symptoms were those of pleurisy, and in consultation with them they recommended an adherence to the course of treatment prescribed for inflammatory disease.—Notwithstanding this, however, I resolved to attempt the magnetic remedies as prescribed by Dr. H. H. Sherwood, having applied them before in many cases with the most satisfactory results; under this treatment the patient soon exhibited signs of improvement, and has continued to mend from that time to the present. He no longer suffers from pain, his appetite has returned, his sleep healthy and refreshing, and his appearance favorable; and so far as the radical cure of the complication of disease described is concerned, he has now entirely recovered his health; he is able to walk about his farm, eat the ordinary food provided in a farmer's household, and can ride a number of miles on horseback without fatigue. The magnetic treatment has rescued him from what was literally a "living death."

AMERICAN MEDICAL STUDENTS AND THEIR HABITS.

We extract the following very gratifying observations from a late number of the *Philadelphia Medical Examiner*:—

"The improvement in education and general character of the medical studeuts at the colleges in Philadelphia within the last few years is the comon subject of remark with all who have had the opportunity of judging. There are at this time between seven and eight hundred of these young gentlemen in this city,—connected from nearly all parts of the continent and the adjacent islands, surrounded by the temptations of a large city, and without the restraining presence of parents and relations,—as quietly and diligently engaged in the pursuit of knowledge as any grey-heaed philosophers that ever congregated together. They afford an example, indeed, to the young men of other professions in the place. which it would be profitable for them to follow. Among other evidences of their self-denial and rigid determination to keep out of the way of temptation, is their voluntary association as members of a temperance society, on the principle of total abstinence. Early in the session of last year, such a society was formed among them, and embraced a considerable number; the present winter a similar movement was made early in the session; two public meetings have been held, at which nearly all the students in the city were present, and a very large number signed the pledge."

The Rotary Magnetic Machines, and the Duodynamic treatment of Diseases.



The savage Rotary Magnetic Machines are of different sizes, and are fitted into neat mahogany cases, including the battery. The case of the first size is ten inches long, five wide, and three deep. The second size is eight inches long, four wide, and three deep. The third size is seven inches long, three wide, and two and a half deep. The fourth size is six inches and a half long, three wide, and one and a half deep. The instruments are set on the covers in magnetising, as seen in the figure, and are made in a very superior style; are jewelled and run in the best manner.

A, case; B, the cover; C, sheet copper vessel; E, sheet copper, the lower edge of which is soldered on the bottom of the copper vessel C; D, copper piece connected with the zinc between the copper surfaces, containing a solution of sulphate of copper; F, cylinder of copper wire; G, magnet and armature; e, e, conductors to the armature; c, negative, and a, positive button for magnetising.

A great many physicians, as well as many private families, have been testing the effects of the Rotary Magnetic Machines during the last six months, and so far as we can learn, they are very generally well satisfied with the results they have obtained, but complain much of the imperfection of the old instruments—of the bungling manner in which they have been made—of their liability to get out of order—of the difficulties in running them, and of the necessity of frequent resort to the aid of blacksmiths, gunsmiths, &c. &c.

It was useless to talk to the manufacturers of these machines on the propriety and importance of manufacturing a more perfect instrument, so long as those that were coarse and cheap could be sold at a great profit. To obviate these objections, we were at last compelled to employ a jeweller to make the machine represented in the engraving at the head of this article, under our direction, as mentioned in our last number.

These machines are made upon a new and mathematical arrangement of a new principle in Duodynamics, are very light, neat and portable, and will last a life time.

It has been the great object of those who have before planned, or constructed the Rotary Magnetic Machines, to make them in a manner to obtain the greatest or most severe shocks, and for this purpose, large machines or instruments were supposed to be necessary, and those ideas were very natural, especially in those having large organs of marvellousness. They proceeded upon the erroneous principle "that the greater the machine the greater the power," or that the power increases *pari-passu* with the size of the machines, whereas the reverse of this proposition is true; for the power of these instruments increases as their size decreases —other things being equal, as is seen on a comparison of the old machines with the Savage instruments. The motions of the forces from the latter are continuous and agreeable, and produce the most violent action of the muscles and of the poles of the organs, without the severe and painful shocks of the former, which are more or less injurious, and always very unpleasant to adults, and are borne with great difficulty by children.

There are, in fact, many cases in which these shocks do a positive injury, like the electrical machines. The value of these machines consequently increases as the shocks decrease, or as the motions of the forces from them are more continuous, other things being equal. It was a principal object in the plan upon which the Savage machines are constructed to avoid these shocks, as much as possible, and it was in a great degree suc-

cessful, but not perfectly so. We have however at last succeeded in our object, by having a cross or four or more arms to the shaft of the armature as seen in the figure, with a corresponding number of breaks or pole changers, and adjusting screws, which make the motions of the forces continuous. The *armatures* and *pistons* are gilded, the battery improved, and their power and value greatly increased.

The price of these improved machines is $20, while that of the others remain the same as before, or $18 for the largest size, and $15 for the 2d and 3d size, although they are improved by the cross and adjusting screws, which increase the power of these machines, and make the forces more continuous.

The figure drawn below the engraving is intended to represent the direction of the forces as they proceed from the buttons in magnetising—a, the negative button, repels and expands, while the positive button, b, attracts and contracts. Besides the negative force exerts an alkaline, and the positive an acid influence upon the fluids and solids of the body, and hence the importance of a scientific application of the buttons in diseases of the different membranes, or of the serous and mucous surfaces.

The form of the buttons for magnetising, and the different kinds of metals of which they are made, is a matter of some importance. Brass cylinders were connected with the machine, and held in the hands to show the power of the instrument, before we applied the buttons seen in the figure. It was then a mere toy, but is now an important and indispensable instrument in the treatment of diseases. Besides these buttons, we have found other forms very useful in magnetising the eye, and in some cases of disease of the uterus, urethra, &c., and these are now forwarded with the machines.

Effects of the Rotary Magnetic Machines.

In describing the effects of these machines in the April and July numbers of this work, we were very cautious in our commendations of this new mode of treating diseases, as a sufficient time had not elapsed since we commenced magnetising with these instruments to obtain a full and unbiased view of the subject. We had many doubtful cases under treatment, the result of which could not then be known. Among these there were some of the worst cases of *distortion* of the spine, and lumber abscess in children, of from one to eight years old, we have ever seen. Some of these cases were complicated with disease of the sacrum, hip joint, mesentery or lungs. Some of the worst cases are now cured, and all the others are so far advanced in the cure, as to leave little doubt of their entire recovery.

The great number of lateral curvatures of the spine, and the extraordinary effects of the machines in these cases, continue to excite the greatest interest. The cases we are now magnetising have continued from one to twenty-eight years, and many of them are of the worst description, yet they are all advancing to an erect position. In some of these cases the extent of the curvatures has been so great as to cause a displacement of the heart, lungs, stomach, spleen and intestines. The heart beats in the right, and is not heard in the left side, while the left lung occupies its position. The stomach and spleen are depressed, and crowded into the left or right side, and displace the intestines, but as the spine becomes more erect, they gradually resume their natural positions These are *all* cases of tubercular disease of the muscles, or *rheumatism*, in which *white swellings* are often formed under, over and around, the shoulder blades, on the hips—the side of the lumber vertebræ, and sometimes on the lower extremity of the spine.

Young females who have rheumatism, are always in danger of such a deplorable result. The disease is easily distinguished; for if a person has rheumatism—no matter what part of the body or limbs is affected by it—pressure with the fingers upon the intervertebral spaces of the cervical vertebræ will produce *pain* more or less severe, in proportion to the intensity of the disease. In cases of rheumatism, acute or chronic, affecting the head, face or limbs, the machine is, and will con-

tinue to be, invaluable. Nearly all the cases of dizziness in the aged, are cases of rheumatism, and are the premonitory symptoms of palsy or apoplexy, which may be easily reduced, and their lives prolonged by the use of this instrument. Rheumatism may, and does attack, one or both hemispheres of the brain, as it does a finger, hand or arm, and may paralyze them in the same manner, or the spasms from this cause may be so strong as to rupture the blood vessels of the brain, as they frequently do; when the blood flows into the sinuses, and ventricles, or forms deposits in its substance, as every physician knows, who distinguishes diseases by the magnetic symptoms.

In all the cases of disease of the organs the machine is of great service, and in some cases it is indispensable to a successful treatment, among which are some cases of amenorrhea, chlorosis, leucorrhœa, and prolapsus uteri, &c.

We have used the instrument in one severe case of bilious fever with great success. It reduced the pain in the head, stomach, liver, and back, with the paroxysms of fever, in the most prompt manner. In examining this case, severe pain was produced by pressure on the sub-occipital nerves connected with the brain, and pressure on the ganglions of the spinal nerves, in the intervertebral spaces connected with the stomach, liver, secum, and small intestines, produced the same effect, showing it to be a case of acute tubercula of the serous surfaces of these organs, instead of a case of gastro-enterete, or acute disease of the mucous surfaces of these organs.—These magnetic and invariable symptoms which point to the disease, like the needle to the pole, are always present in bilious, remittent, congestive, yellow, and *nervous* fevers. We have always found them in every case we have seen from the great lakes, to the Balize in the Gulf of Mexico, and we have published and circulated more than 20,000 copies of different medical works, in which these symptoms are delineated; yet the Professors of Astrology in our Medical Colleges call these fevers, cases of disease of the mucous surfaces of the stomach and intestines, from the aspects of the tongue and urine, and the color and odor of the stools, as in other cases of disease, and continue to teach such nonsense to the students of medicine. They have even had the address to induce grave legislators (tell it not in Gotham) to pass laws to prevent any person from practising physic until his head was full of such absurdities, as seen by their sign manual.

In two cases of paralysis, in consequence of prostrated fever; one of the entire left arm and hand, and the other of the extensor muscles of the left leg; the machine has had the happiest effect.

The first was a case of a little girl aged eight years. She had bilious fever when she was four years old, during which time the left arm was observed to be paralysed; since which time it hung by her side like a rag without the least power in the muscles of her arm, hand or shoulder.

On the first application of the buttons to the hand and shoulder; about two months since she raised her elbow two or three inches, and she can now flourish a cane with the same hand.

The second case was that of a young gentleman aged 20 years. He had bilious and then typhus fever, more than a year since, and when beginning to recover, found he was unable to raise the left leg. Various remedies were resorted to including the spring and bandage, without the least effect. We commenced magnetising the leg about ten weeks since under the full power of the machine, which he bore every day without the least uneasiness, or any apparent effect during three weeks. He however soon began to raise his toes, and then his foot, and next his leg, and in about eight weeks from the time we first commenced magnetising him he began to walk without his cane.

A recent but bad case of paralysis, of the right arm, of a mechanic aged 28 years was cured with the action of the machine in about two weeks. We have also apparently cured in the same way, four cases of recent and partial paralysis of one side of the face, in one of which there was slight paralysis of the right arm and leg.

These cases of paralysis were not complicated with disease of the organs, and required no medicine. We have also had three or four cases of paralysis of the muscles about the ankles, approaching what is called club feet that required no medicine, but nearly all of the other cases we have had since we commenced magnetising with the machine have required medicine.

We have tried faithfully to cure chronic diseases of the organs with the machine alone, but have failed in every case of any importance, and were at last compelled to resort to the aid of medicines applicable to the cases, when the disease has given way, and such patients have recovered their healths much sooner than they have before when under the influence of medicine alone.

Besides many recover when in the last stage of the disease, who could not do so under the influence of medicine alone.

We have also observed the daily effects of the machine alone, on tubercular and mucous disease of the throat and eyes, and also its combined action with medicine in these cases where we could see, as well as hear, of the daily and weekly progress of the cure, so as to be able to form a more correct prognosis of the progress of the cure in the lungs or other organs, and the results have been so palpable as to leave no doubt of the great importance of combining the action of the machine, with other remedies in diseases of the brain, throat, heart, lungs, stomach, intestines, liver, kidneys and uterus, as well as diseases of the spine, muscles and joints of the limbs.

On a comparison of the effects of the machine in a great number and variety of cases, it appears that its extraordinary effects must be imputed mostly to its power of restoring lost motion, by its action upon the magnetic organization of the system.

In acute or inflammatory diseases the motion of the forces along the membranes or substance of an organ, are obstructed at some point, when the motions of the fluids in the blood vessels, are instantly impeded and accumulate around that point and distend it. The forces from the machine if soon applied, re-establish the motions of the forces in the membrane or substance, and consequently the motions of the accumulated fluids, and health is re-established in the most prompt manner.

In chronic diseases, the phenomena presented to us are very different. The motions of the forces along the minute lymphatic and absorbent vessels of the serous surfaces become obstructed, when the motions of the fluids in these vessels are impeded, and accumulate in them and in the lymphatic or secreting glands and distend them, or the follicles or excreting glands of the mucous surfaces are distended in the same manner.—The strength of the magnetic organization of the glandular system of these different surfaces of an organ, limb, or other structure is consequently increased; while that of the general organization of the system is decreased in the same proportion; for the strength of the body or of a limb, depends entirely upon the strength of their magnetic organization; the muscles being the mere pullies and ropes by which it moves the body, head, eyes, or limbs.

Besides, acute diseases announce their advent, as thunder does a storm, while chronic diseases advance stealthily and slowly, and rarely excite the attention of their victims—guardians, or their attendant professors of Astrology, until these tuberculations in one case, and vegetations in the other, has gained great advantages in age and strength, and it must consequently, and does require a much longer time to reduce and restore lost motion in these regular organizations, than that of mere accumulations of fluids, as in the case of acute diseases.

If, however, we commence magnetising in the first stage of chronic diseases, they are reduced very fast as in the cases of tubercular disease of the throat and lungs, and there is no reason why physicians should not do so as there is now no difficulty in distinguishing chronic diseases with facility and certainty in the first as well as the last stage.

Besides restoring lost motion the Savage Rotary Magnetic Machines (at least) opens the pores of the skin, and increases the

strength, and these effects of these instruments are very constant, and uniformly noticed by these patients.

In nearly all the cases we have magnetised including the case of fever, we have found it necessary to use medicine of some kind, or that indicated by the disease, and such patients have not only recovered much faster than they usually do under the old treatment but a great many entirely recover their health in cases in which the common alopathic and homœopathic remedies and a great variety of quack medicines have entirely failed.

The following is a postcript in a letter from Dr. L. D. Fleming, of Newark, N. J.

"July 4, 1844.

"I commenced treating Mr. S——, of New Vernon, for a tumor, or enlarged lymphatic gland, on the right side of the neck, of the size of a walnut, which had continued there 9 or 10 years. I Magnetised it with the Rotary Magnetic Machine 6 or 8 times in as many weeks, when it suppurated, and by the 1st of September the cure was complete. The effect of the instrument was the same upon a similar tumor on the lower part of the sternum of 30 years standing."

The Curability of Cerebral and Spinal Softenings.

Though numerous observations have fully demonstrated the possibility of this occurrence, Dr. Bennett considers that the anatomical marks or appearances, by means of which pathologists have endeavoured to demonstrate the fact, are very fallacious. The slight indurations occasionally met with in the nervous substance are spoken of by some authors as *cicatrices*—a term he thinks wholly inapplicable to them. Durand-Fardel alludes to the softening resembling chalky milk, as a proof of the passage of the lesion into a state of cure, and Dr. Sims speaks of the fawn-colored cavities as evincing the same fact. In one case of hemiplegia of long standing, in which the chalky milk-softening was found, the granules of the exudation-corpuscles were seen to be large, equal in size, and very transparent, in fact presenting a very unusual appearance; it is not improbable, therefore, that the granules were undergoing absorption; and consequently that the opinion of Durand-Fardel may be correct. On the other hand, the appearances described by Dr. Sims were met with in one case, but here, on the application of the microscope, numerous exudation-corpuscles and granules were met with, precisely similar to those seen in parts undoubtedly affected with acute inflammation. Intense rigidity of the opposite side of the body also existed, without any other lesion than this which could at all account for it. Dr. Bennett's opinion therefore is, that the fawn-colored spots described by Dr. Sims are no evidence of the cure of inflammatory softening.—*Medico-Chirurgical Review.*

OBSERVATIONS IN MIDWIFERY.

BY TYLER SMITH, M. D.

The Spinal Uterine Actions excited through the medium of the Stomach.

Uterine action may be excited in three different modes:—

I. By the direct action of the vis nervosa from the central organ, the spinal marrow, in the direction of the motor nerves distributed to the uterus.

II. By the immediate action of the uterus itself, in virtue of its own irritability, on the application of an appropriate stimulus.

III. By the reflex action of the vis nervosa, along incident nerves, proceeding to the central organ, and from thence reflected by motor nerves to the uterus.

It is to one variety of the latter kind of action which has not hitherto been noticed as such, that I am desirous of drawing attention, namely, the uterine action excited through the medium of the pneumogastric nerve in the stomach.

I have looked in vain in the therapeutic treatises of Drs. Paris, Christison, Pereira, and A. T. Thompson, for any reference to a motor action of the uterus, dependent on the application of a stimulus to the stomach. They make the common remark that emetics should not be given in the latter months of pregnancy, but the rationale of this contra-indication has been, that the straining of the abdominal muscles, and the concussion would prove injurious It has also been the general belief that stimulants excite contractions of the uterus, but this has been explained by their simple exciting effects on the system generally. Another fact observed, namely, that sickness or nausea favors the dilatation of the uterus, has been thought to depend on the general effects of nauseants, and not on a particular action on the uterus.

In fact, as far as I am aware, the idea of a spinal action *from* the stomach *to* the uterus, or even a sympathy acting in this direction, has completely eluded the writers on materia

medica. The converse of this, the action of the uterus on the stomach has been well understood, and the knowledge of reflex motor action supplies the true explanation. Practical accoucheurs, have, however, recorded numerous facts, showing that excitation of the gastric nerves is usually followed by uterine contraction, but none of them have attempted to account for such facts on the principles of reflex motor action.

Among the proverbial philosophy of the lying-in-room, nothing is more popular or more true than that "sick labors are always safe." I believe the explanation of this to be found in the circumstance that irritation of the stomach promotes the actions of the uterus, increasing both its contractions and the dilatation of its mouth. In the first place I proceed to consider briefly the evidence of the former kind of action.

Uterine Contractions excited through the Medium of the Stomach.

Dr. Rigby observes that "a sudden drink of cold fluid will generally excite contractions of the uterus, owing to the close sympathy which exists between it and the stomach."

Heat, as well as cold, is a powerful excitor of reflex motor action. It was the old practice, and is still the rule with nurses and others, to give patients warm drinks from time to time during labor, with a view to strengthen the pains.

Much discussion has been raised about the proper mode of exhibiting the ergot of rye, but it is singular that almost all accoucheurs consider the warm or cold infusion to be most efficacious. Is not this because either the warm or cold liquid tends to excite the uterus, and in this manner adds to the power of the ergot? Without doubting the specific action of the ergot, I may adduce, in favor of this opinion, a remark made by Mr. Headland, at a recent meeting of the London Medical Society, to the effect that he knew a gentleman who had kept a table of the relative effects of the ergot, and warm brandy and water, and had found them nearly equal in power. It is also well known that taking warm fluids into the stomach immediately excites afterpains when delivery has taken place.

Spontaneous sickness sometimes occurs in uterine hæmorrhage, and excites uterine contractions. With reference to this point. I quote the following interesting passage from Denman:—

When patients have suffered much from loss of blood, they will often have a sudden and violent fit of vomiting; and sometimes, under circumstances of such extreme debility, that I have shrunk with apprehension lest they should have been destroyed by a return or increase of the hæmorrhage, which I concluded would be an inevitable consequence of so violent an effort. But there is no reason for this apprehension; for although the vomiting may be considered as a proof of the injury which the constitution has suffered by the hæmorrhage, yet the action of vomiting contributes to its suppression, and to the immediate relief of the patient; perhaps by some revulsion, and certainly by exciting a more vigorous action of the remaining powers of the constitution, as is proved by the amendment of the pulse, and of all other appearances, immediately after vomiting, which I have therefore in some cases attempted by gentle means to promote."

Though the true *modus operandi* of vomiting is not given in this passage, it is clear from the context the writer was aware of its causing uterine contraction, for he remarks that "during faintness the advantage arising from contraction of the uterus is obtained; for this acts, or makes its efforts to act, in sleep, during faintness, and sometimes even after death." He adds that the nausea produced by medicines "has by no forced construction been considered an artificial imitation of faintness, and found serviceable, and medicines have been given expressly for this purpose" in cases of hæmorrhage.

In cases of abortion from excessive vomiting in the last months of pregnancy, I believe the accident is caused by the uterine contractions it excites, and not by the concussion of the system, or the spasmodic action of the abdominal and other muscles as generally supposed.

Dilatation of the Os Uteri through the Medium of the Stomach.

The belief in the power of nausea or vomiting to relax the uterus in common with other parts of the body, is of very ancient date. Dr. Ramsbotham, however, appears to have been the first to recognize a practice founded on this idea. This physician observes, "Under a state of preternatural rigidity of the os uteri, it not unfrequently happens that without any cause, and independent of any means being used, sudden relaxation takes place and from that time the labor progresses with much greater rapidity. This favorable alteration in the condition of the organ is generally accompanied by sickness, and I always hail an attack of vomiting under such circumstances, provided there be no symptoms of exhaustion present, as the harbinger of a fortunate change. I have stated above that emetics have been recommended for the purpose of facilitating the dilatation of the ute-

rine mouth, under the erroneous idea that the vomiting was the *cause* of the softening observed; but that artificial vomiting induced with this view had disappointed the expectation of its advocates. Antimony, nevertheless, taken in doses sufficient to keep up a feeling of nausea, has been exhibited in these cases with marked advantage." In another passage Dr. Ramsbotham repeats that nauseating doses of emetic tartar are of service in dilating the os uteri. I agree with his conclusion, but not with the mode in which it is arrived at. The action of the uterus on the stomach is recognized by him, but not the reciprocal action of the stomach on the uterus. Hence the contradiction involved in Dr. Ramsbotham's view of the subject. He considers the idea that vomiting causes dilatation to be erroneous, and yet admits that nausea is of marked benefit in dilating the os uteri. If nausea have the power of dilating the os uteri, then emetic substances must *per consequence* be a *cause* of uterine dilatation. The difficulty is solved if we recognize in the action of the two organs what Sir C. Mansfield Clark called a double sympathy, in other words, a double reflex action; in fact, if we believe that irritation of the uterus excites nausea and vomiting, and that these, in turn, excite the action of the uterus through the medium of the spinal marrow.

Other physicians besides Dr. Ramsbotham have testified to the effect of emetic tartar in dilating the os uteri. We may illustrate its action on this part by referring to the more extensive effects of nausea and vomiting on the system.

Emetics have been commonly looked on as relaxing all the soft tissues, and in this general relaxation the active dilatation of a reflex kind which they cause in different parts of the body has been completely merged. I believe that nausea dilates the os uteri under the influence of reflex action, but I further believe that a more extended view than this may be taken of the action of vomiting, and that we may look upon it as the means of dilating all the contractile orifices and canals of the body in cases where dilatation is required. In all irritations of mucous ducts and canals, either nausea or vomiting is excited, and accompanies the attempt to eject the cause of irritation; or, more properly, we may term it a provision for effecting their expulsion. In this sense the power of vomiting to dilate the sphincters, or contractile passages, assumes the utmost importance; its object being to remove all obstructions from the mucous surfaces. It dilates the œsophagus, the cardia, the lips,* the gall-ducts, the Eustachian tubes, the ureters, the urethra, the cervix vesicæ, the sphincter ani, probably also the bronchial tubes, and, as I believe the os uteri and vagina during labor. All this is not evident in ordinary vomiting, because some of the parts are closed by voluntary effort; but in excessive sickness, or where volition is suspended, as in the combination of vomiting with syncope, such an extended action of the spinal system occurs. In vomiting the cardia and œsophagus are always dilated, and I believe that in cases where there is no preternatural rigidity, the os uteri is dilated by vomiting in parturition. It is also certain that in severe vomiting, and in the vomiting of children, the fæces and urine are sometimes expelled. It is likewise known that obstructions of the Eustachian tubes, and biliary and renal calculi, are often dislodged during a fit of vomiting. This has been referred to concussion, but it would be more physiological to attribute it, in great measure, to a *positive dilatation* of these canals.

Diaphoresis is a very constant attendant on vomiting, and I know that Dr. Marshall Hall believes every perspiratory pore to be endowed with its sphincter, which is relaxed and contracted to different causes. According to his view the sweating of sickness, or from drinking warm fluids, would depend on the dilatation, by reflex action of the innumerable sphincters of the cutaneous surface; and the *cutis anserina* in the cold stage of ague, or on the application of cold, would be owing to their contraction.

But let it not be supposed that in pursuing this train of reasoning I would deny that simple relaxation is really caused by vomiting and nausea. We know that a strangulated hernial tumor is sometimes reduced during the continuance of nausea, which it was previously impossible to reduce; and we know that volition is impaired, and the power of the voluntary muscles enfeebled by nausea; but we are also aware that while the voluntary muscles are thus affected, those concerned in vomiting under the influence of spinal action, are powerfully contracted. On the other hand, while the soft tissues and the voluntary muscles are relaxed, the sphincters, and muscular canals are in a state of positive dilatation as long as vomiting or nausea continues.

We are bound to acknowledge the distinction between relaxation of the muscles under the influence of the *cerebrum* and the contraction of those under the control of the *spinal marrow* during vomiting. We must likewise recognize the difference between *passive relaxation* of the soft tissues generally, and the *positive dilatation* of the sphincters under spinal influence. Without admitting

* This is more particularly seen in the vomiting of infants, in which the opening of the mouth in sickness is as clearly a reflex act as its closure in sucking.

such distinctions it is difficult to understand the effects of gastric irritation on the uterus in prodncing at the same time *contraction* and *dilatation*.

There is another subject related to the present which I propose to consider on a future occasion. I mean the *vascular* and *sensory* connection between the stomach and the uterus, particularly in the direction *from* the stomach *to* the uterus. This will embrace the effects of nauseants and other gastric excitants in increasing and producing the catamenia; the action of emetics in puerperal fever; the power of dyspepsia as a cause of dysmenorrhœa, amenorrhœa, chlorosis, sterility, abortion, and other important points of a practical nature.

Bolton street, June 7, 1844.

The subject of the above article will be better understood by a reference to the diagram of the magnetic organization of the human system in the last or July number of this Journal, as traced by the Rotary Magnetic Machine, in which it will be seen a magnetic axis exists between the cerebellum, the organ of motion, and the uterus, and the stomach and uterus, or a direct magnetic connection between them, without any regard to the spinal nerves. There is also a direct connection between antagonist muscles, by means of magnetic axes, and all these axes are so connected as to concentrate their power upon the uterus. There is no other way by which such a tremendous power, as is seen in many cases, can be made to bear upon the uterus.

Case of Complicated Ovarian Disease.

By Charles Hogg, Esq., M. R. C. S., Lon.

Jane Rickets, aged 55, Brick Lane, Old-street-road, consulted me on the 8th of March, 1841. She then complained of obtuse pain over the whole right hypochondriac region, extending to the scapula of the same side; pulse feeble; tongue coated with a brownish fur; appetite bad; acidity, with flatulence and constipation; difficulty of breathing on exertion, but no fixed pain in the chest, except in the inter scapular region already alluded to; complexion sallow, and the general health much inpaired; considerable morbid sensibility. On examination the liver felt hard and considerably enlarged, painful on pressure. In the abdominal region there was considerable enlargement, and fluctuation was distinctly perceptible. The urine was scanty, pale, but sometimes turbid, and depositing a sediment; a very trifling quantity of albumen was discoverable by the ordinary tests during the whole course of the disease. Her general health, for several years back, had been indifferent; she was considered temperate in her habits. Large doses of extract of taraxacum, with sulphate of magnesia and tincture of rhubarb, occasionally three grains of blue-pill, with five of compound extract of colocynth, apparently restored the liver to a healthy state. She also took a vapour-bath twice a week. The digestive organs regained their former vigour; with this her usual strength; both the skin and kidneys performed their functions healthily.

Iodine, in its various preparations, was employed, also diuretics, hydragogue cathartics &c; but notwithstanding every effort the water accumulated, and I was compelled to have recourse to tapping on the 21st of April of the same year On proceeding to the operation I found to my surprise, as well as that of my friend, Mr. Sparke, who saw the case two or three times, a hernia about the size of a full-grown child's head, protruding an inch below the umbilicus. It was easily reducible after bandaging and twenty-five quarts of fluid were drawn of. The consistence of this fluid was about that of olive oil, horribly offensive, and of a greenish yellow color.

I now discovered the existence of what the general swelling had prevented me from ascertaining earlier, viz; a lobulated tumour extending beyond the pelvic into the abdominal region; measuring, as nearly as I could estimate, ten inches in length by five or six in breadth. It was extremely tender on pressure, and even on touch, although no pain was complained of on repose.

Moderate antiphlogistic treatment was had recourse to, and the vapor bath continued. The recovery was rapid, and as she became apparently in excellent health and spirits, I had begun to hope that permanent good had been done. On the 2nd of August, 1841, she again requested my attendance; the abdominal enlargement was as great as before. Twenty-five quarts were again removed, the fluid was less offensive in smell, consistence, and colour than before. The former treatment was resumed, with the same effect, that is, the general health alone was benefitted; the fluid now secreted more rapidly, which obliged me to remove it every fourth or fifth week, until the number of operations amounted to twenty nine, thus making altogether *one hundred and seventy gallons* of

fluid which had been abstracted. I have unfortunately mislaid my memorandum of the specific gravity. About the middle of January, 1844, unfavourable symptoms began to appear, which were ushered in by alternate rigors and hot fits; face flushed; pulse unusually feeble, at times scarcely perceptible; she complained now of violent pain in the right hip, which did not yield to either general or local applications, vomiting, cold perspirations, and at last she died on the 8th of the present month.

Examination, Twenty-six Hours after Death

The body was by no means emaciated; after removing about ten quarts of fluid, the abdomen was laid open. Instead of the usual appearance, the omentum presented small pieces of greenish fatty matter. No traces of inflammation to any extent were observable; the parietal peritoneum was much thickened and of a cartilaginous consistence. The liver was greatly enlarged, and of a dark-slate colour. On an incision being made, there gushed out a dark grumo-purulent fluid, having a most offensive smell. The organ seemed to have become one extensive abscess, but little of its parenchyma remaining. The lungs, heart, kidneys, pancreas, spleen, did not exhibit any appreciable marks of disease. On first examination the ovaries, uterus, &c., appeared one mass of disease, connected by thin membranous bands to the surrounding parts. On carefully separating the tumor from its adhesions, the uterus and Fallopian tubes were found free from disease; there was more vascularity found than in the natural and healthy state. The patient was supposed to have some disease in the uterus twelve months before I saw her, and was treated for some time with reference to such disease. The tumor itself appeared to be composed of cells; their exact structure could not well be ascertained, as they seemed as if crushed into each other. The diseased ovarian mass was very vascular, several of the arteries were of considerable calibre; it appeared to be about the fourth of the size which it presented when noticed after the first tapping.

I have occupied too much space already to make many reflections on the case. I was most surprised at the state of the liver; after the first three months I had no reason to suppose there was much disease existing in that organ from the nature of the symptoms. The marked improvement in the general health and strength led me to suppose that the hepatic disease had been overcome.

Finsbury-place South, March 19, 1844.

ASTONISHING EFFECT OF ELECTRICITY IN CURING HYSTERICAL LOCKED JAW.— The following account of the efficacy of this extraordinary remedy, we should do wrong in withholding, though it should never again prove effective. We have the account from some friends who chanced to be present, and saw the patient eating the first meal she had taken in five days, a few minutes after the spasm had ceased. She had been previously nourished by drawing milk through the apertures of the closed teeth, through which the edge of a knife could be passed with the greatest difficulty. The young woman was thus affected in consequence of exposure to cold and fatigue, and was completely recovered by the Electro Galvanic aparatus applied to both angles of the jaw. The machine had not made forty revolutions, when the jaw opened to its full and natural width. We learn that it has been successfully applied for many nervous diseases of the eye; also in a case of poisoning by laudanum, where two entire ounces had been swallowed. In this case the patient was revived by the machine, and collapsed alternately, during five hours, the intervals becoming shorter till speech was re-established. Curvature of the spine has also yielded to its power. Indeed its proper application is as varied as diseases of general debility and irregular nervous action. It was applied by Dr. E. H. Dixon, of 5 Mercer street.

N. Y. JOURNAL OF COMMERCE, *September* 1, 1844.

NOTE—We saw this case soon after the jaws were opened and she had eaten her first meal.—Editor.

THE "TRAITEMENT ARABIQUE" IN OBSTINATE CASES OF SKIN DISEASES.

By G. M. Dangerfield, M. D., Newport.

The very remarkable success I observed to follow the under-mentioned novel treatment in some of the worst and most obstinate cases of chronic cutaneous affections in the south of France, induces me to make it known to the profession through the medium of THE LANCET. Most medical men in extensive practice can testify as to the obstinacy of certain cutaneous affections, and will appreciate any mode of treatment calculated to aid them in their endeavours to effect a cure when all *ordinary* means have failed; such, from the few cases I have seen, I am induced to hope will be the result of the following treatment if perseveringly carried out. I have hitherto had no opportunity of proving its efficacy in this country, but would urge its adoption by the profession at large, and particularly by those having the advantage of

hospital discipline to carry it out, believing it to be our duty to investigate the merits of any treatment likely to relieve those obstinate cases of cutaneous disease which render the patient's life a misery to him, and often defy the utmost exertions of our art.

These means consist in a treatment known in France by the name of *Traitement Arabique*,—composed of pills, an electuary, a decoction, and a particular diet (*diete seche.*) The pills are the following:—Quicksilver, bichloride of mercury, of each half a drachm; senna, pellatory of Spain, agaric, of each one drachm.

The bichloride and quicksilver are first rubbed together, the vegetable substances are then reduced to a very fine powder, and all mixed with the mercury, until the globules have disappeared; then made into a mass with honey, and divided into *four* or *six* grain pills. The electuary consists of—Sarsaparilla root, six ounces; China root (squine,) three ounces; dried nut shells, (ecoree de noisettes torrifiees,) one ounce; cloves, two drachms. Reduce all to a fine powder, and make an electuary with honey. The decoction:—Sarsaparilla root, two ounces; water, three pints. Boil to a quart, and strain.

The *diet*, which particularly appears to influence the treatment, consists in the patient confining himself for twenty-five, thirty, or forty days (seldom more) rigorously to the following regimen: avoiding all other substances, he shall eat only *cakes*, biscuits, and dried fruits, such as nuts, walnuts, figs, almonds, &c. To drink *no fluid of any description*, except decoction of sarsaparilla

This severe regimen, however, cannot always be enforced in very debilitated subjects; hence in these extreme cases a broiled mutton-chop may be allowed once a day, but experience has shown that this has been rarely necessary. The medicines are administered in the following manner:—

A *pill* is given every night and morning, followed by a wineglassful of the decoction; an hour after the pill a drachm of the electuary, gradually increased to six drachms, is to be taken, the decoction being drunk at intervals during the day.

The mode of treatment must vary, of course, according to the age and temperament of the patient, and the intensity and duration of the disease. The practitioner must exercise his own judgment as to augmenting or diminishing the dose of the pills, when to *suspend* or recommence them; in a word, it is for him to modify but not to diverge more than possible from the rules laid down until the disease is removed.

There is one remark I would make relative to the pills, as the cause of their requiring the constant attention of the practitioner depends upon their producing frequently, sooner or later, salivation. It has been remarked that this effect commonly depends upon their being recently prepared, and that when they have been made *two* or *three* months, such accidents rarely take place. This depends doubtless upon the constant contact of the bichloride with the quicksilver and other ingredients, it becomes modified in its chemical conditon, and loses more or less its corrosive qualities, and hence is more adapted for its present application.

My sole object in bringing this treatment before the profession is a desire to hear of its merits being put to the test of experience. In the few cases in which I have seen it employed (cases of maculæ syphiliticæ, syphilitical psoriasis, idiopathic chronic eczema, psoriasis) it was singularly successful, after the ordinary remedies had failed, and I may remark that it has now stood the test of a considerable number of cases of the most obstinate and inveterate character in the hospitals of Montpellier and Marseilles. The most singular part of it is, that in some cases of syphilitic psoriasis, where mercury pushed to salivation, decoction of the woods, mercurial bath, nitric acid lotions, &c., had been administered without permanent benefit, the employment of the *traitement Arabique* was successful, and that in the short space of four or five weeks. These are points for reflection, and it will be for experience to determine how far the withdrawal of all fluids from the diet, with the exception of decoction of sarsaparilla, can influence the action of the preparations of mercury, for these cases had a syphilitic origin, and mercury had been given previously a fair trial. Again, what is the *modus operandi* in those cases where no syphilitic taint exists? and it has been found as serviceable in those as in the former. The humoral pathologist may account for it by arguing that the action of the skin will be modified by the quantity of the circulating fluid being diminished, on the principle that a supply of fluid to the blood is necessary to exudation, &c.; and "those who have dined off dry food or laboured in the tropics will, perhaps, admit of both force and truth in the remark." To diminish the blood and alter its constituents are decidedly depletory acts, and thus local inflammatory action may be removed; and the diaphoretic action of the sarsaparilla, &c., may equalise the humoral distribution, and thus tend to restore a healthy action of all the functions. Mercury, it is true, excites certain secretions, but modifying morbid ones restores the balance, and both subsiding together, health and natural actions are restored. Without attempt-

ing, however, to explain the operation, leaving that to an abler pen, I place the matter in the hands of the profession, trusting that some one may have the means ere long of confirming or removing the favourable opinion I have formed of its merits.

MEMORY:

Its Influence and Importance as a source of action in animals.

By J. Johnson Kelso, M. D., Lisburn.

Besides the influence of memory as a source of action in animals, the consideration of which is here more immediately to engage us, there are very obviously and distinctly these other influences in addition :—

1. Instinct;
2. Intellectual action, or ratiocination;
3. Mental feeling, or emotion.

Of these latter sources, or principles of action, instinct only, as we shall find, is entirely independent of an exercise of memory in reference to prior sensations or impressions. Therefore, when in addition to the *direct* and unequivocal influence of memory, whose extensive *diffusion* through the animal kingdom we *shall, it* is hoped, be able satisfactorily to *establish*, we take into account its *indirect* influence, as manifested through processes of intellectual action, or a species of reasoning and mental feeling or emotion, the vast importance of this faculty, as a stimulant and guide of action in many different genera and tribes of animals, at once discloses itself, challenging very forcibly detailed inquiry and exposition. It is certainly only consistent with ordinary correctness to refer phenomena to their proper causes, and this equality in the psychical and in the physical world.—But certain it is that almost all recent wrters on instinct, of any degree of celebrity, have referred many phenomena to this peculiar influence, which more or less evidently pertain to an operation of memory, or the intellectuality of the animals; this, undoubtedly, is an error which imperatively calls for correction, at least as far as may be. Hence, in order to place the subject in a proper light, to distinguish those actions which are the result of memory from those that belong to instinct,—in a word, to eliminate, as far as practicable, truth from error. it will be absolutely necessary to go somewhat largely into details;—to review not only the phenomena of memory in animals, and those active mental manifestations connected with their nature, involving, as an essential condition, an exercise of this faculty, but also the principle of instinct itself, and its immediate consequences or effects.—With a view to this important object, the following communications are placed at the option of The Lancet; and, although the ground which we shall have to traverse is, as will be apparent, rather extensive, and rich besides in topics of no ordinary interest, still I hope not to trespass too largely on the valuable space of that journal.

Memory, as is perfectly clear, pertains not exclusively to the mental or intellectual constitution of man; it exhibits itself, also, in some degree, in many, very many, of the lower animals, influencing, or guiding and controlling their actions to an extent little short, probably, of that of the power of instinct itself.

With reference to all the higher species of animals, the indications of the influence of memory are numerous, indeed, and most unequivocal; and it may be stated here, generally, that in them, equally as in ourselves, it constitutes the main-spring of all those actions that have conventionally been denominated *intelligential*. But, in regard to the more humble and essentially instinctive orders and tribes of creature life, the existence and active play of this faculty, as evidenced in *certain* of their actions, has, tacitly at least, been hitherto altogether denied, though as I am disposed to think, quite erroneously. In a word, as a source or principle of action both in vertebrated and invertebrated animals the influence of memory, directly or indirectly, through processes of comparison and combination, has been hitherto either wholly overlooked, or only casually and incidentally adverted to in explanation; and by no one, so far as I am acquainted, has the question received that degree of attention which its importance most undoubtedly demands.

The different sources, or principles of action in animals, we have just now indicated, and it will be seen that they naturally divide themselves into *instinctive* and *non-instinctive* Of the latter, it has been equally observed, that memory is either the sole spring or agent, or the chief and indispensable actuating power, or rather element of those composite principles and feelings which constitute the source of numberless and infinitely varied actions, habitual or incidental, in many different genera and tribes of the lower orders of creation.

It may be as well, then, briefly to advert, in the commencement, to those actions which are the result, not of memory *per se*, but of mental or intellectual processes *necessarily involving* an exercise of this faculty in some degree, and they may not inappropriately be viewed here under the general head of

ANIMAL INTELLIGENCE.

That there are many different species of the lower orders which habitually will and perform many actions that are admirably suited to the attainment of certain ends,—and these often remote and obscure, and known to us only by repeated observation, or experience and reflection, and reasoning on the inductive principle,—is a proposition the correctness of which there are few, now-a-days, who would be disposed seriously to call in question. And as actions of this kind can never, with any pretensions to common accuracy, be considered as at all pertaining to the power either of instinct, or of memory *per se*, —far less, certainly, to mental feeling or emotion,—they have, very correctly, been referred to processes of intellectual action or rationality; implying equally an exercise of these essential powers or elements of reason —*comparison* and *combination*, and memory or recollection of previously experienced sensations, or acquired perceptions.

It was, as is well known, the opinion of both Descartes and Buffon, that animals are nothing more than automata—mere pieces of artificial mechanism, insensible equally to pleasure and to pain, and incapable of internal feelings or emotions, as well, of course, as processes of ratiocination, implying an exercise of several distinct mental faculties—akin to those of which we are susceptible ourselves. If this were the case, the objects of creation would for ever remain a dark and unfathomable mystery. But the very reverse happens to be the fact. I shall, I feel persuaded, be able satisfactorily to demonstrate that the vast majority of animals are suceptible, in some degree, not only of the common feeling of enjoyment, but of several distinct mental feelings, or emotions, analogous to those which agreeably or disagreeably influence ourselves. I cannot, too, but think myself capable of establishing, quite clearly, the fact of many animals of different orders, genera and species, being influenced and guided in their actions to an extent not generally known or conceded through an operation of memory in reference to prior sensations or impressions, felt and remembered. Further, I shall be able, I feel convinced, satisfactorily to show that many animals of all the higher orders and classes are possessed, in addition, generally, to great natural sagacity, of limited powers of reasoning from premises to a conclusion. It is the consideration and illustration of the latter highly interesting and important question to which, with permission, we now propose to turn; and, commencing with insects, the ants may be first noticed as furnishing us with some unequivocal indications of the influence not only of strong natural sagacity, but apparently of a degree of intelligence and memory.

I may here drop the subject for the present and, with permission, will resume it in an early publication.

Lisburn, April 29, 1844.

Physometra or Tympanitis of the Uterus.

MM. Stoltz and Naegele. two of the most celebrated practitioners in the diseases of females of the present day, at the medical congress held at Strasbourg, 1842, expressed their belief that tympanitis of the uterus was impossible, and that the alleged cases of its occurrence were apocryphal. M. Lisfranc has seen several cases in which physometra was caused by the decomposition of extraneous matter included in the uterus. In one of these cases the womb extended three inches above the pubes, and occupied nearly the whole transverse diameter of the hypogastrium; on examining the uterus with the finger in the vagina, the other being applied on the hypogastrium, he felt a tumour of extraordinary elasticity; during the manipulation the neck of the uterus suddenly dilated, a volume of gas escaped with considerable noise, and the abdomen resumed its natural size; the uterus, however, remained slightly dilated, and at short intervals audibly expelled portions of air. After the lapse of a few days a fleshy mole was expelled. M. Lisfranc argues, that as the mucous membrane of the intestinal canal indisputably often secretes air, it is unreasonable to deny that the lining membrane of the uterus may also do the same; and in answer to the objection, that any gas generated in the womb when its cervix is not mechanically obstructed must escape, he observes, that every surgeon who has had much experience in examining the uterus must have often observed the remarkable facility which the inferior orifice of the uterus contracts."

The reviewer remarks that M. Lisfranc does not appear to have seen any case in which the tympanitis was purely *dynamic*, that is independent of the presence of an extraneous substance in the womb. He refers to a case, however, which is perfectly satisfactory on this point. In this instance, during three years, gas had been freely generated, though there had been no evidence of the presence of any other foreign body in the womb. The abdomen became at certain intervals distended and returned, on the expulsion of the gas, to its former size.—*British and Foreign Review.*

Extirpation of the Uterus by Ligature.

Two cases of this formidable operation have been recently recorded, one by Dr. Esselman, in an American journal, quoted in the *Medical Gazette;* the other by Dr. Toogood, in the *Provincial Journal.* The first was the case of a married lady who had laboured under disease of the womb from the date of her first confinement, twelve years previously. It was finally determined to remove a polypus like tumour which was found occupying the vagina. A ligature was applied and tightened every morning, for eighteen days, at which time the tumour came away, and, to the surprise of her physician, instead of a polypus, proved to be the uterus itself, much reduced in size by ulceration and strangulation.

The patient, thus accidentally deprived of her womb, did well; at each monthly period, however, she suffered from cerebral congestion.

The case related by Dr. Toogood was that of a single lady who had suffered for many years from what was called a prolapsus of the uterus. It was ultimately found impossible to give the patient relief by the usual remedies, and "a careful examination having shown that the neck of this large mass, as it entered the vagina, rather diminished in size," it was resolved to remove the whole.

"The mass removed was about two pounds weight, the shape of the uterus, but its structure much altered in character, the cavity being quite obliterated, and the os uteri become almost cartilaginous." The patient recovered, and "on examination no uterus could be discovered," nevertheless, the history of the case and the description of the mass removed, excites some suspicion as to its nature.

We should hesitate before recieving "it as an additional example of the safety and propriety of removing the uterus under certain circumstances."

REMEDIES FOR NEURALGIA.

By R. H. Allnatt, M.D., M.A., F.S.A., &c.

In reference to a notice of mine, which appeared some time since in THE LANCET, of certain "Remedies for Neuralgia," Mr. Chippendale has courteously mentioned two cases, which he states to have been successfully treated by the application of the infusion of tobacco; and, he adds, "it appears to me that an extract might be prepared from tobacco, which, being mixed with simple cerate, would be a convenient form for frictions."

In the category of antagonist "unsuccessful remedies," recorded by me in my work on "Tic Douloureux," I find a mention of this extract; and I also find that tobacco, in all its forms and modes of preparation,—its cataplasms of dried leaves, tincture, infusion, extract,—have all been resorted to, at different periods, by the despairing practitioner.

The potassio-tartrate of antimony, also mentioned by Mr. Chippendale, has been often tried, and almost as frequently rejected as useless. Dr. Scott was the first, I believe, to propound this remedy,—upon what principle it would be difficult to conjecture; and Magri, following the wake of an empirical practice, applied compresses moistened with a strong solution of tartarised antimony, until redness, approaching to pustulation, had been produced. These two agents, Mr. Chippendale has cited as having been simultaneously employed; the example, I can assure him, is by no means an isolated one; and I cannot but congratulate him for repudiating the doctrines which would enforce the adoption of such heterogeneous, conflicting elements in combination.

In sober truth, *tobacco* was designed for a far less noble purpose than the cure of neuralgia, and Mr. Chippendale will, I am sure, pardon me for stating, that I rather doubt whether or not the cases to which he has alluded were, *ipso facto*, anything more than neuralgia *notha*, or a spurious kind of *rheumatic* tic. I can hardly persuade myself that the peripheral pangs of true ganglionic irritation can be appeased by any measure that falls short of at once striking at the root and origin of the evil.

Having now encountered a vast variety of these maladies in all their phases, in their various complications, and in all stages of their manifestations, from the functional form of a few day's growth, to the hideous organic variety of thirty years; and having, as far as these opportunities have enabled me, searched diligently into matters connected with their history, past and present, and traced the rise and progress of the accompanying pathognomonic symptoms, I have little hesitation in expressing a decided conviction of the truth of the following propositions:—

1. That peripheral neuralgia never occurs as a primary idiopathic affection, but that (independent of organic disease,) its invariable source may be ascribed to irritation of the ganglionic centres.

2. That this condition is transmitted by direct communication, irrespective of the laws of "sympathy."

3. That (functional) tic is an affection peculiarly amenable to *constitutional* treatment.

4. That local applications, whether sedative or stimulating, anodyne or *destructive*, are more frequently detrimental than sanative in their operation.

Dr. Copland, in the last number of his "Dictionary of Practica Medicine," a work which has been applauded by the unanimous voice of the whole profession, states that "Sir Charles Bell and Dr. Allnatt have praised the decided exhibition of croton oil as a *purgative*," in cases of neuralgia. A few words will suffice to explain upon what principle I have recommended the adoption of this agent.

I do not, in the majority of instances, employ croton oil uncombined, or with a view to obtain its purgative effects. In fact, so minute and subdivided are the doses requisite to ensure its remedial action, as to preclude altogether the idea that its salutary operation resides in the power it possesses of producing catharsis. Croton oil is a *specific* purgative; that is, its properties are equally manifested whether externally applied on an absorbing surface laid over the abdomen in the form of a cataplasm, or exhibited internally. The active principle—the tigline—is absorbed, and is carried by the circulating mass of the blood into direct contact with the disordered tissues. Its *modus operandi* is still a mystery.

ABSURDITIES OF THE FACULTY.

We have before stated that one of the chief objects in establishing this Journal was to expose and correct the errors in medical science, which a long course of prescription seems to have sanctioned as if incontrovertible.

These errors pervade all the branches of medical science, while the number in each, and the extent to which they are carried, are almost incredible. One of the most common subjects of misrepresentation, is as to the nature of the simplest functions in animal physiology. We have a delectable specimen of the ignorance and folly, which characterize a class of men, profesing to be learned, to base every thing upon unerring facts, and to reason in strict conformity with the principles of inductive philosophy, in the little article of which this notice is introductory. Though taken from one of the most respectable Journals of Medicine, a greater absurdity was never uttered in the name of science.

To call the effete matters which are habitually thrown off from the emunctories of the human system, animal secretions, is a perversion of language, which the common sense of every reflecting man, would prevent his using. Every one knows that *secretion* and *excretion* are very different terms, and imply very different duties.

The merest tyro in physiology, is aware that the former is a result of the function of the lymphatics, that through it the fabulum of life is supplied, and that its products are invariably transmitted to the heart, and thence into the general circulations. The excretions are, so to speak, the debris of the general man; they are the portions of the system, which, having fulfilled their duties are thrown off as excrementitious. The distinction between these two functions, is so simple and obvious that every pretender to scientific knowledge ought to recognize it at a glance; and yet we see medical writers, and medical teachers, as the Professors in our Colleges, in the constant practice of confounding them as if they were one and the same.

The error in this instance, is not one of very great importance; and we only allude to it as illustrative of the absurdities, which those accustomed to copy their opinions from authority are prone to fall into. The doctrine of the equal powers of repulsion and attraction, in animal, as in all other matter, which we have taught for many years, would if generally known, prevent the commission of such errors.

ON MUCOUS MEMBRANES AND THEIR SECRETION

Mucous is found, on microscopic examination, to be composed of a viscid stringy fluid, and of a solid matter, that consists chiefly of shreds of the epithelium. It is sometimes acid, and at other times alkaline, Donne distinguishes three kinds of mucous membranes:—1. Those that are analogous to the skin, which furnish a frothy acid secretion; for example, the lining of the vagina. These acid mucous membranes, which our author calls *false*, never exhibit any vibratory cilia on their surface. 2. *True* mucous membranes—as that of the bronchi—which secrete a fluid that possesses alkaline properties, is viscid, and contains mucous globules: these are supplied with vibratory cilia. 3. Intermediate mucous membranes, which secrete a mixed kind of mucous: of this kind are those which exist around the orifices of the mouth, nose, anus. &c.—*Med. Chir. Review.*