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[No. 12.]

ON POISONING BY OPIUM.

Read before the Toronto Medico-Chirurgical Society,
2d December, 1846.

By Dr. GEORGE R. GRASSETT, M.T.M.C.S.

MR. CHAIRMAN: As no intention of presenting a paper this evening has been expressed by any of the members now present, I propose, with your permission, to submit for the consideration of the society an instance of poisoning, which has recently fallen under my observation. I am quite aware that cases of this nature not unfrequently occur, but this circumstance, I hope, will not be deemed of sufficient weight to shut out from the open field of inquiry a further investigation into the character of their phenomena, and the method of treatment which experience may point out as being the most desirable to pursue. It would, I am sure, but prove the expression of your own sentiments, were I to affirm, that, in ranging through that field, some new feature is continually presenting itself; some peculiarity, which had hitherto escaped the closest observation; some modification, which the slightest change of relative position (like that of the revolving kaleidoscope), can not fail to produce in the ever varying phases of medical science. Of this a pleasing evidence was afforded on the occasion of our last regular meeting, when some interesting remarks were read, tending to show, that even to the concentrated wisdom displayed in the production of our pharmacopeia, additions of a highly useful character may unquestionably be made; and although the same result is not now to be anticipated, and it is out of my power to lead my professional brethren this evening through any other than the ordinary track, yet the mere discussion of a subject of this nature, must carry with it a greater or less degree of interest, and must have a tendency to elicit something which may prove of service in the future treatment of similar cases.

Two instances of poisoning by opium have occurred in my practice, within the last few months. The first had its origin in pecuniary losses, and presented no features of an interesting nature, except that on recovery extreme vigilance was present, and a long period elapsed before sleep could be procured. The second took place within the last few days, the attempt at

suicide being induced by the previous commission of a crime, the painful details of which it would be unnecessary to lay before you.

The patient was a young man, eight and twenty or thirty years of age, naturally very intelligent, but inclined to habits of dissipation, and occasionally indulging in the free use of ardent spirits. His guilt having been discovered and exposed, he resolved upon self-destruction, and for this purpose he procured from a druggist one ounce, by measurement, of tincture of opium. On retiring to his bed room, at a late hour, he swallowed the contents of the phial, but shortly afterwards, being seized with remorse, he gave an alarm, by knocking repeatedly against the partition wall. Pointing, with some excitement of manner, to the hearth on which the phial had been thrown, he observed, "I have done the deed." It was soon discovered that he had poisoned himself, but from ill-judged and unfounded apprehension, a messenger was despatched in the first instance to the police station, a considerable distance from the spot. Two of the constables on duty promptly arrived, and a second message was then sent, requesting my attendance. I reached the house shortly after midnight, and, as near as could be ascertained, about three quarters of an hour after the opium had been taken. The phial had been broken by the fall, and it was evident that a small quantity (probably half a drachm) of the fluid had remained, as traces of it could be distinctly seen on the hearth. He was now in a state of profound coma, or stupor; the pulse quick and small; the respiration somewhat slower than usual, but scarcely to be deemed stertorous; the eye-lids closed, and the pupils rigidly and permanently contracted. The face was palid; lips somewhat of a blueish tinge; and the skin generally perspirable. The odour from the drug was less perceptible than might have been expected. The stomach must have been empty, or nearly so, at the time the poison was swallowed, and consequently rapid effect took place. With reference to this point, Dr. David Skae observes,* that in a case of poisoning by opium, which occurred in Edinburgh Castle, the particulars of which were furnished him by Dr. Cowper, of the 29th regiment; "the

* Cormack's Journal.

individual was found *totally insensible*, fifteen minutes after the poison had been taken." Such was the state of my patient on my arrival, and no attempt at treatment of any sort had been resorted to by those whom the report of the event had attracted to the spot. I had brought a drachm of sulphate of zinc with me, and directing that he should be immediately raised and held in the upright posture by two men, I contrived to give him half of it in a little tepid water, which was a matter of no small difficulty, from the almost totally suspended power of deglutition. He was then dragged round the room, more like a corpse than a living being, and fortunately abundance of help was at hand for this purpose, as it required almost Herculean strength to support his weight, his form being very muscular, and his height upwards of six feet. Fifteen or twenty minutes had elapsed, and no effect was produced by the zinc; the other half was therefore given, the stomach pump being rendered useless from the accidental loss at the moment of a very important part of the tube. I was, therefore, obliged to proceed with such means as were at hand, but as no effort at vomiting was yet manifested, I began to think that it would be almost impossible to supply the want of an apparatus so essential in cases of this description. Draughts of warm water were poured down from time to time; constant motion kept up in the manner already described; and at length I had the gratification of seeing a copious ejection from the stomach of a dark coloured fluid. The effect of this was very marked, for consciousness now began, in some measure, to return, and warm water could be swallowed without much difficulty. After each act of vomiting, sensibility seemed to increase; articulation was partially restored; and he was now apparently aware that he was under medical treatment; for, opening his eyes (which he had great difficulty in doing), he implored me to allow him to lie down, even if only for a few minutes. The desire for sleep was most pressing, and resistance to it was evidently extremely painful to him. He continued occasionally to entreat for permission to rest, but as yet, this would have been manifestly improper; and the absolute necessity, therefore, of continuing in motion having been impressed upon him, his supporters renewed their trying office with unwearied assiduity. Whether occasioned by the narcotic, or whether from the acrid effect of the zinc, I was unable to determine, but at this time thirst was much complained of, and he begged that cold water might be substituted for the strong coffee which had latterly been very plentifully supplied. To this request I readily yielded, and I fear that I should be thought desirous of imposing upon your credulity, were I to state the aggregate quantity of his potations within the

short space of one hour. From this period he rapidly improved, walking with but little support, and at length, about day light, he was permitted to lie down, and indulge the now much diminished desire for repose. At seven o'clock in the morning, he was in a tranquil slumber, from which he was easily aroused, and in reply to my inquiry, expressed himself free from uneasiness, except perhaps a slight degree of headache. A light breakfast was recommended, with a small quantity of brandy and water, to be taken immediately afterwards, and some gently aperient medicine in the course of the morning. No interruption to convalescence subsequently occurred.

I will only detain you with one or two observations in conclusion.

1, However alike the symptoms of poisoning by opium may generally be, there are undoubtedly cases where dissimilarity is to be found. In my own practice I have remarked this, and I doubt not that you have noticed the same fact also. In the experience of the writer to whom I have referred, diarrhæa and colic, accompanied with severe pain, were present in some, while diuresis, with convulsion and delirium, occurred in others. The pulse, breathing, and appearance likewise vary materially. And,

2, As in the symptoms, so also in the progress of these cases, does a difference exist, for in one which he relates in the *Edinburgh Medical and Surgical Journal*; "about half an ounce of laudanum was taken, and considerably more than an hour afterwards (during which time the patient slept), he arose spontaneously from bed and procured a drink for himself: about ten hours afterwards he died, with all the symptoms of narcotic poisoning." In another case, "where the dose was *small*, but also *fatal*, the individual answered some questions readily and cheerfully, two or three hours after swallowing the poison." A great difference, too, is observed in the quantity which produces a fatal effect. Four grains are stated by Dr. Paris to have occasioned death in an adult, and a case is related by Dr. Christison, in which the same event occurred from the administration of four grains and a half of opium, with nine of camphor.

3, With respect to the treatment which was pursued, if it should be regarded as an omission that acidulated drinks were not freely administered, the best explanation which can be offered is grounded on the objection entertained to the only one which was believed to be at hand, namely, vinegar and water; and, however unfounded such an objection may be considered, I could not divest myself of the idea, that it is in itself possessed of qualities which are calculated—if not to promote absorption—to add, at least in some degree, to the nar-

cotic effects of the drug. In any event, my professional brethren have no reason to yield to discouragement should they hereafter be required to treat a similar case, unaccompanied with an apparatus, which, however confessedly valuable and important, cannot be said to be *absolutely indispensable*. And although this remark is not by any means intended as an apology for a deliberate rejection of its aid, yet the case now brought under notice affords sufficient proof that, in its unavoidable absence, a perseverance in the most simple means may, under the Divine blessing, be attended with complete success.

Toronto, C. W., December 2, 1846.

CASE OF ERYSIPELAS, WITH REMARKS.

By W. FRASER, M. D.

Lecturer on Medical Jurisprudence, McGill College.

The following case of Erysipelas of the throat, face, and scalp, will be found, I think, interesting, in regard to the seat, and severity of the local symptoms by which the patient's life was placed in the most imminent danger. Different plans of both general and local treatment having been recommended by writers of authority for this disease, and their respective merits being by no means settled, it is the duty, therefore, of every member of the profession to contribute, fairly and impartially, whatever cases may come under his observation, bearing on any such *verata questio*.

On the 23rd January last, at 6 p. m., was called to D. B—, aged 36; robust, temperate, and health in general good; by occupation a builder. States that at ten o'clock this morning, on entering a neighbour's office, he felt the room oppressively warm, and on opening the door to cool it, he became chilly. A few hours afterwards was calling at a friend's, who remarked that his face was unnaturally red, which he himself felt unusually warm. He now has a slight headache, and a feeling of general languor; tongue slightly furred, skin dry, without much fever. Solution of muriate of morphia, half a drachm; solution of antimony, one drachm; camphor mixture, one ounce—mix and take immediately. Mustard pediluvium. Warm drinks. Three colocynth and calomel pills at bed time.

24th.—Slept some, but did not perspire; more feverish, headache; bowels not being opened, took, of his own accord, this morning, a dose of castor oil. Ordered an emetic. Seven p. m.—Still feverish; bowels moved. Nitrate of potash; muriate of ammonia, of each ten grains; solution of antimony, half a drachm; camphor mixture, one ounce—mix and take every four hours.

25th.—No decided alteration. Headache, skin not perspirable; mixture appears acting on the bowels.

Complains of general uncomfortable feeling, which appears muscular. Continue mixture, with the addition of three drops of tincture of opium to each dose.

26th.—More feverish. Complains of throat being sore, which is red. Continue mixture, without the tincture of opium, every three hours. To use an astringent gargle frequently.

27th.—Was called to him at two a. m., on account of excruciating pain which he suffered, shooting from throat to left ear. The parotid was swollen; the tonsils, velum, uvula, and pharynx, were intensely red and greatly swollen, especially the latter, which was twice its natural size. He had much difficulty in swallowing and breathing; spoke in a hoarse whisper, and was obliged to sit in an arm chair on account of dyspnoea. Pulse 132 of good strength. Took twenty ounces of blood from his arm. Scarified tonsils and uvula. Ordered lintseed poultice to throat. Tartrate of antimony, four grains; nitrate of potash, one drachm; water, four ounces—mix, give a tablespoon full every half hour till sickness supervenes. Eight a. m.—Respiration and deglutition still difficult. Is unable to lie in bed on account of dyspnoea; very restless; bowels moved freely by mixture. Pulse still good. Took sixteen ounces more blood from his arm. Ordered six leeches to be applied to his throat. Mixture to be continued every two hours. To use a sugar of lead and opium gargle for throat, and an inhaler. Seven p. m.—Bowels opened frequently; breathes and swallows rather easier. Continue mixture every fourth hour.

28th.—I was called to him at five a. m., on account of swelling of the nose which prevented his breathing freely; found him much alarmed, sneiderian membrane swollen, and the continuous skin, for half an inch on each side of nose, having a distinct erysipelatous appearance, evidently extending; he also complained of general headache, especially over frontal sinuses. Cleared out nostrils, and applied two leeches to sneiderian membrane, which bled freely. Directed sugar of lead and opium wash to be applied warm to nose externally. Eleven a. m.—Has found great relief from leeching and lotion, headach and difficulty of respiration much alleviated. Erysipelas spreading on face. Omit mixture. Continue lotion, Soda water for drink.

29th, ten a. m.—Passed a restless night, feels weak; says he is sinking. Pulse 140, small and fluttering. Complains still of throat. Besides his sago gruel to have beef tea. Carbonate of ammonia, five grains; camphor mixture, two ounces—mix, take every fourth hour. Gargle. Continue lotion.

30th, ten a. m.—Pulse stronger and more regular. Is troubled with an uncomfortable feeling at stomach, like

hiccup; bowels not moved for last twenty-four hours. Hydrargyrum cum creta, ten grains; aromatic powder, three grains—mix, and give now; to be followed in two hours by half an ounce of castor oil. Eight p. m.—Much the same; disease extending over cheeks and forehead; says he would give a great deal for a night's sleep. Extract of henbane; extract of hemlock, of each four grains; mucilage, two drachms; solution of acetate of ammonia, two drachms; camphor mixture, half an ounce—mix, and give now; to be repeated in four hours, if not asleep.

31st.—Upon the whole passed a better night than any previous one; has had several naps of half an hour's duration. The disease extending along forehead and temples on scalp; throat and nose are now much better; can swallow and breathe pretty freely. Fancies mixture disagrees with him; discontinue it. Let his head be shaved. Continue lotion.

Feb. 1st.—Passed a very restless night. Disease has extended over all face, and is spreading on scalp; eyes shut; pulse 124; weak. Let him have half an ounce of wine in sago gruel every two hours. Eight p. m.—Pulse 130, weak; made three or four attempts to go to stool, but passed nothing satisfactory. Hydrargyrum cum creta, ten grains; aromatic powder, four grains—mix, and give now. Extract of hemlock, extract of henbane, of each four grains; compound spirit of sulphuric ether, half a drachm; syrup of poppies, one drachm; camphor mixture, one ounce—mix, give in one hour, and repeat in four hours if not asleep. Continue wine, beef tea, and warm fofus.

2nd, ten a. m.—Passed another restless night—was delirious. Disease now covers three fourth of scalp; is subsiding on face, with the exception of eyes, which are still closed; pulse 130; weak; subsultus tendinum; tongue dry; the uncomfortable feeling at stomach still continues, and makes occasional efforts to retch. One scruple calcied magnesia, immediately. Increase wine to one ounce every two hours; and let him have a table spoonful of the following mixture, also, every second hour.—Sulphate of quinine, twelve grains; dilute sulphuric acid, fifteen minims; tincture of cardamoms, half an ounce; water two ounces and a half. Mix. Ordered fofus to be discontinued, except to eyelids; and painted scalp with iodine. Seven p. m.—Is much better; has had two or three naps in course of day; retching ceased; two free motions from bowels; pulse 120, of good volume.

3rd, ten a. m.—Did not sleep well, but feels, upon the whole, much better, and is evidently improving; eyes open, and swelling of face diminished; pulse 120;

tongue clean. The disease has now travelled nearly all over scalp. Repeat iodine paint on scalp. Continue mixture and wine.

4th.—Decidedly better; disease has met on scalp, and is not extending in any other direction; pulse 98. Omit quinine; continue wine, &c.

From this date the patient, without any thing worthy of remark, went on improving.

REMARKS.

This case is chiefly interesting on account of the disease originating in the throat, as it is not usual for erysipelas to originate in a mucous membrane; in the majority of cases affecting the head, it first shows itself about the ears or cheeks, and thence extends over the face to the scalp, and occasionally over the nostrils and lips to the fauces and pharynx. In the above case, it, on the contrary, first declared itself in the throat, and extended not only through the nose to the face and scalp, but the symptoms also indicated its extension to the larynx and esophagus, which was the chief cause of the patient's distress and imminent danger. I may mention, as another illustration, that erysipelas occasionally originates in mucous membranes, that during the winter of 1842, an epidemic, first affecting the throat, prevailed extensively in many parts of this continent.

The exciting cause was apparently cold, as erysipelas was not epidemic at the time; the most prevailing complaint was a species of catarrh accompanied with sore throat. This appeared for the first few days to be, and probably was the patient's case, but owing to some predisposition, the local inflammation assumed an erysipelatous action, which appeared to me to have propagated itself to one of the patient's children, and to a friend living in the same house.

Opposite plans of treatment have been, and still are advocated by authors of the greatest respectability—depletion by the one, and stimulants and tonics by the other. In the above case, owing to the intensity of the inflammation of the throat and larynx, the treatment was necessarily very active; the patient was twice bled and once leeches, before the disease declared itself on the skin. The effects of such active treatment in erysipelas are worthy of remark. These may be divided into primary or immediate, and secondary or remote effects.

1. The immediate effects of the venesection were most grateful, relieving pain by moderating the inflammation, and the patient stood it well.

2. The secondary effects were not so satisfactory; although moderated in its action, the disease was neither arrested in its progress nor was its duration shortened;

the patient became alarmingly weak, as may be perceived by the report of the 29th, "feels weak, says he is sinking; pulse 140, small and fluttering." Considering that the diseases of the period were of a sthenic character, and bearing in mind his youth, strength, health, and habits, the degree of debility for the quantity of blood taken was great, and required the prompt use of stimulants and tonics, which favours the idea, that the constitutional nature of the disease is largely neuropathic.

But independent of all theoretical speculations as to the nature of erysipelas, the practical lesson to be learned from the case, is—that depletion, even when urgently called for, requires to be practised in this disease with the greatest caution and due consideration of all the circumstances of the case.

At two periods I considered the patient in danger from opposite causes; overaction and debility. First on the 27th, from the threatening of suffocation, and on the 29th, and two or three subsequent days from debility. I have asked myself would he have escaped the first of these with less depletion, or overcome the latter without a generous regimen and tonic medicines, and I am disposed to answer in the negative; for, notwithstanding the activity of the treatment, the patient was unable to resume the recumbent posture on account of his breathing; on the latter occasion his pulse and feelings indicated the greatest prostration, whilst the disease was still progressing; and had the case been left to nature, at this time, the patient's ultimate recovery would, I think, have been doubtful. From these considerations, my impression, and I think the legitimate inference, is, that when depletion is practised in this disease, it ought to be closely followed by tonic medicines and a generous diet.

The local applications employed in erysipelas are numerous. In the phlegmonous form, I have found none so soothing, grateful, and effectual, as warm astringent fomentations, and by no other means have I been able to prevent suppuration of the eyelids in such severe cases as the above, but to be effectual, they must be assiduously applied.

Montreal, March, 1847.

CASE OF ULCERATION OF THE COATS OF THE GALL BLADDER.

By JAMES A. SEWELL, M.D., Quebec.

A. B., æt. 50, an habitual drunkard, presented himself for admission into the Hotel Dieu hospital of this city, in August last. He resided at a considerable distance from the hospital (say a mile), and had come there on foot without any apparent inconvenience.

When I first saw him, he was waiting his turn of admission in the ante-room; his appearance being that

of a man who had been ill for some time, but certainly not indicating the fatal termination which was so soon to follow.

Upon inquiry, I found he had been ailing for about three weeks, with more or less pain in the right side, accompanied with occasional vomiting. His illness, however, excited so little alarm among his friends, that, up to the moment of desiring admission into the hospital, no medical assistance had been sought. I directed him to go into the ward, and gave instructions to the nurse to get him into bed; intending to return and prescribe for him after having visited the female department upstairs.

Ten minutes, however, had scarcely elapsed before I was hastily summoned, and found my patient rolling on the floor in an agony of suffering, which he referred to the seat of his old pain; countenance pinched and anxious; pulse at the wrist scarcely to be felt; extremities cold, and the whole surface bathed in a cold clammy sweat: in short, he was dying. He was ordered a mixture of sulphuric ether and laudanum in some warm brandy and water, with hot application to the extremities and epigastrium. The above mixture was repeated in a few minutes, but no reaction came on, and he died in about twenty minutes from the time of my being summoned to him, and about thirty, or a little more, from the period of his admission.

Examination of the body 24 hours after Death.

Head not examined; heart and lungs healthy; on opening the abdomen, we were struck with the appearance of the pyloric extremity of the stomach; the upper portion of the duodenum, and the other parts in the immediate neighbourhood of the gall bladder, seemed as though smeared over with bile, and such, upon closer examination, was found to be really the case; for upon raising the liver slightly, a further quantity of this fluid was observed to escape from a small aperture, of about the size of a crow quill, in the under surface of the gall bladder. On the mucous surface of this reservoir was discovered an ulcer of the size of a threepenny bit, in the centre of which was the small opening into the peritoneal cavity, already mentioned.

There were no traces of peritonitis; liver somewhat enlarged, and slightly softened; stomach and bowels healthy.

Remarks.

The ulceration here noticed was, in all probability, the result of sub-acute inflammation, of much longer standing than the period from which the deceased dated his illness, giving rise to symptoms at all times obscure, and occasionally (as we may well understand) so slight

in degree as for a long time to escape particular attention.

With regard to the precise moment at which the rupture (and consequent effusion) took place, I conceive it occurred subsequent to his entrance into the ward, and probably while in the act of undressing himself; and moreover, that his speedy dissolution can be alone accounted for by the sudden and violent shock conveyed to the nervous system by the application of so acrid a fluid as bile, to so sensitive a membrane as the peritoneum; more particularly in a subject already enervated by the habitual use of ardent spirits.

I would add, that the speedy death of my patient is somewhat analogous to that which occurs in some cases of severe peritonitis, in which the symptoms during life, as well as the appearances after death, are well marked; the disease running its course to a fatal termination in from eight to twenty-four hours. Still, neither the symptoms *before*, nor the morbid appearances *after* death, can satisfactorily account for this rapid progress of the disease, except upon the supposition offered above.

Quebec, January, 1847.

To the Editor of the British American Journal.

SIR,—A friend has this moment placed in my hands the March number of your valuable Journal of Medical and Physical Science. In it I notice some critical remarks (as they are rather amusingly and pompously termed) on my labours as Chemist to the Provincial Geological Survey, by H. Croft, Esq., Professor of Chemistry, King's College, Toronto.

As Mr. Croft is not satisfied with making some very petulant and silly allusions to his loss of reputation, and to my capacity as a chemist, but has also questioned, in his peculiar style, the accuracy of my *qualitative* analysis of the Tuscarora spring, it will become necessary for me to reply to his strictures, and to offer a few observations upon his attempts, as exhibited in the columns of your journal in its numbers of June and August, 1846, and in the last. I trust you will permit me to avail myself of your columns for that purpose. Unavoidable absence from town, and a variety of pressing occupations, will prevent my preparing anything for April; I am therefore reluctantly compelled to postpone my remarks until your May number. In the meantime, I would remind Mr. Croft, (an important truth which he seems entirely to have forgotten), that a contemptuous mode of expression is no proof either of capacity or attainments; and, moreover, that his attempts to show what ingredients are not to be found in

the Tuscarora water, may simply illustrate the fact that under the most favourable auspices, he is of himself, Mr. Croft, Professor of Chemistry, King's College, Toronto, incapable of determining the elements of which it is composed. His efforts pretty plainly demonstrate this incapacity, when he is unassisted by others.—I remain &c.,

E. T. DE ROTTERMUND.

Montreal, 15th March, 1847.

- I. *Lecture Introductory to the course on the Theory and Practice of Medicine, in the Medical Department of Pennsylvania College. Session 1846-'47. By W. DARRACK, M.D. Philadelphia, 1846.*
- II. *An Introductory Lecture, delivered before the Class of the Baltimore College of Dental Surgery, at the Session of 1846-'47. By A. WESTCOTT, A.M.M.D. Professor of Operative and Mechanical Dentistry, etc. etc. Baltimore, 1846.*

I. An introductory lecture is scarcely expected to exhibit a rigorous demonstration of any specific part of the lecturer's department of science. It is usually made the occasion of representing the advantages or the necessity of the study to be entered upon, in such a manner as to awaken the interest of the student; or it points out the mode of investigation proper to the subject in hand, indicating the sources whence the best information may be derived, and furnishing to the student those hints and cautions which the wary investigator has found by *experience* so necessary against precipitate and erroneous conclusions. There is nothing of this description of object in Dr. Darrack's introductory lecture. He has, unwisely, we think, abandoned this ordinary track, which had certainly been one more profitable to his students; and, let us add, not without its advantage to himself.

The professional teacher has a graver duty, and ought to have an aim of a higher order than the popular lecturer; and, at any rate, is bound to set an example of conclusive reasoning, and of judicious selection of subjects of investigation—requirements of which the present lecture gives no evidence.

"Gentlemen," says Dr. Darrack, "the topic which I have been induced to select as an introductory lecture is life." "Life! this is my topic. It is, I am sufficiently aware, a trite, mooted, vexed subject. Nevertheless, I venture to call attention to it." It is invariably an excellent proof of a sound mind to make choice of a subject to the elucidation of which it can bring the requisite qualifications and powers;

"Sumite materiam vestris, qui scribitis, equam
Vestibus;"

and it is no less an evidence of a genius of the highest

order to grapple manfully with a subject that has posed the intellectual powers of all that have gone before him, provided his success be demonstrable, and his claim to the honours of a triumph be made good; these honours would have been won had the success of so great a genius been a little greater than his modesty.

The reasons which the Dr. assigns for selecting the "topic" of life! are, "First, because a teacher of the theory and practice of physic is expected to deliver his doctrine on it." This is surely an unreasonable expectation. Notwithstanding, if a teacher resolve to deliver *his* doctrine, he requires to prove it to be better substantiated than the doctrine of others. "Second, because writers on vitality have either reasoned without experience or without revelation." No better cause could surely be adduced for the exercise of such humanity as Dr. Darrack's: no case of more deplorable need could be made out, for the flood of light which is now to descend upon us! Writers on vitality have reasoned without experience of—of what? Of vitality, of course. Will this gentleman be kind enough to tell, in a point so mysterious, how they could reason on any subject without experience of vitality? Creatures that have no experience of vitality, we have been wont to suppose, never reason at all. Perhaps the Dr. has employed the wrong term, for he is not particular about language in the argumentative part of his lecture, however studious of it in the pathetic department. If he means *observation*, then his second inducement to lecture on the "topic" of life, is equivalent to this; "Because writers on vitality have reasoned without any data, without shadow of a peg to hang an argument upon." Perfect fools! *that* they were. "Or they reasoned without revelation," says Dr. D. Again we must express, with humility, our desire of being instructed. Was not the revelation to which he refers us given at a very early date? in the days of Moses? Supposing his meaning to be *without respect to revelation*, he ought to have said so, or to have written, as a writer on vitality requires to do, with accuracy and clearness; and might have added a little piece of information, to the effect, that many of the best writers on vitality have shown due regard to the light of revelation.

Dr. Darrack proceeds to develop the mystery of life.

"My three propositions," says the doctor, "are the following:—

First,—Life is that principle in us by which we are enabled to resist the destructive inorganic powers.

Second,—Life is organism.

Third,—Life presents itself in three forms, vegetable, animal, and man."

From an enumeration from Schænlein of those des-

tructive inorganic powers, though without casting any new light on their specific action upon the vital functions, the doctor supposes we have got "new insight into the silent workings in the microcosm of vital forms, and discover the fact that life is that mysterious (so he describes it) energy by which we act protectively, defensively, and continually against the countless aggressive and injurious forces of the universe." In point of fact we receive from the doctor's elucidation of his proposition no "new light into the silent workings in the microcosm of vital forms," far less are we enlightened with any new knowledge of the nature of the vital principle or that "mysterious energy" which actuates the vital functions. The illustration of his proposition has cleared the way for the reception of this important truth, that life is that principle by which we live in opposition to the objects that would cause us to die—a truth that cannot certainly lay claim to much originality, and one which previous writers on vitality possibly have elaborated by such experience or powers of observation as they happened to be in possession of; for it is a cruel idea, and what their bodiless shades might be justified in resenting, to expect that they could reason without some experience of vitality.

"Second,—Life is organism," says the doctor.

In this his second proposition, he boldly faces the question—what is life? He gives us the intimation that he will astonish us by the novelty of his way of achieving a victory. "The answer which I will give to this question—what is organization?—will doubtless have the appearance of novelty, and *properly on this account*, and also that it has not the palpable reality which an unqualified advocacy of Locke and Bacon may be supposed by some to demand, will not be so readily perceived; nevertheless it is as ancient as revelation." This is very ingeniously conceived, and if it only tell, it cannot fail to prove a very palpable and admirable hit. No mortal man can stand before this. Of all the destructive inorganic powers we are acquainted with, this is the best calculated of all to smash the life out of all the pseudo-philosophers that have reasoned on vitality without the experience of it. "Men," says Dr. Darrack, "are shaped according to their sentient organism." If this be the case, they are perhaps able to run—a circumstance that will prove singularly fortunate to those who have any confidence in the rules of Locke and Bacon, when they feel the shock of the doctor's onset.

"What is organization?" he asks. I answer, it is the union of matter and breath of life—a connate union. This is the doctrine of Thorburn, and which I adopt to the exclusion of all others. Receive it, and we will perceive more manifestly the prevalent errors on this subject."

He says it is Thorburn's doctrine. We are sorry for this, because as Thorburn is a different organism from Darrack, the doctrine is not so astonishingly new; and it is a circumstance, however trifling, that invalidates one of the doctor's inducements to treat upon the topic of life, inasmuch as there has been at least one person who wrote on vitality with some experience, or with revelation.

He proceeds to observe:—"We will be convinced that organization is not, as has been vainly imagined by the vitalists, the effects of a pre-supposed undemonstrated vital principle, nor as taught on the other hand by the materialist, the result of an inherent power of material atoms to come together, in definite proportions, &c. &c. Organization is none of these; but on the contrary, as a neutral salt, is the result of a commingling of an acid and an alkali; so organization is the *tertium quid* which results from the connexion of matter and breath of life."

The remarkable thing in this enumeration of repudiated hypotheses, is the doctor's denial that organization is the effect of a pre-supposed undemonstrated vital principle. "We will be convinced that it is not," he says; "it is a vain imagination of the vitalist," as he describes; and then the luminous conclusion is at last made known to us, that organization is "the *tertium quid* which results from the connexion of matter and breath of life," *i. e.*, which results from the connexion of matter and a principle *not pre-supposed, and a demonstrated principle*. It is then a discovery of the doctor's that organization results from the connexion of matter and a principle not pre-supposed, not assumed nor taken for granted, but one which has of course been rigorously demonstrated. Now, this is by far the most memorable thing to be found in this lecture. The vital principle—the pre-supposition of which he so scornfully rejects—the undemonstrated character of which he sets aside with sublime devotion to scientific accuracy, is pre-supposed, is taken for granted, and that even without the attempt to demonstrate it. So far from demonstrating the principle of vitality, Dr. D. is not sure of the mere signification of the terms in which he describes it. After quoting the passage: "He breathed into his nostrils the breath of life, and man became a *living being*," he observes, with some modesty, that "in *some oriental* sense, the breath of life is the breath of the Creator, and that according to the best critics, as he is well informed, the import of the expression is the animating principle which renders the inert mass insusceptible with animated existence,"—a conclusion, the novelty of which is so great that it has been held by all who since the days of Moses have had experience of vitality, but demonstrated by none—not even by Dr. Darrack himself.

Dr. D. defines what organization is—he defines what organism is—he defines what stimuli are, and confounds *them*, as we shall perceive, with susceptibility; but as for the principle of vitality or breath of life, or breath of the Creator, there is some "proper oriental sense in this"—the sense of which is, that the principle of vitality is the principle of vitality, the breath of life is the breath of life, and the sum total of the originality of this discovery of "a demonstrated principle" is this, that the breath of life is derived from God. Now this has always been, and still is, we may say, almost universally the common belief of men, who wisely pre-suppose it without demonstration, and the only difference between them and Dr. D. is found in the circumstance of their *not pretending* to demonstrate it.

We are repeatedly informed that organism is the result of organization acted upon by stimuli—"An organism is an organization in action by stimuli. It is the result of stimulated organization." And then we have diagram 3, which is given as a sort of pictorial demonstration of "the subject of organism." It is stated in the diagram, that organization (germ or ovum) is the product of dust (inorganic matter), and of breath of life (vitality)—then, that organism is the product of "organization" and of "susceptibility—acted upon by stimuli, and reacted against by the egoistical principle." He has now changed his views upon the subject, and we have an organism, the product, not of organization and stimuli, but of organization and susceptibility, acted upon and reacted against. But, as Dr. D. very properly observes, susceptibility is a necessary endowment of every organization, and therefore may be properly called a property of organization, the statement is equivalent to this, that organism is the product of organization and one of its properties, *i. e.*, it is the result of organization. He sees in the diagram that it will not argue to say, (what he had often said before,) that organization and stimuli produce organism—it is now, organization and susceptibility, one of its properties; in other words, that organization and vitality produce organism. The whole demonstration, then, resolves itself into this—dust and vitality produce organization, and organization with vitality produce organism. Hence, instead of being "convinced, as Dr. D. says, that organization is not, as has been vainly imagined by the vitalists, the effects of a pre-supposed and undemonstrated vital principle," we are convinced that it IS; and, in point of fact, this is the conviction of the Dr. himself, if he understand his own language and do not "vainly imagine" he has demonstrated any thing at variance with it.

Thus far have we followed Dr. Darrack in his introductory lecture, and have exhibited the fallacy of his reasoning. The psychological and physiological part of his argument, we have neither space, nor leisure, nor inclination, to examine, further than to observe with reference to the latter, than in adopting the cellular development of organized tissue, his lecture on this head is strictly consonant with the present generally received theory. We may, however, remark, that a dissertation on Hebrew etymologies, however much it may serve to acquire for the lecturer the appearance of deep learning and research, ought to have constituted no part whatever of his subject; and as it can afford no useful information whatever to the student, would have been better "honoured in the breach than in the observance."

We hope that Dr. Darrack will receive our criticism in good part, and on the next occasion, when welcoming his class, in the names of the illustrious dead, (who, therefore, must have had some "experience of vitality," and who, during that experience, contributed, and that not meanly, to establish the character of the city in which he dwells, as a seat of medical learning) and of the several medical institutions of that city, he will remember, that in a hyperborean city there exists a university, whose name he is also at liberty to employ for the purposes of his general invocation, and we venture the prediction, that not only will the efficacy of the charm be thereby enhanced, but the effects of such an incantation will be talismanic in the extreme.

II. The subject proposed for consideration in the lecture of Professor Westcott, is, *do dental colleges possess peculiar advantages over any other means of receiving a dental education?* and in the discussion of the question, the lecturer has done ample justice to it. We certainly believe, that the diseases incident to the teeth, their causes and their treatment, have ever received too cursory and slight a notice at the hands of the teachers of surgery in universities and schools generally; and the general course of education, which would fit students for the practice of medicine and surgery in their present objects, is by no means that adapted for rendering them accomplished dentists. This subject is too special in its nature and its objects, and although perhaps equally so with that of ophthalmic and aural surgery, has unquestionably not received that attention which has been bestowed upon the two latter. This want has been supplied by the establishment of an institution special to this end; of which Dr. Westcott is, if we may be permitted to judge from the lecture before us, as well as from his contributions to the pages of the *American Journal of Dental Science*, one of its brightest orna-

ments, and eminently well qualified to discharge his important duties, with honour to himself, and advantage to his pupils.

The objects of dental surgery are comprised in the following definition:

What is the field allotted to the dental surgeon?

The term dental surgery does not, if construed literally, convey an adequate idea of what is, by common consent, included under it. Although this term is descriptive of the chief business of the dentist, and gives his department "a local habitation and a name," yet it by no means embraces the entire field of his inquiries, or even his operations. While it is the business of the dental surgeon to inquire into and treat the disease of a specific class of organs, it is also no less his duty to ascertain, if possible, the *cause* of such disease, its connection with other parts, and whether his remedies are to be applied directly, or whether they are not to be directed to the overcoming of some latent difficulty, antecedent to the most prominent disease. In other words, his province and duty is not merely to treat these organs as though they were isolated portions of the system, but as parts of the general system, governed, in many particulars, by the same laws, influencing and being influenced by every other organ.

Hence, his inquiry should be directed to the investigation of every influence which can be supposed to have a bearing upon the diseases of this specific class of organs.

His duty stops not here. It is not only his business to weigh the influence which other organs may exert upon the teeth, but he is also to investigate how far the diseases to which the teeth and mouth are subject, may, in turn, derange the other portions of the system. His field, then, is by no means a contracted one. The dental student is not only to study these particular organs, their immediate connections, their specific diseases, and their peculiarities; but if the view I have taken be a correct one, he should become acquainted with the laws of the entire system, together with those of each organ, their mutual connections and dependencies.

The dependence of dental surgery on anatomy, chemistry, practice of medicine and pathology, surgery and physiology, is exhibited and dwelt upon at length, and the particular modes in which these sciences are rendered tributary to the perfection of the character of the dental surgeon, are fully explained. The lecture is an admirably written one, and will amply repay perusal. We cannot better conclude this short notice, than by quoting the two last paragraphs, and in the aspiration fervently expressed at the conclusion, we sincerely join.

This experiment has not only been successful in itself considered, but it has become the corner stone of a new and more enlightened policy, both in regard to the public and the profession.

Let us see to it that we lose not this vantage ground. If we do this by making our facilities for imparting instruction fully commensurate with the demand, by making our diploma exclusively the reward of merit, it will require no enthusiasm to induce a strong confidence that the students sent abroad from this institution will practice their profession with honour and profit to themselves, with benefit to their patrons, with credit to us; and that they will prove efficient living witnesses of the feasibility and great public utility of dental colleges. In proportion as such practitioners become the occupants of the various fields, will empiricism and imposture be supplanted by science—bombastic pretensions by modest merit—and public suspicion by a just confidence in the meliorating powers of science—the blind avidity for secret and patented nostrums, by a just respect for, and an intelligent appreciation of, those resources of science and art, which in the hand of the enlightened and honest professional man, are the only legitimate agents for meliorating the sufferings incident to hu-

manity. May the time soon arrive when men, deeply imbued with the love of science, and skilled in its application to dental surgery, may be so thickly scattered throughout the length and breadth of our land as that their mutual and combined light shall leave no spot of darkness to shield from full public recognition the devices of the dental empiric.

ANATOMY AND PHYSIOLOGY.

ON THE NATURE & SOURCES OF THE CONTENTS OF THE FŒTAL STOMACH.

Being the substance of a Paper communicated to the Royal Society of London, in June last.

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Whilst all physiologists who have examined the appearances presented by the alimentary canal of the fœtus, agree in representing the *small intestines* as actively engaged in the function of digestion, a remarkable difference of opinion has prevailed as to the source of the nutritious matter there submitted to that process. Harvey, who, of modern physiologists, alone supposes it to enter the intestine through the stomach, adopts the views of the older writers, and concludes, from his observations, that it is the liquor amnii swallowed by the fœtus, which affords the material for chylicification. Geoffroy Saint-Hilaire, perceiving the anatomical objection to this doctrine, which arises from the fact of similar appearances having been found in the intestinal canal of fœtuses born with an imperforate œsophagus, would seem to suppose that the superior portion of the intestines, being irritated by its contact with the bile, secretes a nutritive mucus, by the digestion of which chyle is formed. And Dr. Robert Lee, who is, I believe, the most recent investigator of this subject, has been led by his researches to the conclusion that the liver is the source of the nutritious fluid found in the alimentary canal of the fœtus; the function of that gland being, in his opinion, not merely that of separating from the blood an excrementitious substance, but also that of pouring into the fœtal intestines, through the hepatic duct, a quantity of albuminous fluid.

Now, even though a quantity of albumen may be present in the bile taken from the hepatic duct, it is surely desirable that the impossibility of the nutritive contents of the small intestine having been derived from the fœtal stomach should be clearly demonstrated, before we admit the correctness of this latter conclusion as to their source. But it will be seen by a reference both to systematic writers, and to the authors who have more expressly treated of the fœtal functions, that the evidence yet advanced is by no means sufficient to establish any positive opinion on this point.

Dr. Lee thus describes the result of his own examination of the stomach in several human fœtuses. "The stomach of the fœtus I usually found in these cases distended with a semi-transparent, ropy, mucous, and occasionally acescent fluid without any sensible admixture of albuminous or other apparently nutritious matter." Dr. Blundell, whose opinions on any point connected with the uterine or fœtal functions I consider to be worthy of every attention, has but the following brief allusion to the subject. "The stomach of the fœtus is not unfrequently empty, or nearly so; and when it does contain anything, if I may judge from some two or three observations, this matter consists of a mucous secretion mixed with the gastric juice." And in the systematic works on physiology, I do not perceive any mention of the subject further than an incidental statement that the fœtal stomach contains a mucous fluid. The time which I could myself devote to this inquiry, and my opportunities

for conducting it, have been too limited to enable me to attempt anything like a full and final settlement of the various questions connected with this department of fœtal physiology. The few facts which have fallen under my notice are, however, sufficiently distinct to establish some positive inferences, and I can only hope that the results of this rude effort may induce others better qualified for the investigation to extend and complete our knowledge of this interesting group of functions.

My attention was first attracted to the subject in the autumn of last year, by an accidental observation of the stomach of a fœtal rabbit, and having subsequently examined the fœtuses of other animals, I met with a number of curious facts, of which the following is a brief account.

Observation 1. During the last ten days of its uterine existence, the stomach of the fœtal rabbit is invariably distended with a semi-transparent fluid, of a dark green colour, extremely viscid, and coagulated by heat into a solid opaque mass. Viewed microscopically, it is found to consist of a clear liquid, suspended in which are numerous cells of different shapes, and several large globules of oil. When heated in a watch glass over a spirit lamp, it assumes the appearance of a piece of baked custard; and on dropping it into boiling water, it also instantly solidifies. Dried by a more gentle heat, it forms a brittle substance like gum, which on being dissolved in water, answers to every test of Albumen. A small quantity of the fresh liquid which had been excluded from the air in a test tube, on being examined at the end of six months, though it had acquired a disagreeable odour, was found to retain all its chemical properties, coagulating as readily as when recently obtained. The stomach was in these cases extremely pale, and presented very little vascularity; whereas the small intestines were plentifully supplied with blood-vessels. The chymous substance which the latter contained, was evidently derived from the stomach, becoming however more opaque, as it gradually assumed the situation of the meconium. This latter substance, of a bright green colour, exhibited a curious reaction with strong nitric acid, the addition of a few drops of the latter instantly causing it to assume a bright scarlet hue.

In three instances, a liquid, precisely resembling that contained in the stomach, escaped from the mouth of the animal as it lay on its side before being opened; and in two other cases, the same substance was found in the œsophagus. The liquor amnii of these animals is a transparent, almost colourless fluid, exhibiting scarcely any indication of the presence of albumen. In two instances where I had an opportunity of watching the fœtus through the transparent membranes, it was observed to swallow the liquor amnii, and from its continuing to perform the act of deglutition after its removal from the uterus, the stomach was found extremely distended with air, each mouthful of which appearing as a little vesicle, was preserved distinct by the viscosity of the stomachic fluid. The facts detailed in this observation are drawn from the examination of more than thirty animals.

Observation 2. The uterus of a rabbit, killed about the tenth day after impregnation, contained six fœtuses, an inch and a half in length, and the tissues of which were still very gelatinous. Through the transparent walls of the abdomen the dark globular stomach of each was distinctly visible, and on opening the peritoneal cavity, it constituted with the exception of the liver, the most prominent object presented to the eye, being in every case distended with a liquid of a dark green colour. This fluid was perfectly transparent, presented no microscopical object, was not at all viscid, and did not undergo any change on the application of heat or nitric acid.

The intestines were in these animals extremely minute and tortuous, translucent, and almost void of meconium, or any other coloured substance. The quantity of liquor amnii

was greater than that met with in the former observations, and its opacity, on the application of the tests for albumen, if anything more distinct.

Observation 3. In a fœtal lamb examined at a very early period (for its weight did not exceed two ounces,) the stomach contained two drachms of a clear, citron-coloured liquid, which was neither viscid, nor did it present any opacity or change on the application of heat and nitric acid. The quantity of liquor amnii was relatively large; six ounces of it were collected, and in its colour, consistence, and chemical properties, it precisely resembled the fluid obtained from the fœtal stomach. The intestines were very minute and tortuous, and with the exception of a small quantity of serous fluid apparently empty.

Observation 4. In another fœtal lamb which was fully developed and ready for birth, the stomach, on being opened, presented a substance differing very much from the liquid just described. It contained an ounce of a viscid, transparent semi-fluid mass, suspended in which and gradually subsiding in it, so as to form a sediment, were numerous minute, oval, brown particles, in shape and colour very much resembling grains of lintseed, but somewhat larger, and around each of them was a quantity of an extremely tenacious, gelatinous substance of a yellow colour. Neither the supernatant liquid nor the liquor amnii evinced the presence of albumen, though both possessed considerable viscosity. A substance precisely similar to the yellow gelatinous sediment found within the stomach, existed in considerable quantities upon the fleece, the legs, and the whole exterior of the animal; but on the most careful examination I could not detect in any other part of the fœtal structures or appendages, a single particle corresponding to the brown oval masses met with in the stomach.

The intestines, in addition to some meconium, contained a chymous mass, the liquid portion of which was distinctly albuminous.

Observation 5. The liquor amnii of a fœtal calf, (which was examined at a very early period, when its body weighed only nine ounces) was of a citron colour, neither viscid nor coagulable by heat or nitric acid, but instantly formed an opaque membranous coagulum on the addition of a little acetate of lead, or proto-nitrate of mercury. The stomach of the same animal contained two drachms of a fluid, which in every respect resembled the liquor amnii, and which, on standing, did not present any sediment or coloured flocculi. In the intestine was a small quantity of meconium, which, on being heated with nitric acid, exhibited the usual change of colour, from a green to a reddish hue.

Observation 6. In another fœtal calf of considerable size, (presumed to be in the ninth month of uterine existence, and which was examined twelve hours after death,) the stomach contained four ounces of a yellow glairy fluid, in which, as it lay in the stomachic cavity, were suspended three or four fibrous masses of a dark, brown colour. On allowing these matters to stand for some hours in a cylindrical glass vessel, the quantity of the coagulum or sediment was very much increased, so that its bulk ultimately became equal to the tenth part of that of the supernatant liquid. This latter was slightly opaque from the presence in it of innumerable minute globules, resembling those formed during the coagulation of albumen, and though extremely viscid, it furnished no coagulum on the application of heat and nitric acid singly and in conjunction, the only effect produced being the gradual formation of a pellicle on its surface as the liquor evaporated. Of a few other tests which were applied, sulphuric and muriatic acids caused no change whatever in the appearance of the fluid; ferro-cyanide of potassium, assisted with acetic acid, tincture of galls, sulphate of copper and alum, slightly increased its opacity, and the addition of a drop of solution of acetate of lead or proto-nitrate of mercury, was instantly

followed by the appearance of an opaque membranous coagulum.

Embedded in the coagulum or sediment, which was of a reddish brown colour and semi-transparent, were several thin yellow scales, perfectly opaque, and insoluble in boiling liquor potassæ, whereas the remainder of the fibrous mass readily dissolved in that liquid. From the clear solution thus obtained, copious flakes were produced on its neutralization by muriatic acid.

In the mouth of this animal was found some glairy fluid, very similar to that met with in the stomach; and lying on the outer surface of the gums, particularly those of the lower jaw, were several of the peculiar yellow flakes just described.

The liquor amnii was clear, almost colourless, and, though somewhat viscid, did not with the usual tests afford any indication of albumen, being coagulated only by acetate of lead and proto-nitrate of mercury. *It contained none of the matters which constituted the coagula found in the stomachic fluid.**

Observation 7. The stomach of two newly born kittens contained a brown semi-transparent, viscid substance, which, on the application of heat or nitric acid, evinced the presence in it of a considerable quantity of albumen; but did not wholly coagulate. The portion which retained its transparency did not, however, manifest any disposition to dissolve in the boiling water. The contents of the small intestine were also albuminous.

In the œsophagus and fauces of one of these animals was found some of the same brown, viscid, semi-albuminous substances; and it may also be worthy of mention, that the quantity present in the stomach of this animal (which had lived a few hours after birth) was much less than in the other case.

Observation 8. In each of two puppies, drowned immediately after birth, the stomach contained about half an ounce of a transparent slightly viscid fluid, suspended in which were several large flakes of a light yellow or lemon colour, each flake being surrounded by an extremely tenacious gelatinous substance. On testing the clear supernatant liquid, it was found to be distinctly albuminous, an opaque stratum of coagula being deposited on the application of heat and nitric acid. A portion of one of the flakes and the adjacent mucus being examined under a high magnifying power, presented, in addition to epithelial scales and some oil globules, several minute particles of different shapes, a few appearing as perfect circles or rings, others of a crescentic form, and the remainder as rhomboidal and linear particles.

Observation 9. The stomach of a human fœtus of about the fifth month, examined thirty hours after birth, was found moderately distended. On laying it open, a reddish coloured fluid escaped, and this was followed by three or four semi-transparent gelatinous masses. The largest of these was then placed in a watch-glass containing distilled water, and heat applied. As the temperature of the water approached the boiling point, numerous flakes were seen to radiate from the floating body; and as the process of ebullition proceeded, this latter became throughout its whole substance, firm and opaque, so as to constitute a firm coagulum. Another mass was treated with nitric acid, and wherever the latter came in contact with it, an instantaneous coagulation took place.

* A quantity of the peculiar milky fluid, secreted by the spongy structures which receive the highly vascular fœtal cotyledons, and collected from them by pressure, on being heated, instantly coagulated into a firm mass. With the single exception of its colour being rather that of cream, than a distinct yellow, this substance precisely resembled the coagulum obtained by heating the contents of the stomach, of the mature fœtal rabbit. And in its chemical and nutritive properties this secretion presents a striking analogy to the colostrum furnished to the animal immediately after birth. The secretion of these structures was, in the mature fœtal lamb, also found to possess a similar property.

The contents of the small intestines were arranged in separate portions, in the order of their proximity to the stomach; and the liquid pervading them, on the addition of the same test, also evinced the presence of albumen, the relative quantity of this principle gradually decreasing as the chymous mass assumed the properties of meconium. My friend Dr. Glover was present at this observation, and kindly assisted me in its performance.

Observation 10. The stomach of an infant, supposed to have died immediately after birth, but which was not examined till about forty hours afterwards, contained half an ounce of a remarkably viscid, reddish, semifluid substance, for the most part transparent, but presenting in its interior and on its surface, several opaque white striæ. On boiling a portion in distilled water, it became uniformly opaque, but did not acquire much additional firmness. Heated with strong nitric acid, a clear solution was obtained, from which, on its neutralization by liquor ammonia, a copious flaky deposit took place; and the same circumstance occurred with an alkaline solution, when rendered neutral by the addition of nitric acid. The white striæ were of a fatty nature, as evinced both by their chemical properties and microscopical appearance, being chiefly constituted of fat cells. A transparent viscid substance contained epithelial scales, oval nucleated cells, and a diffused granular matter. This substance could be traced into the duodenum, where it gradually became more opaque, and evidently constituted the material for chymification.

From all these facts, we may, I think, draw the following general conclusions:—

1. That the stomach of the fœtus, during the latter period of its uterine existence, invariably contains a peculiar substance, differing from the liquor amnii, and generally of a nutritious nature.
2. That in its physical and chemical properties, this substance varies very much in different animals, being in no two species precisely similar.
3. That in each fœtal animal the contents of the stomach vary much at different periods; in the earlier stages of its development, consisting chiefly of liquor amnii, to which the other peculiar matters are gradually added.
4. That the liquor amnii, continues to be swallowed by the fœtus up to the time of birth; and consequently after the formation of those matters, and their appearance in the stomach.
5. That the mixture of this more solid and nutritious substance with the liquor amnii constitutes the material submitted to the process of chymification in the fœtal intestines.

The opinion that the fœtal chyle is principally formed from these matters, however, by no means implies a supposition that the *nutrition* of the fœtus is thus accomplished. For the actions which proceed in the chylipoietic viscera of the fœtus are, I imagine, chiefly useful from their gradually preparing the different organs for the important functions assigned to them in the economy of the mature animal. Whereas the nutrition of the fœtus is undoubtedly effected by its placental vessels, the venous capillaries of which (or to speak more correctly, the streams traversing them) possess an absorbing power precisely similar to that of the mesenteric veins. And as a portion of the fœtal blood, charged with the albuminous substance there absorbed, after passing through the umbilical vein, circulates in the blood-vessels of the liver, the presence of an albuminous fluid in the hepatic duct, as noticed by Drs. Lee and Prout, is by no means inexplicable. Viewed in this light, the umbilical vein of the fœtus will answer to the mesenteric veins of the adult, while the ramifications of the hepatic duct, in addition to their ordinary functions, may be considered as to a certain extent representing the lacteals.

The source of the peculiar substances found in the stomach of the fœtus still, however, remains to be determined. That

they are not secreted by the stomach itself is, I think, rendered almost certain, by the uniformity pale, undeveloped condition of that viscus during fœtal life, and by the circumstance of their being occasionally met with in the fauces and mouth of the animal, as in observations 1, 6, and 7. And coupling this latter fact with the negative argument constituted by the impossibility of assigning their productions to any other organs, I am disposed to regard them as the secretion of the *salivary glands*, between the development of which and the gradual formation of these matters a certain degree of connection has appeared to me to exist.

Having thus briefly mentioned the facts met with in the course of this investigation, and indicated the conclusions which appeared to me to flow most directly from the consideration of those phenomena. I shall for the present abstain from any further inquiries into this department of physiology. But, before concluding this communication, I may be permitted to relate one or two additional observations, which tend to establish an interesting and important relation between two of the chief functions in the animal economy, viz. respiration and digestion.

I have before had occasion to corroborate, from my own observation, the statements of other inquirers as to the slight vascularity and torpid condition of the stomach during fœtal life. It became, therefore, an interesting problem to trace the gradual development of its digestive power, and to ascertain the precise period at which the effect of this power became perceptible.

The contents of the fœtal stomach were, in several of the foregoing observations, tested by litmus paper with very different results, the gastric fluid being in some cases neutral, some times alkaline, and in a few instances feebly acid. As the tissues and fluids of the fœtus, however, always manifest a strong tendency to acescent decomposition, and as the indication of acidity was generally noticed in cases where some delay had taken place in the examination of the gastric contents, I am not prepared to deny the possibility of this acescency having been the result of chemical changes taking place after death. A far more satisfactory test of the presence of the proper gastric juice, and consequently of the commencement of its diæstive function by the stomach, was, I thought, to be found in the chemical action of that secretion upon albuminous fluids. And, as a liquid readily coagulating upon the application of all the common tests for albumen exists naturally in the stomach of the mature fœtal rabbit, a few observations upon these animals, performed at different periods after birth, promised to throw some light on the subject.

Observation 11. Two rabbits from the same litter were examined at the end of thirty hours after birth. In one (which from the appearance of the lungs had evidently respired, but which was found dead within a few hours after the presumed time of birth,) the stomach, both as regards its vascularity and the nature of its contents, precisely resembled that of the advanced fœtus of the same species. Its coats were pale, and the blood-vessels distributed through them scarcely perceptible; while the substance within exhibited all its usual properties, being the same green, transparent, viscid, semi-fluid, coagulable mass, as that invariably met with in the mature fœtus.

But the stomach and its contents in the other rabbit (which, though separated from the doe, had lived up to the moment of examination) presented a very different appearance. Its coats were beautifully injected with innumerable blood-vessels, and their thickness was apparently increased; whilst in its interior was a *large flattened coagulum of a greenish-yellow colour*, possessed of considerable tenacity, and exhibiting in its substance, when viewed microscopically, several oil globules, similar to those noticed in the uncoagulated matter.

Nothing could be more striking than the difference between

these two stomachs; and, from a single positive observation like this, we are, I think, justified in concluding, that the formation of the gastric juice does not take place till the act of respiration has proceeded for a certain length of time, and rendered the oxygenation of the blood tolerably complete. In two other rabbits, killed at the end of twenty-four hours after birth, the albuminous contents of the stomach were similarly coagulated, its coats being highly vascular, and a portion of the same green coagula being found in the duodenum. All these animals were removed from the doe before any milk could have been swallowed. In the following observation the young animal was allowed to feed with the rest.

Observation 12. A young rabbit being killed the third day after birth, was instantly examined. The coats of the stomach, which was very much distended with food, were highly vascular, so as to assume a rosy tint. It contained a great mass of coagulated milk, in the midst of which, and rendered conspicuous by the snow-white ground on which they were placed, appeared two half-digested coagula, of a dark greenish-brown colour. These were evidently the remains of the fetal secretion; and, in the duodenum of the same animal, at the distance of two inches from the stomach, were several small acicular particles of a fatty nature.—*London and Ed. Monthly Journ. Med. Science.*

PRACTICE OF MEDICINE AND PATHOLOGY.

CASE OF ISCHURIA RENALIS, IN A MULATTO;

IN WHICH THE SECRETION OF URINE WAS SUSPENDED ENTIRELY, FOR SEVERAL DAYS—RECOVERY OF THE PATIENT.

The following remarkable case of this most dangerous disease occurred in our practice several years ago, and is presented with a view of showing to what extent the malady may progress and yet terminate favourably. The patient, a mulatto girl, about eighteen years of age, was visited for the first time, on the 11th day of Nov. 1843. She complained of pain in the head and back, and constipated bowels; her pulse was full and strong, and the temperature of the skin very much increased. She was bled to the amount of twelve or fourteen ounces, and an active cathartic ordered. For the two subsequent days she was entirely free from any symptoms of disease, but on the third she complained of vertigo and excessive pain in the lumbar region, and for the first time disclosed the scanty secretion of urine, not more than a half-gill being secreted in the twenty-four hours. Towards evening the sensorium seemed affected; the patient being drowsy evinced an indisposition to exertion of any kind; the eyes yellow and suffused; pulse slow and full; with a slight tendency to stiffness in the limbs. The catheter was introduced into the bladder, but no urine was discharged. The symptoms indicating the abstraction of blood, eighteen ounces were drawn from the arm, a mercurial cathartic administered, and a blister applied to the lumbar region. From this date, the 14th, until the 24th, not a drop of urine passed from the bladder, although the catheter was introduced daily. During the whole of this time, the sensorium was more or less affected; the patient at one period was delirious, and again apparently comatose. On the 16th, she was attacked with stiffness of the limbs; which increased until the fore-arm became flexed, the fingers closed on the palms, and the legs spasmodically extended; when the paroxysm would gradually disappear after a continuance of some two hours. The paroxysms recurred at irregular intervals for about three weeks, several days after the secretion of urine was restored. During a paroxysm, the whole muscular system seemed to be affected—the face flushed—the pulse full and hard—the skin hot and bathed in profuse perspiration; but towards its termination, an opposite state of things would prevail, and the patient awake up, completely prostrated in mind and body. The high state of excitement under which she laboured, induced me to resort to venesection, the warm bath, &c., but without effect; in fact, all remedies used appeared rather to increase than diminish the violence of a

paroxysm. At last, an unusually severe paroxysm having occurred on the 24th, recourse was had to an enema of tobacco, made by infusing two drachms of tobacco in a pint of boiling water. In a very few minutes after its administration the patient became intensely sick, and made violent efforts to vomit, while the rigidity of the muscular system speedily disappeared. It became necessary to repeat the injection daily as long as the spasms continued. Immediately after the close of the paroxysm on the morning of the 24th, the patient complained of fulness in the supra-pubic region; the catheter was introduced into the bladder and six ounces of pure pus, without any admixture of urine, were discharged. In the evening, about two ounces more were drawn mixed with urine—the first she had passed since the 14th, a period of eleven days. From this time her improvement was manifest, the spasms becoming less frequent and violent, and the urine increasing in quantity, until about the middle of December, when she was discharged as cured.

The foregoing case is certainly remarkable for its duration; as very few cases of this sure and usually fatal disease are extended beyond the eight or ninth day, death most commonly terminating the patient's sufferings even before that period. So far as we are aware, the period of time between the cessation and the reappearance of the secretion of urine, is longer than of any recorded case, in which recovery took place.

The administration of tobacco for the relief of spasm of an hysterical and tetanic nature, although of ancient origin, is not, we believe, general with the profession. Its use in the present instance was of undoubted utility, as was evinced by its power in controlling the paroxysms, after other remedies had failed, and in several instances since we have observed its good effects. The cases in which we have exhibited the tobacco, were such as were possessed of a vigorous constitution, with a full, tense pulse, and in short all the evidences of high arterial excitement. To such, and such alone, is the remedy applicable. Cases of an opposite description we need not say would be injured instead of benefited by its administration.—*Robert E. Little, M. D. in Southern Med. and Sur. Journal.*

ON THE EMPLOYMENT OF ELECTRO-MAGNETIC CURRENTS IN THE TREATMENT OF PARALYSIS.

By GOLDING BIRD, M. D., F. R. S., &c.

(Dr Bird, whose experience of the therapeutic powers of electro-galvanism appears to have been considerable, gives the following classification of the varieties of paralysis in which he has found it decidedly beneficial.)

I. Case of partial paralysis resulting from congestion or other cerebral mischief, admitting of successful treatment. The congestion or effusion is removed, but a more or less palsied state of some part of the body remains.—Cases of this kind are common enough; and although the paralysis in general slowly disappears with the cause of the cerebral disorder, still the axiom of "*sublatâ causâ tollitur effectus*," does not always apply. Every now and then, although the blow has ceased, the bruise (if the expression be permitted) remains. Time, friction, change of air, restoration of the general health, strychnia, &c., will all succeed; but when with improved general health the stimulus of the electro-magnetic current be employed, success is much more general and certain. All that is required here, is to apply one of the conductors, covered with wet linen, over the trunk of the largest nerve of the part affected, and to pass the other, similarly covered with linen, over the region of the palsied muscle, so as to keep them actively contracting for some minutes. In recent cases, a single application will often succeed; in more chronic ones, the remedy may be continued for weeks, until the paralysis disappears. One of the first cases in which I used this remedy occurred, about nine years ago, in a gentleman, holding a prominent position at the bar. I saw him with Mr. Freeman of Spring Gardens, under whose care he was. This gentleman had palsy of the left side of the face, the relic of an hemiplegic attack following cerebral congestion, the result of intense study and anxiety. His cerebral disease had been cured, his general health restored, but the paralysed nerves of the face alone refused to resume their functions. The electro-magnetic current was applied daily, the patient's footman being the "medical electrician," and in a few weeks he quite recovered.

2. Paralysis of muscles supplied by the portio dura, following exposure to cold.—This form of local paralysis, when independent of cerebral mischief, generally yields readily to treatment. Cases, however, occur, in which the nerve remains inactive, and the patient walks about for a long time with a distorted face. The electro-magnetic current is here of great value. I have seen many cases of this kind; one to which I was recently called resulted from exposure of the left cheek of a lady for some hours to a current of air from a broken window. She recovered readily from the accompanying bronchitis, but was left with her features distorted, being drawn to the right side. I at once suggested the current from the apparatus; her maid-servant was the operator, and cured her mistress in a week.

3. Local Paralysis involving the whole or a part of the limb from exposure to cold.—This variety resembles the last, and is probably of a rheumatic character; although, it must be confessed, it is often a difficult task to define the line separating rheumatic from some paralytic affections. The following is one of many I have seen:—The actuary of one of the large assurance offices consulted me, with nearly complete paralysis of motion of the left arm, sensation being pretty perfect; no pain whatever in moving the limb. During a cold winter he had been in the habit of sitting at his desk, with the right side of his body roasting by a large fire, whilst the left was chilled by blasts of cold air from a frequently-opened door. Gradually, pain and stiffness appeared in the left arm, but no swelling. The pain gradually vanished, and the limb was left palsied. I ordered a conductor to be placed over the lower cervical spinal region, to influence the origin of the axillary plexus, the other being passed down the arm. After a few weeks he quite recovered. This gentleman was his own operator; he fastened the spinal conductor in its place by his neckcloth, and thus had the right hand at liberty to apply the other.

4. Paralysis affecting one side of the body, or a single limb, the result of exhaustion.—These cases are not unfrequent, and before their nature was understood they used to be fearfully mismanaged, the paralysis being looked to, rather than the cause producing it, and depletion and mercury employed when nutritious food and stimulants were really indicated. It often happens that these cases are directly traceable to an obvious cause, and then the diagnosis becomes easy. The insidious exhaustion and enervation produced by excessive lactation is a not unfrequent cause. I saw a well-marked case of this kind five or six years ago, in a patient under the care of Mr. Pretty, now residing in Mornington road. This lady, a person of weak frame and strumous diathesis, had become exhausted by nursing her third infant, and the left arm became gradually palsied as far as motion was concerned. A generous diet, weaning the child, and the electro-magnetic current, were ordered. I had lost sight of this lady until a few days ago, when I was called to see her sinking from phthisis. I then learnt that, under the treatment suggested, the paralysis had soon disappeared.

Paralysis, from enervation, has occasionally followed sudden loss of blood at flooding labours. I have witnessed complete hemiplegia as the result. A case of this kind I once saw with my friend, Mr. Law, of Finsbury, who had most properly treated the lady with generous diet and iron, under which she did well. When under this treatment, in spite of the restoration of the general health, paralysis remains, the electro-magnetic stimulus promises, from what I have seen, to be of much service.

5. Cases of Rheumatic Paraplegia.—To this category I refer cases of rheumatism, affecting chiefly the lower extremities, the pain and acute action disappearing, while more or less complete paraplegia remains. In these cases I have seen the greatest benefit result from electro-magnetism, as well as from ordinary electricity. I have witnessed so many of these cases thus treated so well, that I can speak with great confidence of its influence. One case will suffice. A man came last summer into Luke's ward, at Guy's, under my care, with complete paralysis of motion of the lower extremities. He was totally unable to move his feet or knees, and was carried into the ward. This state of things had followed the dashing of ice cold water on his legs and thighs whilst sweating profusely. But little medicine was ordered for this man, and in less than three weeks he, under the use of electro-magnetism, walked about the ward, aided by one crutch and his stick. In these cases one conductor should be firmly

pressed against the sacrum, whilst the other is placed in a basin of salt and water, in which the feet are immersed.

6. Paraplegia the result of enervation.—I am not quite sure of the pathological correctness of the title I have thus assumed. By it, however, I understand a series of cases in which paraplegia, both of motion and sensation, results from excessive fatigue, from sitting for weeks and months together, during the greater part of the twenty-four hours, with the spine somewhat bent. I knew of one case in which a distinguished physician actually became thus palsied, after assiduously devoting his time to the study of certain phenomena by the microscope, in doing which he, for hours together, used to lean over the instrument. There is, however, another cause, unhappily too rife, of these cases, the miserable result of the utilitarian dogma which makes human labour a marketable commodity, without any regard to the conservation of health. I may perhaps startle some by announcing the fact, that I have, in several instances, seen more or less complete paraplegia among a class of labourers of the most oppressed and most unprotected character. I refer to the needlewomen of this metropolis—a class of girls and women who, to earn enough of the wretched pittance they receive from the agents who employ them, to procure the commonest necessaries of life, are often compelled to work for fourteen, sixteen, eighteen hours, or even sometimes longer in the twenty-four hours. They toil on, indeed, at the needle, until their sight fails as they drop asleep, waking, after snatching a short slumber, to resume their work. These poor creatures receive from three half-pence to four-pence half-penny for making a shirt (for the latter price producing such as is worn by respectable mechanics and others.) They are unable to procure proper food, and are often driven to intemperance to forget their miseries, or to prostitution to add to their wretched income. No wonder that they become exhausted, enervated, bloodless; and paraplegia is not unfrequently the result. I had under my care in the hospital this last summer, a young woman who had once moved in a respectable sphere. She was quite paraplegic. She had been exhausted by working in the way I have described, and declared to me, that excepting dozing in her chair, she had often not slept for two nights together. She first felt vague pains in the toes, then in the knees; rigidity came on, and ultimately she became as I saw her, the lower half of her body being as powerless as if made of marble.

In many of these cases no organic lesion exists; and by due nourishment, rest in the recumbent position, iron or zinc, and the subsequent application of the electro-magnetic stimulus, recovery generally takes place. These cases are little known, and will continue (we must fear) to occur, so long as the labour of the friendless and dependent female is regarded with no more feelings of sympathy or humanity than the amount of duty performed by a steam-engine or any other machine.

In thus advocating the electro-magnetic current as an important and most valuable excitant of paralysed muscles, I must still acknowledge that it is anything but a universally successful remedy. In the great majority of forms of palsy above described, it is indubitably in some the actual curative agent; in all it expedites and aids the cure, in none is it injurious. As a general rule I think it will be found *cæteris paribus*, to act most effectually in proportion to the acuteness of the case. In chronic paralysis we must recollect that any new tissue deposited during, perhaps, many months, or longer, although organized like the healthy structure, and provided with its due supply of nerves, is still composed of fibres which have never obeyed the influence of the will—have never moved at the volition of the patient. This I believe to be the reason of our not at once rousing a long paralysed muscle into action. We can here only expect to succeed by submitting the paralysed part for a long period to the influence of the remedy. I cannot conclude without urging upon the profession the impropriety and mischief of using electricity in some cases merely because paralysis exists. In true spinal paralysis, depending upon organic lesion, the electro-magnetic current often does mischief, especially where there is sub-acute inflammation, or a highly irritable state of the spinal marrow—a state of things shown, among other symptoms, by the involuntary and unconscious starting of the legs. In all such cases the remedy does no good, and in some it does great harm, the effect of its local irritation; when applied to the legs, appearing to be reflected to the spine, and greatly increasing the patient's sufferings.—*Ranking's Abstract.*

A CASE OF EMPYEMA,

IN WHICH THE OPERATION FOR PARACENTESIS THORACIS FAILED FROM A CAUSE NOT GENERALLY NOTICED.

By JOHN SWETT, M. D., Physician to the New York Hospital.

It has happened to me to assist at, or to perform the operation for empyema seven times during the last eight years, and no difficulty has occurred to the easy and successful evacuation of the purulent matter until the present year. During this time, two cases have occurred to me in which no discharge of matter followed the operation, notwithstanding undoubted evidences were apparent to several intelligent physicians, as well as to myself. Both these cases terminated fatally. In one, the cause of failure appeared clear on post mortem examination; in the second case no post mortem examination was made, so that the cause of failure is at best conjectural.

A single gentleman aged about thirty-two years, with a strong family predisposition to tuberculosis, was attacked with hemoptysis about ten years ago, while pursuing his medical studies in Philadelphia. He soon, however, recovered his usual health, which was rather delicate, principally from the existence of dyspeptic symptoms, and continued to pursue his usual business, which was that of a clerk, until last autumn. He was then attacked by severe pain in the right side of the chest, cough, dyspnoea, and by other symptoms which were probably dependent upon an acute pleurisy. He, however, recovered his usual health, the cough, dyspnoea and pain in the side entirely leaving him, so that he could walk from his residence to his place of business, the distance of a mile and a half, during the coldest weather of the past winter, and with the greatest ease and comfort. Early in February, however, of the present year, the pain in the right side gradually returned with the cough and dyspnoea, and he complained of feeling feeble and unwell, although he continued to pursue his usual avocations at this time—he was attended by a physician of this city, who supposed that he was suffering from an affection of the liver. About the first of March, he was examined for the first time; by Dr. McClellan of Brooklyn, who found him much enfeebled, with a weak, rapid pulse, and with the physical signs of extensive effusion into the cavity of the right pleura. He was treated by a mild mercurial course, the gums being kept slightly sore for ten days, and by counter-irritation to the chest. Afterwards, tonic remedies were used, but they were soon abandoned, as they did not appear to agree with the digestive organs. In time, hectic symptoms appeared, while the gradual failure of the vital powers continued, as also the physical signs of the pleuritic effusion.

I examined the patient, for the first time, on the 25th of April last, nearly two months after his attack. He was then sitting up, his face pale and œdematous, somewhat emaciated, and with considerable loss of strength. His pulse was 116, and feeble—his respiration oppressed, with the ability to lie on either side, but with a preference for the affected side or the back. His cough was moderate, with a trifling transparent mucous expectoration. The appetite was indifferent and capricious, the stomach easily disturbed, the tongue red at the tip, and with enlarged papillæ—a slight tendency to diarrhoea existed.

On examining the chest, the right side evidently moved less freely than the left during respiration; it was universally dilated; it was œdematous, and outside the nipple there was a circumscribed bulging with tenderness on pressure, but without fluctuation. This side of the chest was also universally very dull on percussion. Anteriorly and posteriorly, over the upper third of the lung, a distinct bronchial respiration could be heard, also along the spine quite to the base of the lung—over the remaining portions of this lung, below the third rib in front, and laterally and posteriorly from the same level, all respiring sounds were entirely absent. Egophony existed over the middle portion of the side. The heart was considerably displaced to the left side, and the liver descended below the false ribs. Over the left side of the chest the percussion was clear, and the respiration pure and natural.

The condition of the patient, as well as the previous history of the case, convinced me, as it had already convinced Dr. McClellan, that a copious effusion of pus existed in the right pleural cavity. I hesitated as to the propriety of performing the operation for empyema, notwithstanding the favourable opinion of Dr. McClellan, because the strong family predisposition to tubercles, the occurrence of hemoptysis several years before; and finally the existence

of a bronchial respiration at the summit of the lung, induced me strongly to suspect that the lung was already the seat of a tuberculous deposit, and therefore, that an operation could be productive of but little benefit. The patient being disposed to leave the decision of the question entirely to us, Dr. Hoffman, of this city, was called in consultation; after a careful examination of the case, he was of the opinion that the operation for empyema should be performed. It was immediately performed (May 3d) by Dr. McClellan, in the usual place, laterally between the fifth and sixth ribs. The integuments were first divided by a scalpel; and a flattened canula, with a lancet shaped trochar, made for the purpose of penetrating the chest, was introduced. To our great surprise, no matter followed the removal of the trochar. A probe introduced to a considerable depth, much beyond the depth of the pleura costalis, came in contact with a solid substance, but still no pus flowed. We had observed, during the operation, after the division of the superficial parts, and which the existence of œdema prevented us from ascertaining before, that the intercostal space was not at all widened—that fluctuation was entirely wanting; and formed the opinion that an old adhesion had probably united the lung to the ribs at the place where the trochar was introduced.

The wound, kept from closing for some time, by the introduction of lint, with the hope that pus might at length find its way into it—at length healed. The patient, although well supported by proper means, gradually failed. Two new symptoms were noticed—the pulse became more feeble at the right than at the left wrist, and the patient complained of a severe oppressive dragging pain above the spine of the right scapula on rising, which was relieved at once by the recumbent position. The œdema of the chest also increased very much, and produced great deformity, by forming two large tumours, one anteriorly about the superior portion of the chest, the second, posteriorly about the base of the chest, but without fluctuation or other evidence of the pointing of matter. The feet were also noticed to be slightly œdematous.

The failure of the operation had, of course, thrown a good deal of doubt on the diagnosis of the case. The patient, therefore, proposed that Dr. Beales, of this city, should be called in consultation. After examining the case, Dr. Beales expressed the opinion that it was probably a malignant or cancerous disease of the chest. The same idea had already entered my mind, especially from the recollection of the cases detailed by Dr. Stokes, of Dublin, as well as of one I had myself attended, and which is published in the number of this Journal for July, 1845. In this case, the symptoms of pleuritic effusion appeared so marked, that tapping the chest had been seriously considered, while the true nature of the case, a large cancerous tumour, was only revealed by post mortem examination.

With these views of the case, it was of course thought advisable to do nothing beyond making the patient as comfortable as possible. On the 4th day after the consultation, June 16th, pointing occurred at the very spot where the incision had been made; a spontaneous opening took place, and a large quantity of purulent matter was discharged. The patient was somewhat relieved; the breathing became less oppressed, and the distressing dragging sensation at the top of the right shoulder, entirely disappeared. But the patient gradually sank, and died on the 23d of July.

Post mortem examination, 12 hours after death.—The right side of the chest was still somewhat dilated; the œdema had entirely disappeared, except at the lower extremities. The external opening into the right pleura continued. This cavity contained a quantity of fetid gas, and about one quart of pus healthy in appearance, but of a very nauseous odour. The whole pleura was covered by a thick false membrane of variable firmness, and detached without difficulty from the parts beneath. The pleura itself was somewhat thickened and opaque. The lung adhered to the diaphragm by old adhesions; also at the summit of the chest, anteriorly as low as the third rib, and posteriorly to the same extent. Laterally, where the operation had been attempted, there were no adhesions uniting the lung to the pleura costalis, but only a false membrane, somewhat friable in its texture, and adhering with moderate firmness to the pleura costalis. The right lung considerably compressed, exhibited no evidence of disease, except two small aborted tubercles at the summit. The left pleural cavity was healthy, except from the existence of some old adhesions at the summit. The left lung contained, at its summit, some old cretaceous tubercles and a cicatrix. Numerous minute, semi-transparent miliary tubercles, apparently of very recent for-

mation, were scattered throughout this lung. The heart was natural. A few tubercles, were also noticed under the peritoncum. The liver was closely united to the diaphragm by old adhesions; its structure appeared to be natural.

The cause of failure in evacuating the pus, in the above case, was not a mistake in the diagnosis of the disease, but unquestionably, I think, a *false membrane lining the pleura costalis, and so loosely attached to it, as to be pushed before the point of the instrument*, so that the cavity containing the pus was not entered at all. I was not aware that any writer on the diseases of the heart had alluded to this as a cause of failure of the operation, until Dr. Hoffman directed my attention to Dr. Watson of London, who, in his lectures recently published, states on the authority of Dr. Davies, that the operator should be careful to use a sharp instrument, otherwise the accident of pushing the false membrane before its point might occur. But no cases are referred to in which this accident actually occurred, neither is it stated that it has ever happened. That the dullness of the point of the instrument may be an occasional cause of this accident, is, perhaps, partially true in the above case; for in another case which occurred in the practice of Dr. Hyslop, and whom I assisted in consultation, the same instrument was used, and for the moment with the same ill success, notwithstanding that distinct fluctuation existed at the point where the trochar was introduced. The delay of the pus, was, however, only momentary; the introduction of a probe, probably by rupturing the false membrane, gave it a free passage.

But a dull instrument is not, as I think, the sole cause of the accident. That the false membranes forming the true sac in empyema are frequently thick and resisting, must have been observed by all in the habit of examining those who die of empyema; but the looseness with which these membranes are sometimes attached to the pleura would not, perhaps, be as readily noticed, unless in connection with the accident we are now considering. In a case that has occurred to me during the present year, the false membranes were not only three or four lines in thickness, but dense and elastic like leather, and yet so loosely attached to the pleura that, by a slight pressure of the fore-finger, they could be readily separated in the form of a complete sac.—*New York Journal of Medicine, January.*

ON THE CHARACTERS OF THE URINE,

THE BLOOD, AND THE DROPSICAL EFFUSIONS IN ALBUMINURIA.

Heller has recently published a long memoir in which he has displayed the results of numerous researches relative to the pathological characters of the fluids, in albuminous nephritis. As this memoir gives a very complete insight into our knowledge on the subject, the following brief analysis may be acceptable to the reader:—

1. *Characters of the Urine.*—The progress of albuminous nephritis comprises three distinct periods, each of which is characterised by particular modifications in the urine. In the first or period of congestion, the secretion has a deep red colour, which is due to the presence of blood, or at least to its colouring matters. Nevertheless, the reaction is ordinarily acid, excepting blood be present in an unusual quantity. In the second or chronic stage of the disease, the urine is more pale, of a straw colour; while in the third period, it again contains blood, but it is at this time strongly alkaline, ammoniacal and fetid. The secretion of urine is usually diminished during the whole course of the disease, excepting in some rare instances in the chronic stage, when its quantity is augmented.

In the first period, the urine, which is turbid, and high coloured, deposits either a whitish sediment, or a sediment which is coloured by the mixture of blood globules; the supernatant liquor is at the same time clear and red. The presence of the perfect blood-globules is not, however, in all cases, the cause of the deep colour of the urine; it is sometimes due to the hæmatisin alone. The urine may be acid, neutral, or alkaline, and its specific gravity is always below par. In the second period, in which the urine is turbid but clear, the deposit is of a browner colour; in this

period the reaction is acid. Later, the urine is often very pale, like thin whey, and deposits a light-coloured flocculent sediment; the urine at this time rapidly becomes ammoniacal; its specific gravity is, as before, diminished. In the latter periods the deposit is again reddish, from admixture of blood-globules; it is sometimes ammoniacal at the moment of excretion, but at all events soon becomes so; the specific gravity also rises.

In examining microscopically these various sediments, it is perceived that they are composed of two classes of materials, one comprehending those which are normally and constantly present in urinary deposits; the second, those which are accidentally present. The constant ingredients are:—1. The *Pavement epithelium*. This epithelium is always found in large quantity, especially at the commencement of the disease, at which time the deposit is almost entirely composed of it. The epithelial cells are not, however, of a natural figure, being rather round than oval, with very distinct nuclei.—2. The *Epithelium of the tubes of Bellini*. This epithelium is generally small in quantity at the commencement of the malady, wherein it differs from the former. It presents itself under the form of colourless canals, containing brownish nuclei of variable size. Considerable attention is required to detect the species of epithelium in the urinary deposit, as it is frequently so transparent as to elude observation.—3. *Albuminous flocculi*. (*Albumin pilze*.) These are very distinct, especially when the urine is alkaline, of various shapes and sizes, and resemble fragments of pearls.—4. *Mucus-globules*.—5. *Inflammatory globules*. These are found for the most part during the stage of congestion.—6. *Fatty globules*. Which exist principally in the chronic stages of the disease.

The accidental matters found in the urine of Bright's disease, are—1. *Crystals of uric acid*, for the most part colourless and of a rhomboid figure.—2. *Urate of Ammonia*, which exists principally in the early stages.—3. *Pus*, generally seen in the early periods.—4. *Crystals of uroglucin*. These crystals are seldom seen in the urine at the time of excretion, but are often visible after it has stood for some time. They appear as a crystalline mass of an indistinct blue colour.—5. *Crystals of ammoniaco-magnesian phosphate*.—6. *Carbonate of ammonia*. Both these are peculiar to the last stages.

The reaction of the urine is almost always acid in this disease, which reaction Heller thinks is sometimes due to the uroxanthin, as it cannot always be accounted for by the presence of uric or hippuric acid. The effect of the presence of blood in any quantity is to render the urine alkaline. In the latter stages the alkalinity is due to the development of carbonate of ammonia.

The *specific gravity* is variable. In one instance observed by Heller, it ranged from 1.006 to 1.048. In order to gain a correct measure of the specific gravity, the albumen should be first coagulated by heat and afterwards separated by filter.

Among the different substances contained in the urine of albuminous nephritis, there are some which require special mention, and first of the *uroxanthin*. This substance presents itself in solution as a yellow colouring matter, and exists in considerable quantity, changing either immediately or more slowly to a violet colour, after the precipitation of albumen either by heat or nitric acid. *Albumen* is another constant ingredient, but varies greatly in quantity; sometimes it is scarcely to be recognised, at others the urine coagulates into a solid tremulous mass. At the close of the disease the albumen often nearly disappears. *Urea* is always present but in diminished quantity. The *salts* are less abundant than natural, not only absolutely but relatively.

2. *Characters of the Blood.*—The blood in this disease loses its density in a notable manner, in consequence of the loss of albumen. It, however, retains its natural appear-

ance and coagulates perfectly. The serum is pale and of a low specific gravity. It contains urea in considerable quantity, but no biliary colouring matter. The fibrin and globules are not materially changed. The chief alteration therefore consists in a loss of albumen and the presence of urea; the latter condition, however, is not peculiar to the disease in question, but is observed also in cholera and in ischuria renalis.

3. *Characters of the Dropsical effusions.*—This fluid is of a pale yellow colour, alkaline, and of a low specific gravity. It contains albumen in small quantity, a circumstance which distinguishes it from the fluid of other forms of dropsy, in which, on the contrary, albumen is abundantly present. It never contains the colouring matter of the bile. By rest it deposits a small quantity of fibrin. It contains also epithelial cells, and salts in large quantity, and more particularly the chloride of sodium.

It is evident, therefore, from the above researches, that the constituents of the urine, blood, and serous effusions in albuminous nephritis preserve a certain definite relation. The water which should pass into the urine is found in the effusions; the albumen which is missed from the blood, is found in the urine, and to a small amount in the effusions; the urea deficient in the urine is discovered in the blood; and lastly, the salts which are absent from the urine appear in the dropsical effusion. (*Archiv. fur Physiolog. und Patholog. Chimie und Microscopie.* 1846, t. 2.)—From *Provincial Medical and Surgical Journal.* Jan. 27.

BRIGHT'S DISEASE OF THE KIDNEY.

The following conclusions, drawn by Dr. George Robinson, are the result of his researches on the pathology of Bright's disease:—

1. That the epithelial or secreting cells of the healthy kidney contain a certain quantity of oil; the proportion of which, under certain circumstances, and, within certain limits, may fluctuate considerably.
2. That it is an excessive increase of this fat leading to engorgement of the epithelial cells, and of the urinary tubes, which constitutes primarily and essentially Bright's disease of the kidney.
3. That the presence of albumen and blood in the urine, and the wasting of the tissue of the kidneys, are secondary phenomena, dependent on the mechanical pressure of the accumulated fat.
4. That, in the majority of cases, Bright's disease is associated with a similar fatty degeneration of the liver and arteries, and frequently of the valves of the heart; these diseases being related to each other as joint effects of one common constitutional cause.
5. That probably acute inflammatory dropsy, occurring in a person previously healthy, and the dropsy which occasionally supervenes upon scarlatina, have no necessary connection with Bright's disease of the kidney.
6. That most important evidence of the approach and presence of the renal disease may often be derived from a microscopic examination of the urine, in which will be found fat in unusual quantity; partly in the form of free oil globules, and partly contained in epithelial cells which have escaped from the urinary tubes.
7. That the insight which we have obtained into the peculiar change which the kidney undergoes in Bright's disease, and the knowledge we possess of the simultaneous occurrence of a similar change in other organs, may serve as important guides in the prevention and cure of the disease. (*Medico-Chirurgical Transactions, Vol. 29.*)—From *Provincial Medical and Surgical Journal.* Jan. 27.

CASE OF PERITONITIS, WITH PURULENT EFFUSION; SPONTANEOUS EVACUATION OF PUS THROUGH THE ABDOMINAL PARIETES.—RECOVERY.

By C. J. B. ALDIS, M. D., Physician to the London and Surrey Dispensaries.

The subject of this case was a little girl, aged seven, whom the author saw, for the first time, on June 5th. At this time the abdomen was much distended, with umbilical protrusion and fluctuation. A small swelling, with thin parietes, was observed between the margin of the ribs and umbilicus on the right side. It was reported that, eleven weeks previously, the child had been attacked with chilliness, followed by heat and vomiting, with pain in the belly, feverish symptoms, and delirium. The tumefaction of the abdomen first appeared in about four weeks.

After a careful examination of the abdomen, no enlargement of any of the viscera could be detected. The motions never contained purulent matter. From the history of the case, and the present symptoms, the author considered it one of peritonitis, with effusion, the swelling above mentioned being an effort of Nature to evacuate the effused fluid.

On the 8th of June, about five quarts of pus escaped through a perforation of the abdomen occurring naturally in the swelling. After this, the abdomen was uniform in appearance: no tumor nor remains of a cyst could be traced. The discharge continued more or less until the 31st of July, when it had nearly ceased. The author lost sight of the case until Sept. 14th, when he found she was in perfect health—a cicatrix had formed where the discharge issued.

The author concluded by remarking that the case is interesting from the unusual occurrence in children of such a termination of peritoneal inflammation. Dr. R. Lee has informed him that he has met with several cases of puerperal peritonitis terminating as the above; but has never met with a similar instance in children.

Dr. WATSON observed, that purulent matter, the result of peritonitis, was uncommon, whether in relation to children or adults. He inquired if any of the members had met with a case analogous to the one just read?

Dr. ALDENSON regarded the case as one of abscess in the walls of the abdomen, and thought that there was no evidence of peritonitis having existed.

Dr. ALDIS said, that he had, in the narrative of the case enumerated, various symptoms of peritonitis, such as tenderness on pressure, and vomiting; but as he had seen the case, on the first occasion, eleven weeks after the peritonitis had existed, he could not be more precise in his account of it. Five gentlemen besides himself had seen the patient, and regarded the disease as peritonitis. Fluctuation existed over the entire abdomen, which was very much distended. He referred to three cases of a collection of a matter to a smaller extent, occurring as the result of puerperal peritonitis, in the practice of Dr. R. Lee.—*Dublin Medical Press.*

SALIVATION FROM CAUTERIZATION OF THE CERVIX UTERI WITH ACID NITRATE OF MERCURY.

M. LISFRANC has observed that the application of this form of mercury will produce salivation in about one case in two hundred; but the symptoms are not in general severe. In one case, however, a female, in the ward of St. Augustin, in the Hospital of La Pitié, a single cauterization produced an abundant and obstinate ptyalism. [This fact is worthy of being remembered, not only as contradictory of the opinion generally entertained of the comparatively low vitality of the cervix uteri, but as a caution which should not be without value, in reference to the mode of treating uterine engorgements now much in vogue.]—*Gazette des Hôpitaux*, October 17, 1846.

TINCTURE OF CANTHARIDES IN BRIGHT'S DISEASE.

This medicine, in the dose of from fifteen to twenty drops, "par pot de tisane," combined with the use of decoction of bark and chalybeates, is the remedy which has given the best results in the treatment of albuminous nephritis.—(Bright's Disease.) Many cases have already been cured by this treatment.—*Ibid.*

SURGERY.

INHALATION OF ETHER IN SURGICAL OPERATIONS.

To the Editors of the Medical Press.

GENTLEMEN,—Having now administered the vapour of ether for the purpose of rendering surgical operations painless in a great number of cases at our metropolitan hospitals and at my private residence with perfect success, permit me, if not encroaching too much on your valuable columns, briefly to state the appearance of the patient, when under the influence of the vapour, that indicates the proper time for the operation to commence.

As my own operations on the teeth have now become numerous and satisfactory to those medical men who daily witness them, I will not occupy the time of your readers by entering into detail.—I am, gentlemen, your obedient servant,

JAMES ROBINSON, Surg. Dentist.

7, Gower-street, Bedford-square, January 16, 1847.

At the commencement of the inhalation always allow the patient to inhale the vapour three or four times without closing the nostrils; the nostrils being closed, observe carefully the appearance of the eye, the pupil of which will be found, in most cases, after about a minute's inhalation, to be considerably dilated (according to the susceptibility of the individual); after eight or ten more the pupil of the eye will remain stationary and fixed for a period varying from one to two seconds, it will then turn towards the upper eyelid; this motion will be repeated several times. If the vapour be continued, the pupil will be observed to turn under the eyelid, and remain fixed; three or four inhalations more and the operator can commence.

In operations which are protracted and require any length of time, cut off the vapour by means of a stopcock attached to the mouth-piece to the one I have invented. Permit the patient to breathe the atmosphere through his nose five or six times; again let on the vapour, and so on, breathing atmospheric air and the vapour of ether alternately, at intervals of half a minute, until within two or three minutes of the completion of the operation, when the pipe, &c., can be removed with perfect safety as to the result.—*Dublin Medical Press.*

ON THE DIVISION OF THE TENDO ACHILLIS.

Professor Stromeyer has lately published the following propositions, in which he lays down the indications for, and the manner to proceed in, dividing the tendo Achillis:—

1. The tendo Achillis ought to be divided with a small thin knife, with a sharp point, and slightly rounded, employing the subcutaneous section, and cutting from within to without, taking care to make but one puncture of the skin.
2. The tendon must be entirely cut through or the operation will be unsuccessful.
3. When other muscles or the plantar aponeurosis are retracted at the same time as the tendon, the former must always be divided before the latter.
4. After the operation the wound must be dressed with compresses, bound on with a bandage in the figure of eight.
5. With adults, on the fourth or fifth day after the operation, and with children, on the third or fourth, the first dressing must be removed, and if (as is often the case), the wound is found to be healed, it must be opened again; this must never be done when there is great ecchymosis, or when the wound suppurates.
6. Before putting the foot in the machine for the extension, the limb must be surrounded by a sound bandage, and some pads of cotton must be placed on all the parts that are to be submitted to great compression.
7. Extension must be proceeded with gradually and slowly, lessening it each time it gives pain to the patient.
8. The dressings must be removed if the patient suffers much and continued pain in the parts compressed, in order to avoid excoriations, erysipelas, or mortification of the tissues.
9. Immediately upon taking off the dressings the limb must be enveloped in wool.
10. It ought to be known that all those who have had the tendo Achillis divided, have felt a sensation of cold and numb-

ness, which is sometimes limited to the heel, sometimes extends over the whole limb. This sensation gradually diminishes, and generally disappears entirely by the sixth or eighth day.

11. The first day or the next morning after the operation, a viscid sweat of a disagreeable odour comes out on the foot, although the patient has never previously been subject to perspiration of the feet.

12. In placing the foot in the extension machine, it ought to be put in such a direction as to form a right angle with the leg; and this position ought to be maintained for eight days. After this period has elapsed, the limb must be enveloped in a circular bandage, and the patient must not be allowed to make any attempt to walk before the fourth week. Without this care, the limb will swell, the wound become irritated, and perhaps even the new tissue will give way.

13. It is impossible to name precisely the duration of the treatment. This must in some degree depend on the state of the patient, the degree of the deformity, and the extensibility of the articular ligaments.—*Ibid.*, Nov. 10, 1846.

TREATMENT OF EPISTAXIS BY INSUFFLATIONS OF ALUM.

When hæmorrhage from the nasal cavities assumes a dangerous aspect, recourse is generally had to plugging, a measure both inconvenient and painful. M. Lecluyse has successfully employed means far more simple, and at the same time, according to his own account, more certain—namely, the insufflation by means of a quill of equal parts of powdered gum arabic and alum. In one case this succeeded after three repetitions, other means, and plugging among them, having entirely failed.—*Gazette des Hôpitaux*, Nov. 3, 1846.

MIDWIFERY.

TWO CASES OF DOUBLE VAGINA.

By Professor MEIGS.

On the — October, 1846, I was called to see Mrs. ———, aged 20 years, in labour of her first child. She is a remarkably well formed and comely woman.

The pains were sharp and frequent, evidently of the kind called dolores præparantes, or grinding pains. After some time, as they had become more violent, I examined the state of the os uteri, which was of the size of a half-dollar, the head of the child presenting, and the ovum unruptured. In the course of an hour more, I examined again, and the os uteri was then nearly dilated. While pressing the palp of my index finger to the left side of the pelvis, it caught in a seeming bridle, which at the instant made me fear the cervix uteri had been broken, so as to detach a semi-circular portion of the os uteri, for the pains had been exceeding sharp, and their returns had been announced by violent cries. It was but a moment that I indulged the idea of a rupture of the cervix, for upon pushing the index farther, and flexing the finger, I found I could draw the point of it outwards, pulling along with it the bridle in question. Still I did not understand the case until, having withdrawn the indicator, I examined with it the structure of the external parts, and then learned that the lady was possessed of a double vagina. Supposing that such a revelation would not be agreeable to her, I kept my own counsel, hoping that the child's head would come down through the right or the left channel without injuring the septum. But after the head escaped from the circle of the os uteri, the bridle or partition would not go definitively to the left or to the right, although I thrust it first one way and then the other. The tie was so strong that the fleshy septum extending from the anterior to the posterior columns of the vagina, would not admit of the dilatation of the lower or outer third of the tube. And as the lady was very strong, and had powerful uterine pains, I began to perceive some danger of the vagina being ruptured by the vain efforts for expulsion.

I now explained to the monthly nurse, and to a relative of my patient, the cause of the delay and the necessity that had arisen. I therefore procured the requisite permission to expose the parts to an inspection. Upon this, the two orifices of the vagina were seen to be exactly alike, and the partition stretched across the head from front to rear of the passage, which by it was wholly prevented from dilating.

I now with a strong scissors divided the wall by a single stroke of the instrument, whereupon the child's head advanced, dilated the os magnum, and was speedily delivered with safety to both the mother and her infant. She never complained afterwards relative to the operation, and within a month I met her on foot in the streets.

A week after, I was called to a lady in her 30th year, in labour of her first child. Upon examining the state of the os uteri, I found the circle not much bigger than a quarter dollar, with thin margin, and within it the penis of the child; the scrotum being detected within the os uteri after the pain ceased.—As it was night, I went to another apartment and slept an hour, when being called, I found the os uteri very much dilated, and a buttock, near which was the right foot, presenting.

While inquiring into the state of the cervix, I hooked my finger into a bridle, just as I had done in the case above mentioned, and I confess that the same thought was obvious to me, viz: that she had broken off a half ring of the circle of the os uteri, but I immediately afterwards discovered that I had another case of double vagina under management. In this case the partition was very firm and thick, extending from the os magnum almost up to the os tinca. I inspected the external structures, and the two vaginas were each perfect and alike, included within labia pudendi common to both.

I was glad to find that only one foot of the child would come down, being fearful that if both should descend, I might not readily prevent one from entering the right and the other the left vagina.

I now disengaged the right foot and brought it down the right channel, the left leg was flexed upon the belly and thorax of the fetus. With a little assistance the foot was delivered and the buttock of the child coming downwards, thrust the vaginal wall to the left, and so the trunk was delivered.—I had great difficulty to extricate the head of the child, which remained long in the vagina; the infant breathing from time to time the air that I admitted through the hollow of my hand and fingers to its mouth and nostrils. The child, a male, was alive, and is in good health; the mother is quite well recovered.

Some years ago I was called by the late venerable Dr. Ruan to consultation upon a case of double vagina in a primiparous woman. I delivered the child with the forceps through the right canal, without difficulty or any injury, and had some five weeks later an inspection of the parts, which, as I remember, were very similar to those described in my second case above.—*Medical Examiner, Dec. 1846.*

APPLICATION OF ETHER VAPOUR TO THE PRACTICE OF MIDWIFERY.

Professor Simpson has employed ether vapour in the practice of midwifery, and is the first, we believe, who has made the application of this agent. The case was perfectly successful, as the following extract will show:—

"A few days ago Professor Simpson stated to his class that he had practised with entire success the inhalation of sulphuric ether in a case of the most difficult form of labour, and where otherwise the sufferings of the patient would undoubtedly have been extreme. The mother was lame and deformed. At a former accouchment, the labour lasted three or four days, and, from the necessarily protracted use of instruments, the patient's agonies were very great. On the present occasion, Dr. Simpson had previously determined to avoid, if possible, the use of all instruments, and to attempt to extract the infant by the feet. He expected to be aided in this by the use of the ether inhalation.

Accordingly, when labour had set in for a few hours, the patient was put under the influence of ether, and in a few minutes the child was turned and extracted, while the mother was altogether unconscious of the operation, and that, too, although the delivery was rendered excessively difficult, by the degree of compression to which the child's head required to be subjected. On afterwards awaking, or passing from her 'ethericalised' condition to the state of common consciousness, one of the first circumstances of which the patient became aware, was the noise attendant on preparing a bath to resuscitate the infant. A remarkable circumstance pointed out in the case by Dr. Simpson was, that, whilst breathing the ether, the labour pains or throes continued, and yet the mother (to speak paradoxically) felt no pains. We hear she is rapidly recovering. This is, we believe, the first instance in which this new and extraordinary agent has been employed in the practice of midwifery.—*London Med. Gaz., Jan., 1847.*

MEDICAL JURISPRUDENCE.

ON THE APPLICATION OF M. RIENCH'S TEST FOR THE DETECTION OF ARSENIC, TO MEDICO-LEGAL INQUIRIES.

By D. P. GARDNER, M.D., of New York.

The discovery of arsenious acid in complex fluids has always been an important problem in the science of toxicology, by reason of its frequent use for criminal purposes. From the statistics of the *Viscount de Cormenin*, it appears that between the years 1830 and 1840, three hundred and thirty-five cases of poisoning by arsenic, implicating four hundred and fourteen persons, were investigated by the Parisian tribunals alone; and two hundred cases more were ascertained, but not brought before the courts. The use of this substance, in minute doses frequently given, to produce a lingering death, has entailed upon the chemist the necessity of furnishing himself with the most delicate tests. For as the certainty of detection increases, the temerity of the criminal also becomes greater, so that the cause of morality is directly advanced by these researches.

Numerous tests are recognized in medicine, but all of them with the exception perhaps of Mr. Marsh's, are of little value in collecting the poison out of its solutions. This part of the process is, however, the most important, for the profession have unanimously agreed that no series of precipitations is satisfactory, unless the metal be finally reduced. If sulphuretted hydrogen be used, as recommended by Dr. Christison, for the precipitation of the arsenic, we are embarrassed afterwards by the collection of the matter thrown down, and then the reduction. This, and many other processes, advised by writers, require much time, with the use of materials not belonging to the medicine of a country practitioner, and they are less delicate than the method of M. Riech, for the discovery of arsenic as a commercial impurity in various fluids and re-agents. The reader is referred to No. 126, December 1841, of the London, Edinburgh and Dublin Philosophical Magazine, for an abstract of M. Riech's paper "on the action of metallic copper on solutions of certain metals, particularly with reference to the detection of arsenic." That article led me to examine the utility of the test recommended in medico-legal questions, and from extensive series of experiments, I became convinced of its great value, and have communicated this paper with a view of introducing to the notice of the profession, the simplest, and, as I believe, the most effectual method of collecting arsenic out of suspected fluids.

The principle on which the test is founded, is that pure hydrochloric acid exerts no action upon bright copper—but when certain metallic solutions are present, as an adulteration in the acid, it then attacks the copper, and there is thrown down the reduced metal of the solution. Many metals will thus precipitate themselves, but some do so when in minute quantities, whereas others fall down only when in large amounts. Some salts of mercury are reduced without hydrochloric acid, whilst arsenic in no proportion can tarnish copper, unless the acid be present.

Before Riech's process could be adopted by physicians, it was necessary to ascertain how far organic matters, such as may exist in the contents of the stomach, &c., were calculated to embarrass the operator. The existence of medicines, in the suspected fluids, might also destroy the value of the test. These inquiries and the

hope of simplifying, and rendering the process more certain, caused me to enter upon a full examination of the matter.

There are three stages in the manipulation: 1. The collection of the arsenic in Riench's test; 2. Its sublimation; 3. Its separation from other substances.

1. The collection of the poison out of a solution, in which no other active metallic agent is present, is most easily effected by the following process. A piece of copper, in the form of wire or sheet, is to be filed bright, and introduced into the suspected fluid; to this is then added a small quantity of pure hydrochloric acid, and the whole boiled together in a glass flask. Upon examining the copper after a few minutes' ebullition, when arsenic is present, its surface will either be found coated with a film of the colour and lustre of rolled zinc, or a deep black with slight polish; or covered with scales of a black colour. These various appearances depend upon the quantity of the poison present, and the extent of the surface of copper. If the boiling be continued after the scales are produced, they drop off, and are lost in the fluid, so that the collection becomes imperfect. All the arsenic present can be separated in this way, therefore the copper not only reduces it, but also affords us an accurate measure of the amount in solution.

In this part of the subject, the most important practical considerations are the determination of the amount of metallic copper to be used, and the method of procedure in dense fluids, such as broths, matter vomited, the blood, &c. In ascertaining the first, two things are to be remembered; 1st, that in the second step of the operation, the sublimation, the tube should be as fine as possible; and 2d, the thickness of the deposit of arsenic is not at all important, excepting that less copper is required, but there is danger of its falling off in scales if too little is used. The only rule that is applicable to all cases is, to examine a known small proportion of the fluid first, and ascertain how much copper is necessary to deprive it of all its poison; the estimate thus made may be applied to the remaining portions of the solution. If sheet copper be used, it should be cut into strips, not exceeding one fourth of an inch wide, and one inch long, so that they may be readily admitted into the subliming tube. The whole amount of poison present may be sublimed in several tubes. To be certain that all the arsenic has been separated from the fluid, successive strips should be introduced, and the boiling continued longer and longer, until no stain is produced in thirty minutes.

The colour and consistency of the fluids examined, may be sources of much embarrassment, when the usual tests are employed; and filtration is a necessary part of the process when the fluid re-agents are used. But neither of these qualities opposes serious impediments to the method under consideration. The coagulability of the solution is, however, a serious obstacle, because the arsenic is shut up in the coagula, and cannot be brought into contact with the copper. To remedy this evil, the coagulum should be cut up into minute pieces and warmed along with muriatic acid, the consequence of which is that all the poison will be dissolved by the acid, which is one of the best solvents of arsenic. The solid parts should be afterwards separated, by straining through a strong piece of cloth of close fabric. In this way, the drug can be collected out of blood. When the coats of the stomach are to be tested, they should be cut up, as is usually prescribed, and boiled with dilute acid. In operating upon fluids which are not yet coagulated, it is best to add dilute hydrochloric acid before heating, for in this way they do not form so dense a solid, but the acid exerts its solvent action throughout the mass, and may be afterwards pressed out by straining.

A certain number of copper strips will be thus obtained, coated with arsenic, and the next step is to remove from them any substances which may interfere with the second part of the process. Water, oleaginous matters, and solid particles from the solution adhering to the copper, are all to be removed. The first can be easily effected by bringing the metal into contact with bibulous paper and then warming it, gently. The other substances must be cleared off by introducing the strips into some warm water in a capsule, and moving the vessel so as to communicate a gentle motion to them; friction should be avoided. The cleaning may be continued in three changes of water, and the copper should be afterwards dried as already directed. It is of considerable importance that no empyreumatic vapour should be produced during the second stage of the manipulation.

2. The sublimation requires to be conducted with great nicety, when the quantity of poison is minute. The tube used should be

about six inches long, and open at both ends, one of which is drawn out to a perforated point. The diameter must be diminished with the amount of metal collected; when that is very small it should not exceed one tenth of an inch, and never be larger than is necessary, and as small as possible to operate with. The strips used in delicate investigations will therefore be reduced in size so as to enter the subliming tube. The greatest attention must be bestowed to cleaning the tube thoroughly; a piece of rag, attached to a wire, should be introduced, and drawn up and down, until all dust is removed; the outside should also be examined, so that it may be perfectly transparent. It must be dried by being warmed over the flame of a spirit lamp.

The copper strips, or as many as may be desired, are then to be introduced into the tube, so as to fill up the narrow end for about two inches. They must not be packed together, for it is necessary that air should pass freely amongst the pieces. The tube is next to be warmed up to the boiling point of water, so that any moisture that may still be present shall be driven off. The heat should be first applied at the occupied end, and the water as it condenses be heated so as to leave the tube entirely. If the condensing fluid be discoloured by the presence of empyreumatic matters, this part of the process must be managed with great care, so that the copper be not subjected to too high a temperature. All moisture having been expelled, the tube is to be allowed to cool down, and is afterwards to be brought again into contact with heat, to sublime the arsenious acid.

The pointed end is first to be heated to approaching redness, care being taken that the aperture be not closed thereby, and the tube is then to be slowly moved through the flame until it warms each part in succession, as far as the enclosed metal extends. The temperature at which the sublimation takes place is 380° Fah., which should not be much exceeded. If the process has been well managed, and arsenic be present, it will be found in the form of arsenious acid, occupying a position around the tube about half an inch beyond the copper strips. The part of the glass surrounding the strips will be stained by a whitish opalescent film, which when the heat has been carried high becomes green; it is a salt of copper, as is proved by the action of the ferrocyanide of potassium. This stain does not in any way interfere with the test. The metallic copper is encrusted with dioxide.

The arsenious acid of the ring is formed by the action of the oxygen of common air, which, as it passes over the heated metal, combines with any arsenic present. It collects on the nearest cool place, in the form of minute octahedrons of a remarkable brilliancy. The crystals are much more characteristic of arsenic than the reduced metal, which may be counterfeited by many substances. The smallest amount of the acid that can be satisfactorily recognized is the 1.500 of a grain. In examining it, the tube should be first cut immediately below the ring, and the deposit viewed with a magnifying glass at the open end and near the crystals; in this way the influence of the refractive power of the tube can be avoided. The production of arsenious acid from the metal is also advantageous, inasmuch as the bulk is increased in the ratio of their equivalents, or as 75.34 to 99.34 (AsO₃). The field covered by the crystals is also larger than that which would be occupied by the reduced arsenic. There is no sublimate which can rise under the preceding circumstances, that will in any way embarrass the operator.

Arsenious acid thus obtained forms a perfect evidence, and none other will be desired by the chemist. But in medico-legal questions it is proper to collect it, and use the other tests, so as to remove all doubt from the minds of the jury. The best way to collect the acid, is to cut the tube with a file, immediately above and below the ring, and pound up the whole in a mortar of sufficient hardness. The particles of glass cannot interfere with any test to be used.* A portion of the powder thus obtained should be digested in pure water, and tested by ammonia-nitrate of silver sulphuretted hydrogen, &c. Another part may be reduced with charcoal, and a third portion introduced into Marsh's apparatus.

In examining the delicacy of the foregoing process, it was found that one part of metallic arsenic in 200.00 parts of fluid can be detected, and 1.500 gr. sublimed and satisfactorily recognized.

* It should always be remembered that glass not unfrequently contains arsenic, which is used in its manufacture as a deoxidizing and decoloring agent. Every sample of glass to be employed in toxicological experiments, should therefore be carefully examined to prove its purity.—Eps.

Mr. Breet (Lond. Ed. and Dub. Phil. Mag., No. 132) did not succeed in detecting less than 0.0169, or nearly 1.250 gr. of metal, by Marsh's apparatus. M. Riensch considers the discoloration of the copper as a sufficiently delicate test for arsenic, but in my researches the colour of the deposit did not appear so perfect a means of discrimination as the production of the sublimate of acid. Its adamantine lustre and triangular facets are much more distinctive; the ease with which it can be volatilized—its rising without previously fusing, are all characters rarely met amongst chemical substances, and are, collectively, common to no other body. The length of time requisite to conduct an analysis up to the production of the sublimate, when the solution does not offer any cause of delay, does not exceed five minutes, for a small quantity. But the presence of other metals in the solution, as well as the impurities of commercial muriatic acid, are sources of embarrassment which it is necessary to examine before this test can be recommended to the profession. This inquiry forms the third division of our subject.

3. Arsenic exists in many specimens of hydrochloric acid met with in commerce. Such an adulteration is fatal to the delicacy of Riensch's test; and the acid used in the foregoing process must be first carefully examined and purified. The method recommended by M. Riensch for this purpose is the best—boiling the acid along with bright copper strips, as long as they continue to be stained with arsenic. The quantity of acid must be in proportion to the amount of fluid; there is no danger of using too much. But the presence of remedial agents in the suspected mixtures is a source of much more difficulty. In the November numbers for 1829 of the American Journal of Medical Sciences, there is an exceedingly important paper by Samuel Jackson, late of Northumberland County, Pa., on a case of suspected poisoning, which shows how necessary it is to know what substances are present in the fluid submitted for examination, before forming an opinion. Four highly intelligent physicians appointed a committee by the coroner for the examination of the contents of the stomach, &c., of a person recently deceased, drew up a report to the effect—that he had died from the effects of arsenic, when none of that drug existed in the matters analyzed. This serious error arose from the presence of tartar emetic and common salt, combined with the colour of the fluids. The tests used were sulphuretted hydrogen, ammonia-sulphate of copper, ammonia-nitrate of silver, and the production of the arsenical alloy with copper. The action of all these reagents on the suspected mixtures, was examined by the side of their effects on a solution of arsenious acid, without detecting the error. But notwithstanding this, and a certain amount of moral evidence produced against the accused, it has been made clear by Dr. Jackson that none of the poison was present.

Of all the substances which may be met with in the matters examined, the salts of antimony give rise to the most serious difficulties. If sulphuretted hydrogen or Marsh's test be used, it is impossible to distinguish between arsenic and antimony, when both are present in certain proportions. It is therefore of the first importance, that this and other similar sources of error should be removed, so as to present to the jury a satisfactory report.

The metallic substances to be expected, whether in broths, medicines, or the contents of the stomach, &c., are the sulphates of copper and zinc, acetate of lead, nitrate of bismuth, corrosive sublimate, calomel, tartar emetic, and nitrate of silver. Of these the salts of silver and lead are precipitated by the addition of sufficient hydrochloric acid, and therefore do not interfere with the test. The sulphate, and other compounds of copper and zinc, do not exert any action in this case. But bismuth, mercury, and antimony, attack the copper strips as well as arsenic.

Bismuth.—Upon the addition of hydrochloric acid to the nitrate, a sub-nitrate is precipitated, but afterwards dissolve by the acid. From this solution is produced, almost immediately, a pinkish grey deposit of a crystalline texture, when clean copper is introduced. The reduced bismuth accumulates on the strips until it drops off. But the presence of this metal does not hinder the reduction of the arsenious acid, so that they are both thrown down together, the only inconvenience being that more copper is required, and care must be taken that the arsenic be not lost by the falling off of the deposit. If both agents be present, the character of the precipitate upon the copper cannot be considered as a test at all, for it will differ with the proportion of ether. But by carrying on the process to the second step, the separation becomes perfect, for the arsenious acid sublimes away, and the bismuth

remains at the lower end of the tube. In this way, 1.500th grain of arsenic mixed with 1.100th grain of nitrate of bismuth was clearly recognized after sublimation. This impurity is not, however, often to be expected in the fluids under consideration.

Antimony.—The entire separation of these substances from arsenic, by the method proposed, forms one of its chief advantages. If tartar emetic be present, it will not in any way affect the copper until hydrochloric acid is added. The first consequence of the introduction of the acid into the fluid, is the precipitation of the oxide of antimony, which it afterwards dissolves. From this solution the metal is rapidly deposited in the form of a gray crust, very much resembling that formed when arsenic alone is present in small quantity, but unlike the latter substance there is no darkening, or falling off of the antimonial crust. It is an exceedingly delicate test for antimony alone; but when arsenic is also present, the appearances depend upon the proportion of one or the other.

In subliming, arsenious acid is separated; this takes place at 380° Fah., long before the fusion of antimony at 800° Fah., which is nearly a red heat. In the case before us, more care than usual must be devoted to the heating of the tube, so that the melting point of antimony be not exceeded. This furnishes us with an additional argument in favour of carrying the process to the second stage, before an opinion can be formed upon sufficient grounds.

Mercury acts much more readily on copper than any of the preceding metals. If corrosive sublimate be present in the solution, it attacks the strips without assistance of any acid. The deposition of mercury takes place without heat, but boiling hastens the process. Under these circumstances, arsenic does not fall down, however great the quantity present. The mercurial deposit is at first grey, and afterwards, as the amount increases, presents all the physical characters of the metal, so that it cannot be mistaken for any other substance. But when the quantity in solution does not exceed one part in fifty thousand of the fluid, it will not fall until hydrochloric acid and heat are added—conditions under which arsenious acid also is reduced. So that mercury can be separated from a solution, except a small quantity, without disturbing the arsenic; but if the amount be very minute, both metals fall down, and the character of the stain is no longer a test. The presence of corrosive sublimate is however rarely to be expected, since it is the more active poison of the two; but the test under consideration may be used for the detection of mercury, as well as arsenic and antimony. Calomel may be looked for in many instances; and although it will not be found in fluids, yet in those cases where the coats of the stomach are macerated in dilute hydrochloric acid, for the solution of arsenious acid, it will also be dissolved and converted into corrosive sublimate. But this is not so great an inconvenience as might appear at first sight, for by sublimation the two substances are entirely separated from each other.

Introducing the copper strips coated with both metals into the subliming tube, and heating, the mercury will rise in the metallic form, and the arsenic as arsenious acid. The extremity of the tube surrounding the copper will not be stained green, as already stated, but be coloured with the orange oxide of mercury. A microscopical examination of the sublimate will quickly decide the question whether any arsenious acid be present; for its octahedral form and transparency contrast strongly with the spheres of opaque mercury. In these cases it is best to dissolve the acid away from the metal, the boiling the whole sublimate in pure water and testing again, before an opinion is given.

The results of the examination made on this subject, may be condensed under the following heads.

1st. In consequence of occasional failure of Marsh's test, as shown by Messrs. Danger and Flandin, and the length of time necessary to carry on the process, when the minute quantities of arsenic are present, it has become a desideratum to possess some more certain means of collecting the poison out of solutions. The process recommended by M. Riensch is the best yet discovered; but it is not a good test for the metal, because many other substances produce deposits which resemble that of arsenic to a great extent. *But by subliming always from the precipitate collected, the test is increased in value and certainty.*

2d. When solids or coagulable substances are submitted for examination, the addition of dilute hydrochloric acid is recommended as the most promising means of dissolving out the arsenious acid.

3d. Copper strips should be added until no stam is produced after thirty minutes' ebullition.

4th. Antimony and mercury are the only propable sources of embarrassment. The first is separated from the mixed precipitate by never raising the heat to 800° Fah. Large quantities of Mercury are first removed by the action of copper alone; and when it is mixed with arsenious acid in the sublimate, the solution of the acid by pure water separates it from the metallic globules.

5th. The simplicity of the manipulation and the certainty of the result, are exceedingly strong recommendations. But the facility with which a large number of examinations can be made with only a small quantity of matter, is the most valuable feature of the process. If all the operations are conducted in small tubes, an ounce of the suspected fluid will be sufficient to yield ten or more portions of sublimate.

6th. All the difficulty and loss of collecting common precipitates are removed by using the test, and it is liable to fewer sources of failure than those already known.

In view of these advantages Riench's test is recommended to the profession as a valuable contribution to toxicology.—*New York Journ. of Med. Jan. 7.*

MISCELLANEOUS.

PAYMENT OF MEDICAL WITNESSES.

This subject has been attracting attention in Great Britain as well as in this country. On two recent occasions (see *American Journ. of Me. Sci.*, Oct. 1846, p. 538, and Jan. 1847, p. 257) the rights of medical witnesses have been sustained by the courts, and we are pleased to learn, from the following extract from the *Cork Constitution* of August 4, 1846, that justice has at length also been meted to them in Ireland. —

"His lordship (Judge Jackson) said he had received a memorial from Dr. Barry of Kanturk, on the subject of remuneration to medical witnesses for their attendance at assizes. In reply, he would say, that on the Leinster circuit, Baron Pennefather ordered a physician residing in the country two guineas a day while in attendance at the assizes, and Mr. Serjeant Stock had made the same decision in Limerick. He therefore would direct that Dr. Barry should receive two guineas a day."

It is a new feature, says a correspondent of the *Lancet*. to have the public functionaries thus acknowledging that the services rendered by medical men to the crown should receive reasonable compensation; and I am happy to say that most, perhaps all, of the medical men who were summoned to the late Cork assizes, on behalf of the crown, were treated with some measures of politeness and justice. One gentleman, who for many years had been summoned before the judges of assizes, and oftentimes had been detained from home for from ten to fourteen days, and who hitherto had never received more than five pounds for his attendance, on the last occasion, much to his amazement, was respectfully presented with twenty guineas.—*The Med. News and Library.*

CHEMISTRY.

POISONING BY PRUSSIC ACID.

Dr. Fleming of Glasgow, gives the following results of the chemical test in a case of poisoning by Prussic Acid:—

"Some hours after the inspection, four ounces of a thick pulpy fluid, which had a distinct odour of hydrocyanic acid, were taken from the cardiac extremity of the stomach, and in the clear fluid obtained from this by filtration, the test by the protosulphate of iron failed in producing the distinctive blue colour.

"Ninety hours after death the remaining contents of the stomach, amounting to about fourteen fluid ounces, and consisting of half-digested animal food, bread, and apparently malt liquor, having a faint odour of prussic acid, were put into a retort, with the addition of some sulphuric acid. The retort was placed on a sand bath, and distilled with a gentle heat for three hours, when two ounces of a clear fluid had collected in the receiver, having a distinct odour of prussic acid, masked, however, by the peculiar sour smell of half-digested food.

"1. On rendering a portion of the distilled liquid alkaline by potash, the addition of a solution of the protosulphate of iron produced a dirty green precipitate, which by a few drops of hydrochloric acid was changed to a deep Prussian blue colour.

"2. To the fluid rendered alkaline by potash, the addition of a solution of the sulphate of copper produced a greenish precipitate, which became white on adding a few drops of hydrochloric acid.

"3. On a solution of the nitrate of silver being added to the distilled liquid, a copious white precipitate took place. When this was dried and heated in a very narrow reduction tube, it emitted a gas which, when ignited at the end of the tube, burned with a rose-coloured flame.

"The complete success of these experiments thoroughly established the presence of prussic acid in the stomach."—*Monthly Journal of Medical Science.*

THE

British American Journal.

MONTREAL, APRIL 1, 1847.

THE THIRD VOLUME.

The British American Journal of Medical and Physical Science has now been before the public and the profession of this province for two years; and the manner in which it has been supported fully warrants the belief, that it may now be considered as permanently established. Doubts of success are now lost in certainty; and the experiment of sustaining a journal by the profession, whose interests are advocated with honesty of purpose and independence, is triumphant. On the 1st May ensuing, the first number of the third volume will make its appearance, with such improvements in its typographical execution and arrangements, as will recommend it even more favourably than heretofore to the consideration of its friends and supporters.

Chiefly devoted to medical literature, its pages will continue to present a faithful record of the progress of the medical sciences. Nor will the physical sciences be overlooked. Although, from the nature of the work, the space allotted to the last must necessarily be limited, for the purpose of affording to a very large majority of the subscribers, that information which must be *most useful* to them, yet the desire is rather, to render the journal a local medium of communicating interesting facts and observations in the physical history of this province, than to convert it into a periodical of which the vast and rapid progress which the physical sciences in general are making, should constitute a constant theme, or a marked or prominent feature.

The medical profession of this province may be now deemed to be in a state of transition. Governed by antiquated laws, which make no provision whatever for the education of those aspiring to its future practice, measures with that object in view, as well as for other purposes, will soon engage general attention. The

present is indeed a critical period in the medical history of the province, pregnant with important results, which may be either beneficial or injurious, in accordance with their nature. On the eve of the introduction to the legislature of important measures, seriously affecting the future position and the prospects of the profession, these measures, ostensibly proposed for its amelioration, will receive, as before, a careful and *independent* examination. Devoted to the interests of the profession generally, the journal will faithfully maintain them in their integrity; and, if the profession be true to itself, the principles avowed in its pages will not be overlooked by the legislature, when deliberating on the measures which may be submitted to it.

To the contributors to the original department of the journal, medical as well as physical, the thanks of the editor are due. Fears certainly were entertained, that this department of the journal would not have been sustained in the manner in which it has been. Although the limited space allotted to it has been fully occupied, and to a greater extent than has occurred with any other journal of the same nature previously published in this colony, yet communications on physical subjects are still a desideratum; and we would earnestly call on our friends to record, in its pages, those matters of physical interest which must, when collectively considered, constitute a most important means of furthering our acquaintance with the physical development and resources of this important section of the British Empire. For the record, and dissemination of such facts, this journal presents the only truly legitimate medium of which this colony is, in the meanwhile, possessed; and must, in due process of time, become a work of reference on such topics.

The journal being now fully established, it will assume to itself an independent stand. It seeks for no favours. Its exchange list is large, but to it will be added, with pleasure, those local papers which may give insertion to this notice, and transmit a copy to the editor.

As intimated on previous occasions, all communications on scientific subjects must be transmitted to the editor, postage free; while on every other matter connected with the journal, letters and communications are to be addressed to the publisher, Mr. Becket.

In consequence of its extensive circulation among the medical profession of this province, the advertising sheet presents a desirable means of introducing to the general notice of the Profession, on the part of druggists and booksellers, matters which may be of interest.

The 1st and 2d volumes may be obtained, either bound or in numbers, by application to the publisher,

Montreal, March 15, 1847.

SUMMARY PUNISHMENT OF ILLEGAL PRACTITIONERS OF MEDICINE.

We copy the following judiciously written editorial article, from the *Morning Courier*, Feb. 4; and concurring entirely in the statements which are contained in it, we submit it to the Profession of the Province without comment. We would only observe that the certificate of the Apothecaries' company, is the license which qualifies the general practitioner of England; and, as the criminal law of England is the one which holds in this colony, we certainly conceive that impostors and quacks here can be rendered amenable to its penalties as well as in Great Britain. We think the matter is deserving of consideration by the Profession at large. Numerous are the complaints which have reached us, relative to quacks and medical impostors, in the country districts. The remedy is of easy application, and we should be happy to enumerate a few instances of its successful application:—

The article which we quote below from a London daily paper, we most especially commend to the attention of our general readers, and most particularly to that of the Medical profession, and the Judicial authorities.

The general sanitary condition of the community is of pre-eminent importance, and numerous extracts and editorial articles given from time to time in the columns of the *Courier* demonstrate the interest which this question is at present exciting in England. On this subject we shall at a future period have more to say. We wish, if possible, to induce the Municipal authorities of this City to pay more attention to this question before the meeting of the Legislature, in order that they may apply for a Local Act, under whose provisions they may enforce such general sanitary regulations as are absolutely necessary to ensure the health of the population of Montreal.

If, however, the general health is a matter of interest to the community at large, and its preservation is a question more immediately concerning the public authorities, the subject to which the following article alludes is one that more properly belongs to individuals and the Medical profession.

We presume that there is no occasion for us to state a fact which is sufficiently well known, that is, that this Province is inundated with Medical practitioners who are utterly unqualified to prescribe for the bodily ailments of the lieges, in fact, quacks, under whose diabolical "simples" and other nostrums hundreds of the population are annually murdered. Against this infliction we believe there is no "specific" remedy. At least we remember some time ago having occasion to notice the arrival among us of a Yankee, who pretended to be an oculist, aurist, or some thing of that class, we mentioned the circumstance to a Medical friend, and advised him, if there was any law by which it might be done, immediately to institute a prosecution against him. We were then told that

there was no law which could be resorted to in order to put a stop to irregular practice. This we thought rather extraordinary, and wondered at the existence of a Board of Medical Examiners and the formality of a license to practise, so solemnly promulgated in the Official Gazette. It is true that we were always aware that the examination before this Board was to a certain degree a farce, for to our own certain knowledge men have passed their examination there and been admitted to practice who knew nothing of anatomy but what they had learned from books: they had never in their lives dissected a subject, yet a good memory enabled them, by dint of severe cramming, to undergo the ordeal. But still to enforce an examination on Canadian students, while there are no means of preventing foreigners, not only really educated men from the American Colleges, but the most abominable quacks, from practising when and where they please, certainly does seem to us a little bit of a farce.

Medical men, who come to this Colony, and have obtained their diplomas from regular institutions in England, Ireland and Scotland; medical men natives of Canada, who have gone home to study and there taken their degrees, and men who have studied and taken their degrees in Toronto, and Montreal, have obtained their skill and their standing in their profession at an immense expense and after years of hard study; is it either just or right, or expedient, that these men should not be protected from the intrusion even of educated foreigners? If so, is it not still more imperative that they be protected against quacks! We think this will be readily conceded.

We are aware that this is stating the case on the very low grounds of the mere pecuniary emolument to which every professional man is entitled; but the highest ground we can take up, is to point out to the people the evils under which they labour from the practice of these self-styled Physicians. A general paper like the Courier is not the proper medium in which to discuss medical cases; were it so we could detail instances in which the remedies of these quacks have entailed on their deluded patients the most intense sufferings, which have often resulted in permanent ruin of the constitution, loss of the faculties, and distortion of the limbs; and many cases in which their mal-practice has resulted in a very speedy loss of life, their ignorance and its result having been concealed from public view by the spade of the sexton.

Let the article which we quote below, be carefully considered by the medical profession, and by those legal authorities whose duty it is to watch over the lives and properties of the Queen's subjects; it will be seen that the common law of England, the criminal law, which we fortunately possess in Lower Canada, does, in the opinion of the Great Law Officers of the Crown, in England, afford to every man a remedy against illegal medical practitioners. It is true that this opinion has only been sought by one of the medical corporations, but that which applies to practising apothecaries, must also apply to practising surgeons and physicians. In Canada these distinctions do not

prevail. The medical men here are general practitioners, and the same rule must apply in their case.

We are sorry to state that among the medical men of Lower Canada, and particularly, of the city of Montreal, there appears to be very little of that *esprit du corps* which generally actuates bodies of similar character in other countries. But they appear to give way to petty jealousies and to be divided into little cliques which must ever prevent unanimity of action on questions of interest to the profession at large. It is not our province to decide who is in the right, or who is in the wrong, in these matters—were we to decide at all, we should probably say that their very great acrimony and vehemence would prove both parties to be in the wrong. We would gladly see these differences determined, because we are convinced that through them the public suffers,—

“Quid quid delirant reges,
Plectuntur Achivi.”

It is not for us to say whether the medical men themselves should attempt to determine this question, by instituting a prosecution in the Court of Queen's Bench, against the first irregular practitioner they can lay hold of, or whether it should be left to others. We have done our duty to them and the community by publishing an article which hitherto appears to have escaped the notice of our contemporaries. We believe this to be one of those questions of practical reform of an existing abuse, which is of much more importance than disquisitions on abstract questions of government:—

PRACTISING AS AN APOTHECARY WITHOUT LEGAL QUALIFICATION, AN INDICTABLE OFFENCE.—The Society of Apothecaries have issued a circular, stating that, entertaining an opinion that a penal check upon the practice of medicine by unqualified persons is indispensably necessary for the protection of the public, and that the pecuniary penalty imposed by the Apothecaries' Act is but ill adapted for checking such practice, they have long desired a more summary mode of proceeding against illegal practitioners. A recent decision of the Court of Queen's Bench, in a criminal prosecution instituted against an attorney for practising without qualification, seemed to lead to the conclusion that notwithstanding the specific pecuniary penalty imposed upon unqualified persons practising as apothecaries, such persons might be indicted criminally as for a misdemeanor. This decision appeared to the Society to suggest a mode of proceeding for checking the illegal practice of medicine, which might be attended with such important results, that they determined to lose no time in obtaining the highest legal opinions upon the subject; they, therefore, laid a case before the law officers of the Crown, and from the answers given to the questions submitted, it is the opinion of these learned gentlemen that an indictment will lie against a person who has practised as an apothecary without legal qualification.

The following is the opinion:—1. We think that an indictment will lie against a person who has practised as an apothecary without legal qualification, notwithstanding the particular penalty imposed by the 20th section of the Act, and the disability imposed by the 21st section. 2. The indictment may be preferred in any of the ordinary criminal courts having cognizance of misdemeanors committed in the county, or place, in which the party has so illegally practised, and it may be preferred at the instance of a private prosecutor. 3. We think it is competent for the Society of Apothecaries to prefer the indictment. 4. The punishment, as in case of other misdemeanors, would be fine or imprisonment, or both, at the discretion of the court. 5. We are not aware that any more summary proceeding than an indictment can be resorted to for the punishment of persons practising as apothecaries without legal qualification.—JOHN JERVIS, DAVID DUNDAS, FREDERIC ROBINSON. Temple, Nov. 23.

It is, perhaps, hardly necessary for the society to point out the

increased facilities which this mode of proceeding affords for putting the law in force against unqualified practitioners. Instead of proceeding for the recovery of penalties by a civil action, which in the case of a country practitioner could only be tried at the Spring and Summer Assizes, an indictment may be preferred at the Quarter Sessions and at the Assizes also; and instead of the power of proceeding against unqualified practitioners being restricted, as in the case of the specific penalty imposed by the statute, to the society of apothecaries, it will be competent for any person to prefer an indictment who may be disposed to do so. Another distinction between the two modes of proceeding, which is likely to operate still more powerfully as a check upon illegal practice, is this, that whereas an individual against whom a judgment for a penalty is obtained, under the present form of proceeding, can relieve himself from the consequences of his offence by obtaining his discharge under the bankrupt or insolvent acts, an individual found guilty on indictment of having practised as an apothecary without legal qualification, will be punishable by fine and imprisonment, and will have to undergo, whatever measure of punishment the Criminal Court may in its discretion award.

The authorities of the Apothecaries' Hall express a hope "that a public intimation, that the penalties of the law can now be enforced against illegal practitioners of medicine more summarily than heretofore, will deter all persons from practising as apothecaries who have not given such evidence of their competency to practise as the law demands. But if individuals who have not possessed themselves of a legal qualification will persist in practising in the absence of such qualification, they will do so at the risk of being criminally indicted for the offence at the instance of any individual prosecutor who may be induced to prefer an indictment against them." The Society further state their readiness to enforce the law to the extent of the means placed at their disposal; but those means are inadequate to the institution of frequent prosecution. It may, therefore, be anticipated, that indictments will be preferred at the instance of other parties; and the Society state "that they will endeavour to render such experience as they may have acquired in administering the act of 1815 available in furthering the ends of justice; and that they will be prepared, upon proper application, to furnish any information in connexion with the subject of illegal practice which they may have it in their power to afford."—*London Express*.

Discovery of Fossil Bones.—No little interest has been excited in this city, by the discovery, lately, of some fossil bones, vertebræ, in the blue clay deposit behind Cadieux village, in the immediate neighbourhood of this city, and about a mile N. W. from the northern end of the mountain. They were first observed by the workmen, when excavating for clay for the purpose of making brick, at the depth of fifteen feet from the surface, at the side of a steep bank, at the base of which a small rivulet takes its course. We have seen the spot, and the vertebræ. They are nineteen in number, gradually diminishing in size; the space between the ends of the transverse processes of the largest measuring twelve inches. When placed in continuity they measure about four feet six inches in length, about eight of them are caudal vertebræ; the transverse and spinous processes in these being in the first instance rudimentary, and finally becoming lost altogether. They are undoubtedly the fossil remains of a large cetaceous animal, and the discovery altogether is replete with interest. The excavation is still going on under the direction of Mr. Logan the Geologist, and although in the mean while, nothing further has been developed, yet we can scarcely doubt that ultimate suc-

cess will attend the efforts. The vertebræ are in an exceedingly fine state of preservation. The blue clay deposit, in which these remains have been discovered, belongs to the post-pliocene period, and abounds in marine shells. From the locality which we have specified, specimens of the Tellina, Saxicava, Mytilus, Mya, Balanus, Psammobia, and Nucula, have been taken. The blue clay deposit has been observed in this country as high as 500 feet above the level of the sea; the height of the stratum from which the vertebræ have been removed, may be safely estimated at about 100 feet above the same level. We shall keep our readers advised of the further progress made in this interesting matter.

Kingston and Eastern Hospital of Upper Canada.

—We notice, in the *Kingston Chronicle*, an interesting account of a meeting, held in that city on the 15th March, of the Committee of the Hospital, at which the first annual report was read, adopted, and ordered to be published. From it we learn that the Hospital was opened in November, 1845, between which period and February 19th, 1847, 244 patients had been admitted. We have no account of the diseases, but the following table gives the results:—

Cured.....	156
Left Dissatisfied.....	39
Sent to Lunatic Asylum.....	1
Dismissed for Bad Conduct.....	10
Died.....	26
Remaining in Hospital.....	21

244

Three-fourths of whom were connected with the commercial marine of the lake.

From the successful effort thus made to establish an hospital, the Committee have come to the conclusion to found it on a firmer basis. It is accordingly proposed, to apply for an Act of Incorporation at the next meeting of the Legislature, and the constitution of the Montreal General Hospital is assumed as the model or type of that of Kingston, modified according to the circumstances, and the necessities of the locality. We have previously expressed our opinion, on the peculiar advantages which the city of Kingston presents for the establishment of an institution of the kind. Situated at the foot of the lake navigation, on the high road of immigration to the fertile districts of the sister province, the necessity for such an institution is so obvious, that we wonder it has never been before attempted. We sincerely hope that the work, now commenced with the spirit manifested at the meeting, will be successfully carried to completion, and that the philanthropy of its founders will meet with its due reward, in the gratitude of those who have been par-

takers of the benefits what it is calculated so well to afford. We shall be happy to record, from time to time, its progress, and its utility as exhibited in its work.

Employment of Sulphuric Ether Vapour in Montreal, Quebec, and Sherbrooke.—This agent has been employed in Quebec, this city, and Sherbrooke; but not with uniform success. In Quebec, Dr. James Douglass lately amputated the toes of a man, who had been previously narcotized by the inhalation of the vapour. More lately, in this city, Dr. Nelson removed a tumour from the thigh of a woman under similar circumstances of narcotism. The removal of a leg by Dr. Worthington, of Sherbrooke, was effected under a like state of insensibility from the same cause. In these three instances the successful use of the ether vapour was complete. At the Montreal General Hospital, circumstances lately demanded the amputation of the leg of a patient. Several protracted attempts were made, and at different intervals, under Dr. Campbell, to induce the narcotic effects of the ether, but without success; the leg was afterwards removed in the ordinary way. As the man had been of very intemperate habits, it becomes a question how far these habits may have influenced the susceptibility of the patient to the influence of the ether.

Ohio College of Dental Surgery.—A College for teaching Dental Surgery, has been in successful operation for the last six years, in Baltimore. Last year a second, with a similar object in view, was started at Cincinnati, Ohio, under the name of the Ohio College of Dental Surgery. The medical staff comprises three Professors: one of Dental Anatomy and Physiology, one of Practical Dentistry and Pharmacy, and one of Dental Pathology and Therapeutics; one Lecturer on Chemistry; and two Demonstrators, one of Anatomy, the other of Practical Dentistry. We do not doubt the ultimate success of the undertaking.

NOTICE TO CORRESPONDENTS.

Dr. Marsden's (Nicolet) Case of Hydrops Ovarii; Dr. Worthington's (Sherbrooke) Case of Amputation of the Leg, under the Influence of Sulphuric Ether Vapour; and Dr. Crawford's (Montreal) Case of Ulceration of the Appendix Vermiformis, have been received, but at too late a period to receive insertion in this number of the Journal.

The two first communications did not reach us until after the original department of the Journal was in type, and the middle sheet in page form. The Journal has been, in accordance with instructions received, sent to Drs. Morson and Barry, (Bytown), Dr. Nicol, (Perth), and Dr Purves, (Guananoque). These gentlemen can be supplied with the back numbers if intimation be given to that effect.

BOOKS, &c., RECEIVED DURING THE MONTH.

- Boston Medical and Surgical Journal, March 3, 7, 10, 17, 24.
- Medical News and Library, March.
- Southern Medical and Surgical Journal, March.
- The Medical Examiner, March.
- Buffalo Medical Journal, March.
- New York Medical and Surgical Reporter, February, 27, March 6, 13, 20,
- Illustrated Botany, Nos. 11 and 12.
- The American Journal of Science and Arts, March.
- The Southern Journal of Medicine and Pharmacy, March.
- Missouri Medical and Surgical Journal, February.
- Dublin Medical Press, February 3, 7, 10, 17, 24.
- Provincial Medical and Surgical Journal, February 17, 21.
- La Lancette Canadienne, March 1 15.
- Mesmerism in India, and its Practical Application in Surgery and Medicine. By James Esdaile, M.D., Civil Assistant Surgeon, H.C.S. Bengal. London. 1846.
- The American Journal of Dental Science, March.

REPORT OF THE MONTREAL GENERAL HOSPITAL FOR JANUARY AND FEBRUARY, 1847.

DR. CRAWFORD AND DR. MACDONNELL, Attending Physicians.

Remained,	92	Discharged cured,	157
Admitted,	173	Irregular,	2
		Died,	5
Total treated,	265	Remaining,	101
		Total,	265
IN-DOOR PATIENTS.		OUT-DOOR PATIENTS.	
Belonging to Montreal,	138	Belonging to Montreal,	321
Immigrants,	29	Immigrants,	36
Seamen,	6	Seamen,	1
Total,	173	Total,	358
Males,	99	Males,	189
Females,	74	Females,	169
Total,	173	Total,	358

DISEASES AND ACCIDENTS.

Abscessus,	4	Hypochondriasis,	2
Acne,	1	Lepra Vulgaris,	2
Ambustio,	1	Malingering,	1
Amenorrhœa,	1	Morbus Brightii,	1
Anasarca,	1	“ Coxæ,	1
Bronchitis,	6	Menorrhagia,	1
Bubo,	1	Neuralgia,	1
Bursitis,	1	Necrosis,	1
Caries,	2	Ophthalmia,	3
Cataract,	1	Paraphymosis,	1
Conjunctivitis	1	Paralysis,	2
Constipatio,	1	Paronychia,	1
Contusio,	5	Psoriasis Palmaris,	2
Cynanche,	1	“ Guttata,	1
Debilitas,	1	Phthisis,	3
Diarrhœa,	6	Pleuro Pneumonia,	1
Dyspepsia,	3	Pneumonia,	1
Eczema,	1	Porrijo,	3
Epilepsia,	1	Rheumatism,	6
Erythema Nodosum	1	Sinus,	1
Febris Com. Cont.,	38	Scirrhus,	1
“ Intermit,	1	Scrofula,	1
“ Typhus,	9	Scarlatina,	1
Fractura,	7	Stricture,	1
Furunculus,	1	Subluxatio,	1
Gastritis,	2	Syphilis,	10
Gelatio,	6	Synovitis,	1
Gonorrhœa,	1	Tumor,	2
Herpes,	1	Tympanitis,	1
Hemorrhœis,	2	Ulcus,	6
Hepatitis,	2		
Hysteria,	3	Total,	173

ALEX. LONG, M.D., House-Surgeon.

BILL OF MORTALITY for the CITY of MONTREAL, for the month ending FEBRUARY 28, 1847.

DISEASES	Male.	Female.	Total.	Under 1.	1 & under 3	3 - 5	5 - 10	10 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 75	75 upwards
EPIDEMIC OR INFECTIOUS.....	Small Pox,.....	1	2	3		2	1							
	Fever,.....	5	3	8	1	3	1	2		1				
DISEASES OF BRAIN AND NERVOUS SYSTEM.....	Convulsions,.....	3	1	4	3		1							
	Dentition,.....	3	4	7	3	5								
	Apoplexy,.....	1	1	2							1			
	Water in Brain,.....		2	2		1	1							
	Paralysis,.....		1	1									1	
DISEASES OF RESPIRATORY ORGANS,.....	Consumption,.....	17	16	33	5	2	1		1	6	6	5	3	4
	Asthma,.....		1	1										
	Croup,.....	4		4	1	2	1							
	Pleurisy,.....		1	1									1	
DISEASES OF ABDOMINAL VISCERA.....	Dropsy,.....		3	3				1		2				
	Inflammation,.....	5	7	12	6	4		1					1	
OTHER CAUSES AND DISEASES, AND DISEASES NOT SPECIALLY DESIGNATED,.....	Accidental,.....		1	1				1						
	Debility,.....	3	5	8									4	4
	Still-born,.....	3	1	4	4									
	Unknown,.....	7	4	11	6	3							1	1
	Total,.....	52	52	104	28	22	6	4	2	7	10	5	4	11

MONTHLY METEOROLOGICAL REGISTER AT MONTREAL FOR FEBRUARY 1847.

DATE.	THERMOMETER.				BAROMETER.				WINDS.			WEATHER.		
	7 A.M.	3 P.M.	10 P.M.	Mean.	7 A.M.	3 P.M.	10 P.M.	Mean	7 A.M.	Noon.	6 P.M.	7 A.M.	3 P.M.	10 P.M.
1.	-18	+7	+5	-5.5	29.97	30.03	30.13	30.04	NW by W	NW by W	NW by W	Fair	Fair	Fair
2.	+9	+34	+30	+21.5	30.14	30.01	29.94	30.04	W. N. W.	S.	S.	Fair	Fair	Fair
3.	+35	+39	+37	+37-	29.76	29.41	28.30	29.36	S.	S.	S.	Rain	Rain	Rain
4.	+11	+9	+3	+10-	29.23	29.57	29.78	29.53	W. S. W.	W. S. W.	W.	Snow	Snow	Stormy
5.	+6	+15	+11	+10.5	29.93	29.95	29.96	29.95	NW by W	W.	W.	Cloudy	Fair	Fair
6.	+9	+21	+17	+15-	30.00	29.96	29.99	29.98	W.	W.	W.	Fair	Fair	Fair
7.	+16	+21	+16	+18.5	29.94	29.77	29.58	29.76	W.	W.	W.	Cloudy	Fair	Fair
8.	+16	+29	+23	+22.5	29.57	29.56	29.56	29.56	N. N. W.	N. N. W.	N. N. W.	Fair	Fair	Fair
9.	+20	+31	+26	+25.5	29.40	29.61	29.85	29.62	N. W.	N. W.	N. W.	Snow	Snow	Fair
10.	+22	+37	+28	+29.5	29.89	29.99	29.85	29.91	W. by N.	W.	W.	Fair	Fair	Fair
11.	+23	+28	+12	+25.5	29.84	29.88	29.94	29.89	W. N. W.	W. N. W.	W. N. W.	Fair	Fair	Fair
12.	+11	+20	+14	+15.5	29.90	29.92	29.88	29.90	W. by N.	W. by N.	W. by N.	Fair	Fair	Fair
13.	+9	+16	+10	+12.5	30.00	29.93	29.92	29.95	W.	W.	W.	Fair	Fair	Fair
14.	+1	+14	+8	+7.5	30.07	30.04	29.83	29.98	NW by W	N. W.	N. W.	Fair	Fair	Snow
15.	+6	+22	-5	+14-	29.97	30.13	30.51	30.20	N. W.	N. W.	N. W.	Fair	Fair	Fair
16.	+18	-3	+4	+10.5	30.63	30.38	29.99	30.33	N. E.	N. E.	N. E.	Fair	Fair	Snow
17.	+10	+23	+16	+16.5	29.90	30.01	30.12	30.01	SW by W	SW by W	S. W. by W	Fair	Fair	Snow
18.	+8	+19	+7	+13.5	30.34	30.33	30.32	30.33	W.	W.	W.	Fair	Fair	Fair
19.	+4	+18	+10	+11-	30.33	30.32	30.38	30.34	N. by W.	N. E.	N. E.	Snow	Snow	Fair
20.	-2	+12	-3	+5-	30.52	30.51	30.47	30.50	W.	W.	W.	Fair	Fair	Fair
21.	+9	+8	+8	+0.5	30.33	30.12	30.02	30.16	N. N. W.	N. E.	N. E.	Fair	Fair	Cloudy
22.	+7	+15	+5	+11-	29.97	29.88	29.98	29.94	N. E.	N. E.	N. E.	Snow	Fair	Fair
23.	-2	+18	+8	+8-	30.22	30.24	30.36	30.27	N. by E.	N. W.	W.	Fair	Fair	Fair
24.	+4	+19	+3	+7-	30.47	31.38	30.34	30.40	W.	W.	W.	Fair	Fair	Fair
25.	+10	+18	+5	+4-	30.32	30.28	31.28	30.29	N. W.	N. W. by N.	N. N. W.	Fair	Fair	Fair
26.	+8	+22	+12	+7-	30.42	30.33	30.32	30.36	NW by W	N. W. by W	N. W. by W	Fair	Fair	Fair
27.	+10	+20	+22	+15-	30.14	29.82	29.39	29.78	N. E.	N. E.	E.	Fair	Snow	Snow
28.	+19	+30	+22	+24.5	29.18	29.13	29.14	29.15	N. N. E.	S. W.	W. S. W.	Snow	Fair	Fair

THERM. } Max. Temp., +39° on the 3d.
 } Min. " -18° " 1st and 16th.
 Mean of the Month, +13° 25'.

BAROMETER, } Maximum, 30.63 Inches on the 16th.
 } Minimum, 29.08 " " " 3d.
 Mean of Month, 29.95 Inches.

**CHEMISTS, PROFESSIONAL GENTLEMEN,
AND STUDENTS,**

Are requested to notice the following Advertisement of Messrs. R. GRIFFIN & Co., Glasgow, referring to their Catalogues, illustrated by
NEARLY FIVE HUNDRED ENGRAVINGS.

DESCRIPTIVE OF

CHEMICAL APPARATUS, CHEMICAL RE-AGENTS, Cabinets and Collections of **ROCKS, MINERALS,** and **FOSSILS,** Models of Crystals, Models of Chemical Manufactories, Apparatus for Electography, Glass Blowing, and Blow Pipe Analysis, and every other convenience for the pursuit of Experimental Science, with the prices affixed at which the Articles are sold.

KINGAN & KINLOCH, Agents.

ADVERTISEMENT.

We have the gratification of presenting to the practical Chemist, a Catalogue of Apparatus, the most complete that has ever been published. Having devoted several years to collecting specimens and manufacturing Apparatus on a rather extensive scale, we are satisfied, and we trust the following Catalogue will prove, that our present collection of vessels and instruments, useful to experimental Chemists, is not to be surpassed by any in the country, for variety, for quality, or for cheapness. We therefore solicit with confidence a continuance of that encouragement which has been extended to us during the last four years, and we shall endeavour to merit that support, by paying the strictest attention to the orders with which we may be favoured.

The Apparatus is in all cases catalogued at the lowest cash prices. The expense of Packing Cases and Packing Materials is charged in addition. Upon all small parcels, this comes to about five per cent, or one shilling for every twenty shillings worth of goods. When the goods are very fragile or very bulky, the expense is greater; but, in general, it is below this estimate, and for miscellaneous collections of Apparatus, of about twenty pounds value, it seldom amounts to more than twelve or fifteen shillings. If, however, the goods are to be sent a long journey by land conveyance over bad roads, as happens in some foreign countries, then a more expensive style of packing in small boxes must be adopted. Our foreign customers are requested to give us particular instructions on this head. We employ very careful and experienced persons to pack the goods securely; but we do not hold ourselves responsible for any breakage that may take place during the carriage of the goods to their places of destination.

The whole of the articles noticed in this Catalogue being **KEPT READY MADE,** we can at all times execute orders for them to any extent at a few hours notice. Complete Laboratories can be shipped to foreign countries by the first vessels that sail after we receive instructions. This circumstance, in connection with the variety and cheapness of our instruments, and the concentration in one establishment of the several advantages presented by the English, French, and German Chemists and Instrument Makers, we beg especially to point out

to Chemists in foreign countries and the colonies, to whom the prompt execution of orders for Apparatus is often of much importance.

The prices here given are the net prices in Glasgow. The expense of transporting the Apparatus from Glasgow to distant places must be paid by the purchaser.

As we are continually making or importing improved and new Apparatus, and in such cases discontinue the manufacture of obsolete articles, it sometimes happens that we receive, from India and other distant places, orders for goods described in our old Catalogues, but which we no longer keep for sale. We venture therefore to suggest to persons writing for our Apparatus from foreign parts, that they should give their agents in this country discretionary power to make such limited alterations in their lists as will enable us to send the most improved articles, instead of such as have become more or less obsolete, but which we should nevertheless be forced to send, in strict compliance with the letter of the orders received.

RICHARD GRIFFIN & COMPANY.

Glasgow, July, 1845.

R. G. & Co., have published a second part of their Catalogue, containing an account of New or Improved Instruments, or New Arrivals from the Continent, not particularised in Part I, and many of which have never before been offered for sale in Britain.

The undersigned having been appointed Agents for Messrs. R. GRIFFIN & Co., for Canada, they request all letters and orders be addressed to them, and from whom Catalogues can be obtained, with any other information relative thereto.

KINGAN & KINLOCH.

Montreal, March, 1847.

MEDICO-CHIRURGICAL SOCIETY.

THE next Monthly Meeting of this Society, will be held at the Rooms of the Mechanics' Institute, on Saturday evening next, April 3d.

A. H. DAVID, M.D.

Secretary.

Montreal March 31, 1847.

TO MEDICAL STUDENTS.

A Gentleman who has had extensive experience in preparing **MEDICAL STUDENTS** for their **CLASSICAL EXAMINATION,** at the various Medical Boards in Great Britain, being now resident in this City, offers his services during the ensuing winter to such students as may be desirous of availing themselves of the opportunity of augmenting their knowledge of Latinity.

Cards of Address, &c., may be obtained at the **GENERAL HOSPITAL, of the House Surgeon;** **M'GILL COLLEGE, of the Demonstrator of Anatomy;** **SCHOOL OF MEDICINE, of do. do.** And at the **OLD MEDICAL HALL, Notre Dame Street.**
Montreal, October 26, 1846.

UNIVERSITY OF M'GILL COLLEGE.

FACULTY OF MEDICINE.

THE ENSUING WINTER COURSE OF LECTURES, in the Faculty of Medicine, will commence on Monday, Nov. 2nd, and will be continued, uninterruptedly, with the exception of the Christmas vacation, till the last week in April, forming a Session of Six Months.

Theory and Practice of Medicine,	- - - - -	by	A. F. Holmes, M. D.
Principles and Practice of Surgery,	- - - - -	"	G. W. Campbell, M. D.
Chemistry,	- - - - -	"	A. Hall, M. D.
Midwifery and Diseases of Women and Children,	- - - - -	"	M. McCulloch, M. D.
Anatomy (General and Descriptive,)	- - - - -	"	O. T. Bruneau, M. D.
Materia Medica and Pharmacy.	- - - - -	"	S. C. Sewell, M. D.
Clinical Medicine and Surgery,	- - - - -	"	J. Crawford, M. D.
Institutes of Medicine, (Physiology, &c.),	- - - - -	"	R. L. Macdonnell, M. D.
Medical Jurisprudence,	- - - - -	"	Wm. Fraser, M. D.
Practical Anatomy,	- - - - -	"	W. E. Scott, M. D.

Curator of Museum, Mr. Wm. Wright.

Montreal General Hospital, daily at Noon.

In each of the Courses above specified, five lectures per week are given, except in the Courses of Clinical Medicine and of Medical Jurisprudence, in the former of which two, and in the latter three only, during the week, are given. The Lecturers in the different departments, will illustrate their respective subjects, by the aid of preparations, plates, apparatus, specimens, etc. etc.

The Anatomical Lecturer will generally prefer demonstrations on the fresh subject, but will not neglect the assistance of dried preparations and of plates.

The Chemical Lecturer is in possession of an apparatus, specimens and models, adapted to illustrate every part of his subject, and will be further assisted by having at command the valuable and extensive philosophical apparatus, bequeathed to the college by the late Dr. Skakel.

An excellent collection of specimens of Materia Medica, together with an extensive series of large colored botanical plates, is employed by the Lecturer on Materia Medica.

The Lecturer on Institutes has the advantage of a powerful microscope, and will further illustrate his Course by morbid preparations, and splendid pathological plates.

The Lecturer on Medical Jurisprudence will likewise employ a very powerful microscope, both in reference to morbid appearances and to the detection of poisons. Toxicology will farther be illustrated by chemical experiments, specimens, and plates.

In the Lectures on Surgery, the Surgical Anatomy of the principal regions will be shown on the fresh subject, previous to, or in connection with, the demonstrations of the operations on each part, and plates and morbid specimens will be referred to.

In like manner, the Lectures on Medicine will be illustrated by pathological plates, and examples of morbid structure.

The Lecturer on Midwifery, in addition to the use of preparations, wet and dry, and of some beautiful wax models, will employ their necessary apparatus, to assist students in acquiring accurate knowledge, as well as that manual dexterity which is called for before engaging in actual practice. To the advanced student, ample opportunities of acquiring practical knowledge will be afforded by the University Lying-in Hospital.

The Medical Library, which is furnished not only with books of reference, but the usual elementary works, will be open to matriculated students, without charge, under the necessary regulations. Access to the museum will be allowed at certain hours. The Demonstrator of Anatomy will be daily in the dissecting rooms to oversee and direct the students.

Students who are desirous of boarding in the College, will require to furnish themselves with bedding and the usual bed-room furniture.

The price of board, including lighting, heating, and attendance, but exclusive of washing, has been fixed at \$13 per month, always payable in advance.

Extra-academical or non-matriculating students will be allowed to attend the lectures on a reduced scale of fees.

N. B.—The tickets of this University being recognized by the Universities and Colleges of Great Britain, students who propose completing their professional education in the mother country will obtain an important advantage by having attended its Courses.

SUMMER SESSION.

The Summer Courses will commence on the Second Monday of May, 1847.

Medical Jurisprudence	By	Dr. Fraser.
Botany	"	Dr. Papineau.

A. F. HOLMES, M. D. & P.
Secretary Med. Fac.