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CASE OF SCARLATINA ATTENDED BY PROFUSE PERSPIRATION.

By JAMES CRAWFORD, M.D., Lecturer on Clinical Medicine, McGill College.

Proceedings of the Medico-Chirurgical Society of Montreal.

I was called on the 27th July last, to see Mrs. M——, a healthy person, of full habit, and mother of six children, three of whom, I was informed, had just recovered from Scarlatina. She had been seized on the previous day with symptoms of smart fever, accompanied by sore throat. The face, neck, and shoulders, had, on the day of my visit, become covered with a bright scarlet eruption, accompanied by a general aching, or painful sensation over the body and limbs. There was headache, suffusion and redness of the eyes, difficulty of swallowing, the fauces being red and the tonsils tumid, tongue moist, and slightly covered with a white pasty fur, much thirst, the skin moderately hot and *perspiring profusely*. Pulse 130.

She stated that she had frequently been much exposed to the influence of Scarlatina, but had never taken it before. It was very evident that she was now labouring under the disease, not only from the character of the eruption and sore throat, but also from the exposure she had to its contagion in attending her children. The unusual condition of the skin attracted my attention, and on remarking it to the lady, I learned that the children *all had similar free perspiration*, and that this was the case, even with one of them who was so slightly affected with fever, as to be able, during most part of her illness, to keep out of bed. A fourth child took the disease while I was in attendance, but did not perspire.

The condition of the skin prevented my having recourse to sponging with cold water, which I should otherwise have done. I merely directed the throat to be well fumigated, with the vapour of boiling water and vinegar, a little castor oil to be given, and to have cold acidulated water to drink. During the following day she appeared to go on well, the throat being better and deglutition easier, the eruption proceeded in its progress of extension over the body, *the skin perspiring constantly and freely*. Pulse 130.

In the evening she felt a slight uterine pain, accompanied with a bearing down sensation, and also by a slight hæmorrhagic discharge from the vagina, which alarmed her, for fear of a miscarriage. Having on a recent occasion experienced a similar mishap, an anodyne draught, consisting of tinct. opii. gt. xxxv., and liquor ant. tartarizati gt. xxx. in a little cinnamon water were ordered, which procured her a comfortable night, and quieted the action of the uterus. The uterine pains however returned in the morning, and were not influenced by even a large dose of opium. About noon, she aborted.

After the abortion, she appeared much easier, the febrile symptoms abating, thirst less, pulse fallen to 120, the eruption had begun to fade about the face and neck, the throat better, *perspiration continuing*, bowels gently open, uterine discharge trifling. She, about this time, began to complain of pains in her joints, particularly in the hands and wrists. She had felt a slight indication of this new complaint yesterday, but could hardly define the sensation.

On the 1st August, the eruption had nearly faded away, her bowels were confined and lochia stopped, skin still hot *and moist*; pulse 96. The pains of her hands, wrists, and elbows, were so severe that she could scarcely move her arms. She was ordered calomel gr ij., and pulv. ipecac comp. gr vi. ter in die.

On the following day the pains of her wrists and elbows were even more severe, and deprived her of the use of the limbs—the joints were also much swelled and red, the pains of the other joints (which were now generally affected) pretty much as before; pulse 90, skin cool. To-day, the most painful joints were painted with tincture of Iodine, and she continued her powders as yesterday.

On the following day, (3rd), the pains of her hands and wrists had subsided, the joints were still, however, stiff; and incapacitated her from using her hands. The pains now principally occupied the shoulder joints, to which the tincture was applied, and in a few minutes afterwards she was desired to try if she could not use the limbs, and to her great astonishment she found that she could move them about freely; the pain having almost immediately subsided. She also stated that she had obtained relief yesterday shortly after the application. From this time she began to improve daily, and was able to leave her bed on the 8th of the month—10 days from

the time I first saw her. She made a very good convalescence, which was aided by sulphate of quinine. Although the rheumatism left the joints, she still, on occasions, experiences weakness and slight pain. She lost a good deal of flesh during her illness, and although now in very good health, has not yet recovered her former *en bon point.*

There are several points of interest in this case, to which I would beg to draw attention. In the first place, the *profuse and continued perspiration*, a circumstance of such rare occurrence, that I have never observed a similar instance, nor am I able to discover any allusion to it in any of the authorities I have been able to look into on the subject. Several pass over the condition of the skin with an allusion to its high degree of temperature, a circumstance in itself sufficient to indicate the absence of perspiration, which would tend to reduce the heat did it exist. I may also add, that cold water could not be with propriety used upon the principles on which *Dr. Currie recommends it*, if perspiration existed. Dr. Armstrong says, the skin from the preternatual flow of blood towards it soon becomes not only morbidly sensible to the touch, but rough, dry, and hot.

Mr. Green in his work on diseases of the skin, says, the febrile excitement and heat of skin, &c., coincides with a *total suppression of perspiration in particular*, and of the secretions generally.

Rayer says the skin, which is much hotter in this than any of the other exanthematous diseases, is *burning*, itchy, *parched*, and tender to the touch.

Withering notices it to be intensely hot, *dry*, and harsh.

Patterson notices the heat to be morbid and pungent. Good and Tweedy, Graves, and such other authors as I have consulted, all speak of the great heat, but none mention, a state of perspiration, unless as a critical termination, upon the application of cold water.

The next circumstance I would notice is the unfavourable complication which abortion was likely to induce, although the issue in the case fortunately was otherwise. I have not had time to seek for authorities on this point. I believe all are agreed on this matter. Tweedy says it is a fatal disease, when it attacks pregnant or puerperal women.

Watson says, when scarlet fever befals parturient women, it almost always proves fatal.

The issue on the present occasion, fortunately, proves an exception.

I shall now merely notice another complication, namely, the rheumatism, which when confined to the joints, is merely a painful addition, and a retardation of convalescence. It may however involve the heart, pericardium or other internal fibrous organ, and then materially complicates and adds to the danger of the complaint. On the present occasion it retarded the convalescence, and still is an occasional source of suffering to the patient.

The benficial influence of the tincture of Iodine in removing the more acute affection, was most remarkable. This is a remedy which I have in many cases of acute articular rheumatism, found of the greatest service.

I attributed the unusual occurrence of perspiration, to idiosyncrasy, as I have not seen any other case so affected, either during the late epidemic, or on any former occasion.

Montreal, September, 1845.

SINGULAR CASE OF CEREBRO-SPINAL IRRITATION IN A YOUNG LADY.

By Charles Wm. Coverton, M. D.

Read before the Toronto Medico-Chirurgical Society, July 2, 1845

Miss H. T., æt. 17; a tall and muscular young person, light hair and eyes, florid complexion, daughter of a respectable farmer, for two years previous to the present violent seizure, had been subject to severe headache, frequently followed by syncope; in the beginning of June, 1841, she experienced so violent an attack of these symptoms, that her parents sent for me to prescribe for her. On visiting her, I found her with a flushed countenance, heavy and languid eye, tongue but little coated, pulse about 90, respiration and action of the heart normal, catamenia regular, no perceptible tenderness on pressure along the spine—bowels open from medicine previously administered;—the intense pain of head was then referred to the centre of the coronal suture, and has continued in that spot, with but very slight occasional relief, to the present period, (August, 1842.) I abstracted blood to ʒ xii, and prescribed ten grains of colocynth pill, with gr. iij of the submuriate at bed-time, and effervescent saline draughts every four hours. The next day there was but little alteration in her symptoms, and the medicines were ordered to be continued. On the evening of the third day, I was summoned in great haste, and found her to be in a perfect state of insensibility, countenance flushed, pupil dilated, pulse slow and oppressed. I again bled to ʒ xviii, ordered the hair to be cut, and applied evaporating lotions, counter-irritation with sps. turpentine along the spine, blisters to calves of the legs, and placed two grains of submuriate on the tongue every four hours. Towards the middle of the night she made urgent attempts at vomiting, but immediately lapsed into insensibility. In the afternoon of the next day, she recovered from this comatose state, but was perfectly blind, the brightest light having no

action on the pupil. Together with this amaurotic condition, there was found to be a perfect loss of sensation of the left half of the body, and of power over the sphincter muscles. She appeared now to be in a state of great exhaustion, face deathly pale and voice feeble. The *right* arm and hand were affected with muscular twitchings and spasms, greatly aggravated by the least mental emotion. These symptoms were followed the next day by most violent convulsive fits, brought on by apparently the most trivial causes, such as the heavy tread of a person on the floor, shutting a door, or noise of vehicles passing on the road, the sudden bark of a dog or the lowing of cattle. Her strength in these fits was extraordinary, five or six strong persons would sometimes hardly suffice for keeping her in the bed; frequently exhibiting a perfect state of emprosthotonos. In the intervals the stomach was so irritable that every thing in the way of food or medicine was immediately rejected, very hot tea in small quantities being the only liquid it would retain; liquids given cold occasioning most distressing cramps. These symptoms were succeeded in about three weeks by most violent and prolonged hiccough brought on in the same manner as the convulsions by the least noise or excitement of mind. For a period of six months, she continued to be subject, daily, either to convulsion or hiccough, (according to the degree of irritation.) The only amelioration of her condition being a recovery of sight. The vomiting, pain of head, and loss of sensation remaining the same. Although, from the first commencement of her illness, she has taken barely sufficient to sustain life, there is but little emaciation, bowels regular and tongue clean. At Christmas, 1841, I first noticed a remarkable feature in this strange case. Immediately on raising the head from the pillow, she would become perfectly insensible, if merely by the addition of a couple of pillows, it would only last for five or six minutes, but, if bolstered up in a sitting posture, until she was again laid on the bed. Instantly on raising her, the action of the heart would become scarcely perceptible, the countenance bloodless, the eyes partly open, having a fixed and glassy stare. When in this state the attendants could dress an issue in the loins, or attend to her in other ways, without the slightest consciousness being perceptible, whereas, if attempted when in the supine position, it would almost directly occasion either a violent fit of hiccough or convulsion. In January, 1842, for the space of a fortnight, the vomiting was so constant and intractable, that she was principally supported by enemata of beef-tea and chicken soup—all attempts at relieving it by counter-irritation over the stomach, along the course of the phrenic, exhibition of hydrocyanic acid, effervescents, kreozote, &c., proving futile.

The above notes were made in August, 1842. From that period to the present, June, 1845, her condition has been much the same. The sensation of the left half of the body has been principally restored by the use of strychnine, sprinkled on a blistered surface. Sometime after the use of this, obstinate constipation and retention of urine, requiring the daily employment of the catheter occurred. The insensibility on change of posture remains unchanged. Her mother, a few months back, was of the opinion that she could bear her head higher than formerly, without syncope being induced, but the amelioration is but trifling. At the first commencement of her illness, before the irritability of the stomach was so excessive, suspecting there might be visceral obstruction, I administered croton oil in combination with extract of colocynth, giving alternately with it neutral salts. The treatment afterwards consisted in long continued counter-irritation by blisters, setons, &c., along the course of the spine, nape of neck, and temples. Hydrocyanic acid in combination with hyosciamus for a long time afforded the most relief to the pain and vomiting; afterwards when it failed in arresting it, morphine sprinkled on a blistered surface, was of temporary use. With the exception of one short interval, during the whole period of this long illness, she has menstruated regularly, and to judge from her appearance in a recumbent posture, a stranger would imagine her to be in perfect health. Convulsion or protracted hiccough is now of rare occurrence, but will even still occasionally result from sudden noise or emotion of mind.

CASE OF "GLANDERS" IN THE HUMAN SUBJECT. (EQUINIA.)

By C. Smallwood, M. D., St. Martin.

History.—Louis H., married, æt. 42, farmer, of spare habit, given to drink rather freely of spirituous liquors, otherwise healthy; was taken ill on Saturday, 20th April, 1844, with a pain in the head and back of the neck, which prevents him from sleeping.

Present State.—Applied this day, 22nd, at 5, p. m., complains of headache, pain in the back of the neck, and limbs; the pain at the back of the neck increased by motion; skin hot; a slight redness and tumefaction of the right eye-lid; pulse 90; tongue moist, covered with a brownish fur; slight thirst; loss of appetite; bowels natural; urine high coloured.

℞ Hyd. Submur.
Pulv. Antimon. *aa* gr. v. Fiat. Pulv. S. S.
℞ Magnes. Sulphat. ℥ i.
Acid. Sulphur. Dilut. ℥ ij.
Potas. Nitrat. ℥ i.
Aquæ. Menth. Piperit. ℥ vij. M. Hujus. mist. sumat. cochl. quart. omni hora. donec venter rite solutus fuerit.
℞ Liq. Plumb. Acetat. Dilut. ♎ i. Lint. quadruplicat.

hoc liquore frigido madefact. partibus inflam. applicent., et sæpissime renoventur.

24th.—His wife applied this day; states the pain in the neck and limbs not alleviated; headache diminished; reports the tumefaction of the eye-lid increased; soreness of the throat; bowels have been freely opened, (by medicines ordered); fæces dark coloured and offensive.

Repetant Mist. et Lotio.

25th.—Visited him this day, at 4, p. m., (about a league distant), the redness and swelling increased, so as to completely close the eye-lid, with great heat; redness does not disappear on pressure; great restlessness; pulse 100; skin hot; difficult deglutition; pharynx and tonsils tumefied and red; increased secretion from the nostrils and saliva; breath very offensive; tongue furred; bowels loose; fæces dark and very offensive.

℞ Hyd. Submur. gr. xxiv.
Pulv. Opii. gr. iij.—Fiat. Massa in Pillul. xij. dividend. Sumatur una omni hora.

Midnight.—Complains of intense heat of the head, neck and throat, so much so that he is constantly calling to have cold water applied; a secretion of viscid mucus, of a yellow colour, from his nostrils and throat; the tumefaction extended to both eye-lids; increased difficulty in deglutition and respiration; skin moist; pulse 110; occasional delirium; dejections dark, liquid, and offensive; urine high coloured.

℞ Tinct. Hyoscyami, 31.
Mist. Camph. ℥1.—Ft. Haustus S. S.

26th.—1, p. m., swelling of the eye-lids increased so as entirely to prevent vision; skin diminished in temperature; complete inability to swallow; increased secretion from the nose and throat, of a dark colour, and viscid; the swelling has assumed a lurid hue; delirium; tongue coated with a dark fur; vibices; pulse 120, and small; involuntary dejections and very offensive: (endeavoured to force down some wine but could not); a number of pustules appeared this morning on the legs and body, and two on the face, as large as those in variola, containing a watery fluid, of a dark red colour; respiration laborious; constant muttering, and picking at the bed-clothes; urine fœtid and dark; skin bathed in perspiration. Ordered wine to be given frequently, and to gargle with wine and water.

27th.—8, a. m., evidently sinking; scarcely able to rouse him; respiration still laborious; has swallowed a few spoonfuls of broth; I forced down some wine; pustules shrunk and livid; secretion from the nose and throat copious and very offensive; cannot swallow. Left a mixture of Ammonia and Camphor, of which, he did not take but one dose.

28th.—Died at 6, a. m.; the friends would not consent to a *post mortem* examination.

Remarks.—I did not, until my visit to his house on the 25th, (the third day after he applied in person), suspect the true nature of the disease, but from the train of alarming symptoms then present, I made a more careful inquiry, and it was with some difficulty I succeeded in ascertaining the facts of the case, which left no doubt as to its real nature. The mare from which the contagion was propagated, died shortly afterwards with confirmed glanders. It would appear that my patient was administering a medicinal drink to the animal, 2 or 3 days previous to his illness, and that she snorted some of the drink into his face, to which he paid no attention, and thought so very lightly of it, that he did not even wash his face for some time afterwards; he was assisted in the operation of *drenching* the animal, by his son, who escaped the disease. The mare, during the time she was in his possession, (which was only a short time,) did not communicate the disease to any other of his cattle; she was sold twice afterwards, and died in about 20 days from the death of my patient.

The *Diagnostic* marks of the disease, as far as my observation goes, consists of, 1st., The increased secretion of the nose and throat. 2nd., The intense sensation of heat in the head, neck, and throat, (it was most distressing to hear the poor fellow crying out for cold water to be thrown over him). And 3rd., To the heat succeeds a very copious fœtid discharge. The inflammatory symptoms having given way to the typhoid, and, I may add, the pustular eruption.

At a future time I shall recur to this subject.

St. Martin, Isle Jesus, Oct. 25, 1845.

[The exceeding rarity of this disease, in this country, (this is the only case of which we have heard), very naturally points to the inquiry, whether professional men located in other parts of the Province, have met with similar cases. We are exceedingly obliged to Dr. Smallwood, for the above communication, for it has, at least, tended to remove one erroneous impression under which we laboured, that glanders in the human subject was unknown in this Province: not by any means that the disease has not been well recognised in veterinary practice, but that from the influence of climate, its virus had become mitigated, if not destroyed; for we can scarcely imagine that occasions for innoculation are not as frequent here as in Europe.—EDS.]

REPLY TO DR. RAE'S OBSERVATIONS, BY THE REV. W. T. LEACH.

To the Editor of the British American Journal.

SIR,—It is so long since Dr. Rae's remarks appeared in your journal, that I fear you may consider it too late to advert to them. It appears to myself that a reference to them now is indeed superannuated; but then the subject matter that has become the object of question be-

tween Dr. Rae and myself, is not like a transaction of the day, which tomorrow passes over as utterly insignificant; the phenomena, the very imagination of which fires the poetical spirit of Dr. Rae, remain ever apparent, and strike every eye; to the cultivators of geology, they possess a permanent interest, and with them can be recurred to after any intervals of time, with undiminished satisfaction.

The language of Dr. Rae, in commenting upon the observations which I ventured to have published in the *British American Journal*, breathed a tone, it then seemed to me, of unnecessary severity—I think of some dogmatism too. If I recollect correctly, my observations were offered with no arrogance nor pretension that could justify severity. It is difficult to see the validity of Dr. Rae's right to pronounce the observations of others, in matters purely scientific, heterodox and heresy. I distinctly refuse to plead to his jurisdiction, and stand upon my own right to differ in opinion on such questions from anybody I please, for all that he may think it such presumption to differ from so great a genius as himself. Seriously, the gathering and estimating of evidence being all that is concerned in the question, and the nature of the pursuit being happily exclusive of all contentious passions, let Dr. Rae and myself look to nothing but the evidence, and seek for nothing but the truth.

Let it be granted, as Dr. Rae advances, that were the surface of this continent "tomorrow depressed a thousand feet, there are only four openings by which the waters of the Atlantic could find admittance to the bed of an interior sea thus created." It may also be correct "that this subject has been a matter of careful and scientific investigation and accurate measurement, carried on for a series of years by the Geologists employed by the several States for ascertaining all the facts connected with the science which their respective territories present, and embodied in copious reports laid before their respective Legislatures." With regard to the other question of Dr. Rae—the formation of the several communications or vallies of the Mississippi, the Susquehana, the Hudson and the St. Lawrence, it may likewise be correct that the Geologists who have examined this question "all agree in ascribing their existence, or at least their existence in the form they actually present to us, to the agency of water bursting out from an inland reservoir." Dr. Rae adds, "upwards I think of forty years since—the evidences of it are so clear and strong—it struck the then comparatively unskilled and unscientific observers as a thing the proofs of which were too palpable to be disputed."

Before adverting to the evidence which is subsequently adduced by him, I cannot but remark it to Dr. Rae as an anomalous and scarcely right procedure, to assume in his favour the whole body of the authority of the States Geologists. What was thought indisputable forty or twenty-three years ago, cannot now be considered an overwhelming authority—the Wernerian theory, then so generally adopted, having since been found so inadequate for the explanation of phenomena such as are involved in the present question, and though "up to the present moment there has not been a whisper against the original hypothesis," it is too vast a conclusion, and an unwarranted one, to infer from this circumstance, that "all observers (the States Geologists) concur in admitting that these vallies exhibit very evident traces of water having at some antecedent time burst a passage through them." Nothing but the present expression of their opinions in favour of this view could justify Dr. Rae's protecting his hypothesis with a shield of authority so immense, and this shield is taken away from it if his right to adopt it is found to be invalid. It is not in my thoughts that Dr. Rae requires any authority to support whatever conclusions he may arrive at, but the exhibition of such a force of it, whether intended to be so or not, is an appeal to popular sentiment, which has nothing to do with the decision.

The attention of every person who, with an observant eye, travels through any part of Canada, must be arrested with those evidences of the action of ancient waters that are visible in the finely expressed marginal lines found on the slopes of vallies and the flanks of the mountains. To account for these it has often been supposed, and I believe generally understood, that each of these marginal lines indicates the action and elevation of an ancient inland sea, and that the differences between them correspond with measures of disruption in a supposed containing barrier. These disruptions in the barrier are conceived to have been brought about in points of the mountain ranges towards the mouths of the great rivers of the continent; that is to say, mountains of many miles extent are supposed to have been extended across their mouths, and to have been carried away by the waters in successive rebellious outbreaks. "I have not," says Dr. Rae, "the materials by me to give the proof of the interior waters having burst through at all these points, and if I had them, it would extend my paper to an intolerable length were I to set about putting them to use. It will be sufficient for me to show that there are good reasons for believing that the immediate agent in the formation of one of these vallies was water forcing its way from the interior, *for if we are satisfied that it had to force its way at one point, we must of necessity conclude that there*

could then have been no free passage for it at the others." This will never do. Let Dr. Rae beware of his conclusions. Sufficient, says he? Sufficient it may be to clear the way of the St. Lawrence, but sufficient to stop up for ever the mouths of the Hudson, the Susquehana and Mississippi. Here is a sea of vast extent imprisoned by a barrier of mountains; its walls of rock have long sustained impregnable the heaviest assaults—remained sulky and unshaken in a thousand storms. The waves at length overmaster them at some weak point, and out rush they roaring and rejoicing, greatening at every bound the gap of the prison wall, nor stop for a moment the laughing thunder of their sport, till they have effected a general delivery, and extorted the privilege of strolling at large. But what use, let me inquire, could there be in making two or three, or four gaps? What use could there be? and *how could* they do it *within* when they were *out*? If they could not knock down the mountain across the Mississippi before, how could they do so now when so many of them had gone away by the St. Lawrence? The deluge which subsequent to the tertiary era has left behind it such various and vast proofs of its force, might have effected something in the way of disruption, but Dr. Rae himself will probably assign this deluge to a period antecedent to the supposed inland sea, and besides this, instead of accounting for the marginal lines, is certainly the true cause of their frequent obliteration, where otherwise they should have been apparent. To suppose that the said barriers were burst asunder by the waters acting in any thing like the present form of their existense, is to suppose that the four barriers agreed to be broken up at the same point of time, made the same agreement, too, at divers successive intervals, and adjusted at each time the measure of disruption that each should be subjected to. Nothing can be more evident, than that one barrier being removed, the force that would remain for the removal of the others must necessarily be reduced—the force reduced, and the opposing obstacle proportionably increased, *i.e.*, the production of a condition which rendered the disruption of the others by the same forces a physical impossibility. When the fountain Arethusa sunk under ground in the Peloponesus and rose in Sicily, it performed a feat not half so admirable as the waters of this inland sea in the removal of their mountain gates.

It seems superfluous to notice that the regions bordering on the locality of the barriers supposed to have been removed, will probably present traces of the action of water. The evidence furnished by Dr. Rae is abundant on this point, and the extensive range of his observations gives his views a claim to be regarded with very great respect. We should naturally expect among those regions, as throughout Canada at large, the terraces or marginal lines so often adverted to, nor would it be regarded as extraordinary were the faces of the hills found to be abraded and furrowed by the action of those waters ascertained to have passed over the continent in a rapid deluge from the North West; but with submission it may be said that these appearances fail to prove the specific action which Dr. Rae supposes them to demonstrate; and indeed it would be difficult to describe the phenomena in rocky strata that would suffice for such proof, phenomena distinguished by characters not usually appertaining to the action of currents and seas generally.

No necessity requires the Geologist to ascribe the formation of such a valley as the St. Lawrence to the action of water. Whatever work it may perform in them afterwards, it is surely probable that most valleys of large extent were found by it *ready made*. It has never been alleged that the inequalities of the earth's surface are to be attributed to water solely, or running streams and currents. The moon is found to be bristling with inequalities, though it possesses no water at all, and if water were created on it, instead of having the trouble of forming valleys, would have only to fill them. No matter how old the world may be, what was an inequality in its youth may be an inequality still. The valley of the St. Lawrence may be an original engraving, and though we behold, as in the Ottawa, the waters cutting deep into the recent strata, sometimes of enormous thickness, yet are they only removing the intruded materials that had diminished its original depths; and such, in point of fact, is part of the present business assigned them.

(To be Continued.)

Observations made at the Magnetical and Meteorological Observatory at Toronto, in Canada. Printed by order of Her Majesty's Government, under the superintendence of Lieut.-Colonel Edward Sabine, of the Royal Artillery. Vol. I.—1840, 1841, 1842. London: LONGMAN & Co., 1845.

(Continued from page 180.)

The meteorological observations, connected as they are with the character of our climate, are perhaps the most valuable portion of the work now under our consideration, from their being more generally understood throughout the community, than the "ponderous" and scientific details of magnetic perturbations which come only within the scope of a limited class. These meteorological observations were conducted with the most perfect attention to extreme accuracy, and may therefore be fully depended upon as affording indisputable results. The remarks of Lieut.-Col. Sabine, we shall generally give nearly in his own words, while the tables we condense to suit our columns.

Thermometer.—The highest temperature of the

day, on the annual average, is between 2 and 4 p. m. and the coldest between 4 and 6 a. m. In the winter months, the minimum is at the later, and the maximum at the earlier hour; in summer, the reverse takes place. The mean *daily* difference in the height of the thermometer in the several quarters of 1841 and 1842 were as follows:—

	Max.		Min.		Difference.		
Winter,...	28.1°	32.0°	21.2°	25.9°	6.9°	6.1°	= 6.50°
Spring, ...	47.3	50.7	33.1	37.4	14.2	13.3	= 13.75
Summer,.	74.3	71.3	57.1	54.2	17.2	17.1	= 17.15
Autumn,.	51.8	51.0	41.9	40.1	9.9	10.9	= 10.40
In the yrs.	50.1	50.9	38.6	39.7	11.5	11.2	= 11.35

In 1841, June was the hottest month of the year and February the coldest; the respective mean temperatures were 66° 2′ and 23° 2′. In 1842, August was the hottest month and January the coldest, the temperatures being 65° 7′ and 27° 9′. The monthly means were obtained by the result of observations every two hours; the annual mean of 1841 being 43° 9′, and 1842, being 44° 8′, = to 44° 35′; on the two years,

The temperature in 1841 and 1842, as shown in quarterly and annual means, is ascertained to be—

Winter, ...	24.6°	28.5°	= 26.5°
Spring, ...	39.6	43.2	= 41.4
Summer,.....	65.4	62.4	= 63.9
Autumn,.....	46.2	44.9	= 45.5
In the years,.....	43.9	44.8	= 44.35

Barometer.—The daily, monthly, and annual means of the barometer, for 1841 and 1842, were also obtained by observations at every two hours, at 32° Fah., and are reckoned at 29 inches + the numbers below. The daily difference in the quarters was—

	Max.		Min.		Difference.		
Winter,.....	.631	.578	.574	.529	.057	.049	= .053
Spring,.....	.632	.618	.580	.574	.052	.044	= .048
Summer,....	.653	.678	.592	.628	.061	.050	= .0555
Autumn,....	.626	.664	.593	.616	.033	.048	= .0405
In the years,	.634	.635	.588	.591	.046	.044	= .045

The quarterly and annual means, as ascertained for 1841 and 1842, are—

Winter,.....	.601	.551	= .576
Spring,.....	.608	.591	= .600
Summer,.....	.620	.650	= .635
Autumn,.....	.606	.637	= .622
In the years,.....	.609	.608	= .608

The following particulars relative to the diurnal variation of the barometric pressure are derived from the tables. The morning maximum takes place at eight A.M. in the summer, and at ten A.M. in winter; in spring and autumn it is almost equally divided between those hours. The afternoon minimum takes place at two P.M. in winter; six P.M. in summer, and at four P.M. in spring and autumn and in the annual means. The second maximum occurs at eight P.M. in winter, is equally divided between eight and ten P.M. in autumn, is at ten P.M. in spring, and at twelve in summer. On an average of the whole year it is at ten P.M. The second minimum is at two A.M. in spring, summer and autumn, and in winter it occurs two hours and occasionally four hours earlier. From the average heights of the barometer in the several quarters, the winter and spring quarters are found below, and the summer and autumn quarters above, the general mean. The mean height in August is higher than that of any other month in 1841 and 1842, and February, in 1841, and January, in 1841, have the lowest barometric pressures of those years respectively.

Elastic Force of Atmospheric Vapour.—The elastic force of the vapour at Toronto has but one maximum and one minimum in the twenty-four hours. The maximum occurs at two P.M. on the annual and separate quarterly averages. The minimum takes place at four A.M. on the average of each year and in each separate quarter, except in autumn, 1842, when it was at six A.M.; but if the observations were made at shorter intervals than two hours, the minimum would probably be found to take place earlier in spring and summer than in winter and autumn. The average daily difference between the greatest and least elevated force of the vapour in each of the two years and in each quarter was ascertained to be in inches.

	Max.		Min.		Difference.		
Winter,.....	.130	.149	.112	.132	.018	.017	= .0175
Spring,.....	.214	.216	.168	.179	.046	.037	= .0415
Summer,....	.516	.480	.408	.371	.108	.109	= .1085
Autumn.....	.300	.277	.257	.235	.043	.042	= .0425
In the years.	.290	.279	.236	.231	.054	.048	= .0510

The quarterly and annual means for the two years, 1841 and 1842, as ascertained, are—

Winter, ...	.121	.140	= .131
Spring,.....	.188	.196	= .192
Summer,.....	.462	.426	= .444
Autumn, ...	.279	.258	= .269
In the years,.....	.262	.255	= .259

The average amount of tension of the vapour is less in winter and spring, and greater in summer than the mean of the year. Autumn approaches nearly to the mean but is somewhat higher. Both in 1841 and 1842, the month of August has the greatest elastic force of vapour. February, in 1841, and January, in 1842, have the least in their respective years. These are the same months which have the highest and lowest mean heights of the barometer in the same years.

Humidity of the Air.—The mean degree of humidity in both years is 78, or on an average of the whole year, the air contains a proportion of vapour of which the elastic force is 78 parts of 100 of the amount required for saturation. The spring is the driest quarter, then the summer, then the autumn, and the winter is the most humid quarter. May is the driest month of the whole year,* and December

* It must be borne in mind that these calculations are based on observations at Toronto. Its position on the borders of Lake

the least so. The diurnal variation of the humidity has one minimum which, on the annual average, occurs at four P.M., but in autumn and winter is frequently at two P.M. The maximum takes place at six A.M., on the annual and separate quarterly averages. The quarterly and annual means of humidity for the two years, 1841 and 1842, as ascertained, are—

Winter,.....	84	.....	84	= 84
Spring,.....	72	.....	70	= 71
Summer,.....	76	.....	76	= 76
Autumn,.....	81	.....	82	= 82
In the years,.....	78	.....	78	= 78

Pressure of Gazeous Atmosphere.—The diurnal pressure has one maximum which occurs about the coldest hour of the day, and one minimum about the warmest hour. In summer, the maximum is about four A.M.,—in autumn, six A.M.—in spring, eight A.M.—and in winter, intermediate between eight and ten A.M. In spring and summer the minimum is at four P.M.—in autumn, intermediate between two and four—and in winter, at two. These differences are obviously connected with the variations of temperature in the different seasons. The average diurnal variation in summer is nearly double the amount at any of the other three seasons of the year. The diurnal variation of the gazeous atmosphere exceeds the diurnal variation of the barometer in every quarter, as well as on the annual average. The annual variation consists of a maximum pressure in midwinter, and a minimum in midsummer. The average amount of the difference in the daily pressure in the several quarters of 1841 and 1842, are 29 inches, + the figures in the table.

	Max.		Min.		Difference.		
Winter	.511	.439 ...	.445	.381 ...	.066	.058 =	.062
Spring.....	.446	.422 ...	.374	.366 ...	.072	.056 =	.064
Summer	.213	.276 ...	.095	.159 ...	.118	.117 =	.1175
Autumn.....	.347	.416 ...	.293	.342 ...	.054	.074 =	.064
In the years.	.374	.383 ...	.302	.314 ...	.072	.069 =	.0705

The quarterly and annual means for the two years are 92 inches, + the figures in the table.

Winter.....	.480	.411 = .446
Spring	.420	.395 = .408
Summer.....	.158	.225 = .192
Autumn.....	.327	.379 = .353
In the years.....	.346	.353 = .349

Extreme Ranges.—The following are the maximum, minimum, and range of the Thermometer, Barometer, Elastic Force of the Atmospheric Vapour, and Humidity of the Air, as observed in Toronto in 1841 and 1842:—

		Max.	Date.	Min.	Date.	Range.
Thermometer	1841,	91°7	June 29	5°2	March 14	96°9
"	1842,	90.8	July 19	2.8	Jany. 2	88.0
Barometer....	1841,	30.355	Jan. 18	28.727	Feby. 22	1.628
Barometer....	1842,	30.417	Dec. 21	28.672	Dec. 4	1.725
Elastic Force	1841,	.860	July 23	.017	March 14	.843
"	1842,	.741	Aug.27	.049	Feby. 8	.692
Humidity....	1841,	.100	Frequent	22	July 2	78
"	*1842,	.100	do	22	Twice in Mar.	78

Direction and Force of the Wind.—The Anemometer used at the Observatory fully answers its purpose in recording the *direction*, but was less satisfactory in recording the *pressure* of the winds. In pressures of less than 1 lb. the plate did not move, or the record of its motion was very uncertain. Even in higher winds, the spring was insufficient to bring the pencil back to the zero, so that high pressures might continue to be marked after the wind had lulled. But these defects have been subsequently somewhat overcome, and more satisfactory performances obtained. In the present tables no pressures under 1 lb. are noticed. The force of the wind was also observed by *estimation* on a scale of thirteen gradations, designated by corresponding terms. The terms of the scale, and their corresponding values, varied from "very light, nearly calm," or 0.2 lbs., to "great storm," or 20 lbs. On comparing in detail the records by estimation and by the instrument, the record is generally satisfactory,—both record a preponderance of pressure from the N. and the W.; and in both years the hours in which the winds blew from the points included between N. and W. exceeded those from any one of the other quarters. A great majority of the high winds were also from the same direction. The hours of calm in 1841 were 2669, and in 1842 were 2409; those at which there was more or less wind were respectively 6010 and 6250,—the hours of wind being to those of calm in proportion, differing little in either year from that of 5 to 2; the balance to make up the number of 8760 observations to the year, being 81 and 101, being the number of hours in the respective years during which the instruments were out of order. In reference to the diurnal variation of the wind's force, its pressure is considerably greater during the day than the night; the force begins to increase between 6 and 8, A.M., reaches its maximum at noon, or soon after, and diminishes again until 10 or 12 P.M., undergoing little change during the remainder of the night. The pressure of the winds for 1841 and 1842, as taken by the anemometer, was respectively 4246.7 and 6247.0 lbs.; and divided by the number of hours during which the several winds prevailed, with the whole recorded pressure, we draw the following result:—

Direction.	Hours of prevailing Winds.		Whole Pressure.	
N.	795 ...	450	543.1 ...	512.8
N. N. E.	348 ...	333	222.0 ...	341.3
N. E.	330 ...	208	164.3 ...	202.5
E. N. E.	310 ...	470	131.6 ...	317.6
E.	460 ...	519	324.0 ...	428.4
E. S. E.	395 ...	278	135.7 ...	295.9
S. E.	226 ...	333	235.0 ...	137.4

Ontario, and the difference of its latitude from that of Montreal, may, and probably does, materially affect the humidity of the air. We are not disposed to think that May is our driest month, and we feel confident we will be confirmed in that opinion by many a housekeeper, accustomed to "flitting" at that period of general removal and destruction of household furniture.

S. S. E.	301	264		49.3	51.8
S.	315	373		86.6	103.0
S. S. W.	363	547		178.7	254.9
S. W.	305	448		204.5	578.1
W. S. W.	282	346		228.6	752.2
W.	384	356		315.7	297.6
W. N. W.	326	400		539.5	418.9
N. W.	357	412		503.1	668.6
N. N. W.	413	513		385.0	886.0
	6010	6250		4246.7	6247.0
Calms,	2669	2409			
No observations	81	101			
	8760	8760			

The greatest pressures of the winds during the two years, as recorded by the anemometer, gives 23 days between N. and W., 11 between S. and W., and 4 each between N. and E. and S. and E., 5 from the N., 2 each from W. and E., and 0 from S. The receiving surface of the anemometer rain gauge, was about 9 feet above the ground. It indicated 26°. 58′ inches in 1841, and 42°. 80′ in 1842.

Rain Gauge.—An instrument for determining the quantity of rain falling at different intervals was attached to the anemometer. Its receiving surface was about 9 feet above the ground. In 1841, 8.14 inches fell in the month of July, which was the maximum; the minimum amount, 1.16 inches, fell in March. In 1842, the maximum quantity fell in September, amounting to 6.16 inches; the minimum, in May, being 1.28. The whole amount which fell in 1841 is rated at 36.58 inches,—in 1842 at 42.80 inches. These observations, however, are not sufficiently extended to permit of any very useful result.

The third and most voluminous portion of the work now under consideration, consists of 340 pages of tables, comprising the observations made at the Toronto Observatory, on the monthly term periods agreed upon in Europe, and taken at short intervals at mean Gottingen time, Toronto being 5h. 57m. 12s. 5., or nearly six hours west of the latter place. To show how very numerous and minute these observations were, it will be only necessary to state, that in 1840 the declination of the magnet was noticed throughout the 24 hours every five minutes, its horizontal and vertical forces every ten minutes; and that hourly observations were taken of the barometer, the dry and wet thermometer, the direction and force of the wind, and the general state of the weather. At the end of the year there are reductions of the observations of the declination and horizontal intensity by curved lines, with the corresponding curves as far as obtained from Boston, Philadelphia, and Prague or Breslau, with the mean diurnal oscillations at Toronto.

The meteorological tables consist of the two hourly observations on every day of the year, except Sundays, of the barometric pressure, the standard and wet thermometers, the humidity of the air, and tension of the atmospheric vapour, and a meteorological journal of six-hourly observations of the dew point, the direction and force of the wind, the weather and its phenomena, the maximum and minimum of the thermometer, the solar and terrestrial radiation, and the quantity of rain. These observations, except those in the meteorological journal, were made hourly after July, 1842.

In 1841, these observations were still further augmented by two-hourly observations on every day of the year, except Sundays, augmented to hourly observations after July, 1842, of the declination of the magnet, and of the horizontal and vertical forces, with the temperatures of the bifalar and vertical force magnets.

Attached to the larger volume, of which we have thus given a review commensurate with our space, but by no means with the importance of the subject, there is a smaller one, entitled "*Observations on days of unusual magnetic disturbance, made at the British Colonial Magnetic Observatory, under the departments of the Ordnance and Admiralty, and published under the superintendence of Lieut.-Colonel Sabine*," the scientific editor of the preceding. This publication has been made in advance of the receipt of the observations from all the parts in which the experiments are being conducted; and it is done in the hope that their early publication, and their "comparison with simultaneous observations in other parts of the globe, may lead to the suggestion of more specific points of inquiry, than are at present apprehended, and possibly to the substitution of improved instruments and modes of observation." The four Colonial Observatories at which these experiments are progressing, are those at St. Helena, Toronto, Van Dieman's Land, and the Cape of Good Hope. But the observations recorded have principally been made at Van Dieman's Land and Toronto, two stations situated in different magnetic hemispheres, and nearly at opposite extremities of a diameter of the globe, in both of which the magnetic phenomena, whether of declination, horizontal and vertical force, or general disturbance, present a remarkable degree of uniformity.

Diurnal Oscillation. The first general result obtained is, that the regular diurnal oscillation does not consist in a simple movement from one extremity of the range to the other, and back, as Arago supposes for instance, but in an alternate progression and retrogression. Commencing at 2 P.M., the movement is continuous towards the East until 10 P.M., when the bar returns towards the West, and reaches at 2 A.M., a second Westerly limit. A second progression towards the East then commences, and continues until 8 A.M., being more decided in the summer than in the winter months, both in its amount, and in the precise hour at

which it reaches its limits. From 8 A.M., to 2 P.M., the return is continuous towards the West. The hours at which the alternate movements terminate, viz., the Westerly at 2 A.M., and 2 P.M., and the Easterly at 10 P.M. and 8 A.M., are indicated also, beyond actual observations, by the means of both the summer and winter half years. There appears less regularity in the periods during the night, than during the day.

The range of diurnal fluctuation appears to be, throughout, greater in the summer than in the winter months. This range is never marked with the Easterly movement, which takes place from 2 to 8 A.M., and the subsequent return. It seems to commence from midwinter, when it is barely perceptible, and daily to increase to midsummer, when the diurnal fluctuation is greatest.

The course of diurnal oscillation at Van Dieman's Land corresponds in all its principal features with that at Toronto, with only one essential distinction, viz., that the hours of Easterly movement at Toronto, are those of *Westerly* movement at Van Dieman's Land, and *vice versa*. The diurnal range is nearly the same at both places, and there is a similar amount of irregularity in summer and winter. The alternate progression and retrogression are as distinctly marked, and the hours indicated by the turning points, or the limit of one movement, and the commencement of the other, are synchronous.

With reference to the diurnal oscillation of the vertical and horizontal forces, the following deductions have been made:—The diurnal oscillation of the latter force, consists in an alternate increase and decrease, forming two maxima and two minima in the twenty-four hours. The principal minimum, or least force, occurs at 10 A.M. in the summer half year, and at noon in the winter half year. The principal maximum is at 4 or 6 P.M., except in midwinter, when the afternoon oscillation is so much reduced in amount, that the other maximum which occurs throughout the year at 6 or 8 A.M., becomes in the months of December and January the principal maximum. The second minimum takes place between 10 P.M., and 4 A.M., during which the force is nearly stationary. The diurnal oscillation of this force appears greater in summer than in winter.

With reference to the former, or the vertical force, the conclusions arrived at are, that the maximum intensity takes place at 6 P.M., and the minimum at 2 or 4 A.M. A second maximum at 8 A.M., and minimum at 10 A.M., are also traceable in some of the months. All variations between the actual position of the bar at any hour, and the normal position at the same hour, (as deduced from the observations made, and recorded, and verified, by monthly means, as to induce these to be regarded as normal positions,) must be set down as the effect of disturbing causes.

Magnetic Disturbance. A comparison of the observations at Van Dieman's Land and Toronto, exhibits some connexion between the disturbances of principal magnitude. Generally speaking they are inferior in amount, both in the horizontal force, and in the declination. The fluctuation from one hour of observation to the next, on the average of the whole year, is at Toronto, of the declination, 3.99, and of the horizontal force 000.86. At Van Dieman's Land, they are, respectively, 2.02, and 000.54. The terrestrial magnetic intensity is nearly the same at both stations, the inclination is 70°40 at Van Diemen's Land—75° 10 at Toronto. These assimilations, or, perhaps, more correctly speaking, coincidences, are certainly remarkable, when we reflect on the geographical relations of the two stations of observation, and go to demonstrate that the cause productive of such effects must be uniform in its force and action, and be entirely uninfluenced by any of the ordinary agents which are usually regarded as operating upon, or influencing the climate of a country. Not the least remarkable phenomenon which has received elucidation from these widely dispersed stations of observation, is the great fact, that unusual magnetical disturbances, observed at one station, have also prevailed at, at least, two others; the disturbances being observed, simultaneously, at Prague in the interior of Europe, at Van Dieman's Land, and at Toronto, though modified in intensity, in the particular time in which the action was greatest, and in the element most affected. The connexion, however, appears most distinct between Toronto and Van Dieman's Land. If twenty or thirty of the most disturbed days be selected from both the stations, the days will be found, for the most part, the same at both; and the three days of most remarkable disturbance at Van Dieman's Land, viz., the 2d March, 10th May, and 6th August, were also the most disturbed days at Toronto.

The general prevalence of these magnetic disturbances receives corroboration from the observations made at St. Helena. The mode of manifestation, however, of the magnetic disturbance, being different in low latitudes from that in high, has, probably, been the occasion of a less general notice of them, than if the operation had been uniform. In high latitude great and rapid fluctuation, both in direction and force, appears to be the ordinary and leading characteristic. In the lower latitudes the disturbance partakes of the character of a sustained deviation, either in one direction or the other, from the normal position at the same hours.

As far as regards months of the years, the observations

rendered, point to August, September, and February, as being those in which the greatest magnetic disturbances are seen, while April appears to be a tranquil month, in both Toronto and Van Dieman's Land, from which stations these results have been obtained. As far, again, as regards season, the fluctuations are greater in the summer than in the winter months. The constancy and regularity with which this excess occurs render this deduction one of considerable importance, and demand for it a closer attention.

Connexion of Magnetic Disturbance with Aurora.—Of the 24 days of principal magnetic disturbance at Toronto, on 13 the aurora was visible, varying in intensity, from a faint auroral light, to brilliancy. On the remaining 11 days the sky was either densely overcast, or heavily clouded, so that its existence could be only inferential. The same days of disturbance, however, were also days of disturbance at Prague and Van Dieman's Land, at which places it does not appear that similar atmospheric phenomena were witnessed. The aurora, has, probably, then, a local manifestation, connected with magnetic influences, pervading, to an unusual degree, whatever may be its origin and its end, the whole surface of the globe.

We cannot pass this subject from our hands, without alluding to the meritorious services of Prof. Espy, of Washington, in this department of science. Of the various meteorologists in the United States, perhaps this gentleman stands pre-eminent, and has devoted his time and attention chiefly to a development of the laws which prevail over, and guide the course of storms. The House of Representatives of that country voted, a few years ago, a sum of money for the elucidation of this branch of meteorology, under Professor Espy's superintendence. The establishment of about sixty stations of observation, distributed over the whole territory of the United States, was immediately effected, and the direction of the wind at the same hours of observation, was carefully noted in all the storms which occurred in the first few months of 1843. A report by Prof. Espy, has been presented to the House of Congress, accompanied by an elaborate and interesting series of maps. These we have never had the gratification of seeing and perusing, but our knowledge of them is derived from other and incidental sources. We have understood that there is some danger of the Legislative grant not being renewed: we sincerely hope that this may not be the case. It is only by wide scattered observations, and a very extended series of co-operative efforts, that the general laws which affect meteorological changes, can be determined. The greatest practical benefits result from their correct appreciation. The pecuniary resources of individuals are usually inadequate to the fulfilment of such grand designs; and we regard the appropriation of public monies to such purposes, as not only strictly legitimate, but also a matter of duty, on the part of the proper authorities.

In thus closing our review of the valuable statistic volumes before us, and which, with the characteristic munificence of the British Government, have been presented to this Province, and deposited in the Library of the Legislative Council by his Excellency the Governor General, our readers find that we have been diffuse, we can only plead in extenuation the importance of the subject, and our desire to place the results so elaborately obtained at the command of all, and thus to compensate for the difficulties which those who feel an interest in such matters would experience in obtaining access to them.

Nor can we here forbear paying a tribute to the memory of the late Robert Armour, jun., Esq., of whose active pen, the first paper of this review, and a small portion of the present one is the production. In him, the literature of this country has lost a warm supporter, and science an ardent admirer. Anxious for the success of his journal, and desirous of contributing to its pages, he commenced the task, which an overruling Providence, "whose ways are not as our ways," did not permit him to accomplish; and it has become the painful duty of one of the Editors, to conclude, under such circumstances, the intended paper of an early, and talented friend.

ANATOMY AND PHYSIOLOGY.

DIGESTION AND ASSIMILATION OF SACCHARINE AND AMYLACEOUS SUBSTANCES.

By M. Mialhe.

It is now commonly believed that the alimentation of animals is effected by means of three different classes of substances, the azotized or albuminous, the fatty, and the saccharine. The researches of late experimentalists have proved that the digestion of the first is effected chiefly through the agency of the gastric juice, and that of the second by means of the bile; but nothing certain was determined relative to the saccharine or amylaceous group of substances. M. Mialhe, in a paper on diabetes, presented to the Academy of Science in April, 1844, gave the first sketch of his views on digestion of these substances, and in the present paper enters into the details. He found that the active matter in the digestion of amylaceous and saccharine matters was the saliva, and by operating on it, discovered its active principle to consist of a peculiar matter perfectly similar in properties and composition to diastase.

This active principle of the saliva, which he proposes to name animal diastase, or salivaire, is a white or grayish-white amorphous solid, insoluble in alcohol, but soluble in weak alcohol or in water. Its aqueous solution is insipid to the taste, and has a neutral action on test papers. It is not precipitated by the subacetate of lead; when left to itself it speedily decomposes and becomes acid. The acid which results is the butyric, or one very closely allied to it. This

substance exerts no action on azotized substances, as fibrin, albumen, casein, gelatin or glutten, nor on the neutral ternary compounds, cane sugar, inuline, gum Arabic, and lignin. It exercises, however, a most remarkable action on amylaceous substances, as the following experiments will demonstrate.

When some of this active principle of the saliva is mixed with some starch beat up with six or eight times its weight of water, and the whole heated, the mixture never acquires a gelatinous consistence as plain starch would have done, but each grain of fecula is rendered entirely soluble the moment it becomes hydrated. After a little while the solution is not even coloured by means of iodine, but caustic potass, if heated with it, produces the intese brown coleration, which indicates the conversion of the starch into dextrine and glucose. These substances are easily separated by treating the liquor with five or six times its weight of absolute alcohol, when the glucose is dissolved and the dextrine precipitated.

Raw starch takes a longer time to be acted on by the animal diastase, but its action is greatly increased by heat. The activity of this principle is such, that one part suffices to liquify and convert into dextrine and sugar more than 2000 parts of fecula.

M. Mialhe relates in his paper the comparative experiments he made with the diastase procured from germinating barley, from which it appears that its action on starch was identically the same. M. Mialhe concludes that all hydrocarbonaceous substances serving for aliment, can only undergo the process of assimilation provided they are decomposable by the weak alkaline solutions contained in the animal humours. This is done immediately in the case of glucose, dextrine and sugar of milk, and mediately in the case of cane sugar and starch, which must first assume the form of glucose and dextrine. Those hydrocarbonaceous substances, on the other hand, which are neither fermentable nor decomposable by weak acid or alkaline humours, as lignin and mannite, do not undergo in man the digestive or assimilative process.—*Edinburgh Med. & Sur. Jour. from Comptes Rendus.*

SECRETING STRUCTURES.

The following comprises an abstract of the chief points contained in an excellent paper by Mr. Goodsir, relative to the function of secretion as well as the structure of secreting organs.

1st. Secretion is essentially a function of nucleated cells. The cells endowed with this property of secretion possess a peculiar organic power by which they can draw into their interior certain kinds of materials varying according to the nature of the fluid they are destined to secrete. Some cells have merely to separate certain ingredients from the surrounding medium, others have to elaborate within themselves matters which do not exist as such in the nutritive medium.

2d. Though secreting cells thus differ in the nature of the fluid which they secrete, (as whether milk, bile, saliva, or other,) their structure seems to be nearly the same in all cases; each consisting, like other primitive cells, of a nucleus, cell-wall, and cavity.

3d. The nucleus seems to be both the reproductive organ by which new cells are generated, and the agent for separating and preparing the secreted material. The cell-cavity seems destined chiefly to contain the secreted fluid until ready to be discharged, at which time the cell then matured bursts and discharges its contents into the intercellular space in which it is situated, or upon a free surface, as the case may be.

4th. The mode of secretion in glands, of which the testicle of the *squalus cornubicus* may be taken as a type, seems to be the following.* Around the extremities of the minute ducts of the glands are developed acini or primary nucleated cells, each of which as it increases in size has generated within it secondary cells, the product of its nucleus. The cavity of the parent cell does not communicate with the duct on which it is situated until its contents are fully matured, at which time the cell-wall bursts or dissolves away, and its contents are discharged into the duct. From this constant succession of growth and solution of cells, it results that the whole parenchyma of a gland is continually passing through stages of development, maturity, and atrophy, the rapidity of which process is in proportion to the activity of the secretion. There seems, therefore, to be no essential difference between the process of secretion and the growth of a gland; the same cells are the agents by which both purposes are effected; the parenchyma of glands is chiefly made up of a mass of cells in all stages of development; as these cells individually increase in size and so constitute their own growth as well as that of the common glandular mass, they are at the same time elaborating within themselves the material of secretion, which, when matured, they discharge, by themselves dissolving away. There are a number of germinal spots or centres in a gland from which acini or primary cells are developed.

5th. The true fluid of secretion is not the product of the parent-cell of the acinus, but of its included mass of secondary cells, which themselves become primary secreting cells, and form the material of secretion in their cavities. In some cases these secondary cells pass out entire from the parent cell, constituting a form of secretion in which the cells possess the power of becoming more fully developed after being discharged and cast into the duct, or cavity of the gland.

6th. In the order of the glands, which consist of follicles more or less elongated, the following is the arrangement:†—At the blind extremity of each follicle is situated a germinal spot, at the centre of which are constantly or periodically developing nucleated cells. These cells, as they become developed, tend towards the open extremity of the follicle. At first they are simple nucleated cells, but as they advance they gradually assume the characters of primary secretor cells, and contain secondary cells in their interior. When fully matured and arrived at the attached extremity of the follicle, the primary cells burst and allow their contents to pass into the branch of the duct to which the follicle is attached. Each follicle is virtually permanent, though both its contained cells and its walls are continually undergoing change, receiving development and addition at the blind extremity, being absorbed and disappearing at the other.

7th. Mr. Goodsir considers that the process of original development of glands in the embryo is identical in its nature with the growth of a gland during its state of functional activity. The blastema which announces the approaching formation of a gland in the embryo, in some instances precedes and is in other instances cotemporaneous with, the conical blind protrusion of the membrane upon the surface of which the future gland is to pour its secretion. In certain instances it has been observed that the smaller branches of the ducts are not formed by continued protrusion of the original blind sac, but are hollowed out, independently, in the substance of the blastema, and subsequently communicate with the ducts. It appears highly probable, therefore, that a gland is originally a mass of nucleated cells, the progeny of one or more parent-cells, and that whether the membrane in connection with the embryo of the gland sends a conical protrusion into the mass or not, the extremities of the ducts are formed as vesi-

* Conglomerate glands in general, as the salivary glands, pancreas, &c., may be included in this class, though individual differences as to the arrangement, and other peculiarities of the cells, occur in each.

† Under this class may be included the follicular glands of the mucous membrane of the stomach, &c.

cles, and then nucleated cells are formed within them, and are the parents of the epithelium cells of the perfect organ.—*Ranking's Abstract*, vol. i.

ANATOMY AND USE OF THE THYMUS GLAND.

On this subject we are fortunate in being able to refer to some recent researches by Mr. Simon,* the value and importance of which have attained for them the high honour of gaining the first Astley Cooper prize. In the endeavour to place before our readers a brief abstract of this work, we shall omit the author's very concise and accurate history of the labours of former writers, and proceed at once to the discussion of the original portion of his labours.

The first appearance presented by the gland, as observed in the fœtal calf, is that of a simple tube lying along the carotid vessels, and exhibiting faint traces of commencing areolar tissue. The contents of the tube at this time are granular, but do not contain any distinctly formed corpuscles. Mr. Simon suspected that this tube was not the primary condition of the organ, but that it might exist at an earlier period in the more simple form of a string of primordial cells; he has not, however, been able to verify the suspicion. He refutes the opinion of Arnold, (*Lehrbuch der Physiologie*, tom. ii. p. 265), that the thymus is a development of the respiratory mucous membrane, as well as that of Bischoff, that it is in some way connected with the thyroid gland. The development of the gland proceeds in the same manner as that which has been observed as the primordial tube of the true glands, that is to say, by the addition of diverticula, which spring from the sides of the tube. These diverticula, when they have arrived at three-fourths of a sphere, themselves give rise to secondary bulgings, which again reproduce others, until at length by the repeated occurrence of the same process, conjoined with a continued interstitial molecular increase, the organ attains the bulk and complexity of the structure exhibited by it in the mature state of the fœtus.

The researches of Mr. Simon confirm in the main the dissections of Sir A. Cooper, with respect to the existence of a central cavity; he thinks, however, that it has hitherto been supposed to be larger than it really is. They likewise accord with those of Haukstead, in reference to the period at which the thymus attains its greatest size, this being, not as is commonly supposed during intra-uterine life, but at a certain period after birth. This exact time it is not easy to ascertain, as it is probable that it varies in different instances; it has, however, been laid down as a law by the author, that its bulk is inversely as the amount of mortality and consequent exhaustion of tissue, and its duration, therefore, dependent upon the period at which muscular activity becomes established. In reference to this point, the author has arrived at the following results:—1st. During the period next succeeding birth, the activity of the thymus is remarkable; it increases considerably in size, becomes turgid with secretion, and its specific gravity is lowered by the greater fluidity of its contents. This first growth is far out of ratio to the general increase of the body. 2nd. For several months it continues to increase at a diminished rate, and merely in proportion to the general growth of the body; its further enlargement ceases about two years after birth. 3rd. From this me, during a *very variable* number of years, it remains stanary, and, supposing the individual to be adequately urished, gradually assumes the structure of the fat. 4th. e duration of its decay, and the epoch of its entire vanishi are still more uncertain; about puberty, it seems in most ces, to suffer its chief loss of substance, and to be reduced tc vestigiary form.

he first appearance of this organ before birth is supposed byatomists to be as early as the fifth week after conception, but in the tenth week of pregnancy it is sufficiently perceptible to the naked eye. It, at this time, exhibits a distinct tubulo-vesicular structure. The third chapter of the work contains a description of the mature gland. Its mode of formation has been already alluded to; it remains only to mention the intervesicular structure and the contained fluid. The intervesicular tissue is a prolongation of the wall of the original tube, and consists of an indescribably fine membrane, over which a close capillary network is spread for the purpose of supplying materials for secretion. This secretion consists of a fluid, in which, as was discovered by Hewson, microscopic corpuscles were seen to float. These corpuscles are circular discs of nearly the same size as the coloured particles of the blood. Their average diameter is 1-3830 of an inch. They are marked by minute dots which are supposed to be molecules of fat in combination with fibrin or solid albumen.

The author gives three separate chemical analyses of the thymus fluid, all of which concur in demonstrating the error of the opinion that it was essentially a highly carbonaceous product. It is proved by them on the contrary that the fluid contains no more carbon than enters into the composition of muscle and blood.

The nerves of the thymus are derived from the inferior and middle cervical ganglions and from the cardiac branch of the pneumogastric nerve.

In the comparative anatomy of the gland, the author's researches have been very extensive, but our space will not allow of a repetition of the different tribes of animals in which he has carried on his investigations; we shall content ourselves with giving the following summary of the results to which they lead. 1st. The *presence of the gland* is coextensive with *pulmonary* respiration. 2nd. Its shape and position are variable and unimportant. 3rd. Its *size* and *duration* are, generally speaking, in proportion to the habitual or periodical activity of the animal. 4th. Where it remains as a persistent organ (as in the hybernating tribes), it is one of the general reservoirs for the accumulation of nutritive material.

In further prosecuting the developmental anatomy of his subject, the author next passes in review the maphological history of the true glandular system, with which he contrasts that of the thymus and its analogues, the thyroid, supraenal glands, and the spleen. The principal difference between the two orders of organs appears to consist in the ultimate arrangement of their secreting cells, that of the true glands being distinctly cellular, that of the glands without ducts, consisting of the cytoblast alone, the involving cell-structure being only of the exceptional formation. It is a curious fact, however, that in those animals in which the thymus becomes a permanent organ, the nucleus, instead of being simply surrounded by aggregate molecules, as in the temporary state of the organ, is converted into a perfect cell. These different points are rendered plainly intelligible by the plates with which Mr. Simon's work is liberally illustrated.

We now pass on to the most remarkable part of the work, the physiology of the gland. It is thus stated by Mr. Simon:—

"It secretes into a closed cavity certain particular elements of nutrition, which are deposited differently under different circumstances, viz:—1st. In most animals it occurs only temporarily; the secreted matter then presents itself under a *fluid form*, and closely resembles the liquor sanguinis in ultimate chemical composition. 2nd. In some animals, after discharging this temporary function, it assumes one of greater permanency, the sequestration of material in the form of solid fat. In both cases, however, though peculiar, the function is especially the same, and consists in the laying by of nutrient material. How this is used up, Mr. Simon next proceeds to show. Here, however, we are called to notice a certain circumstance which is co-existent with both

*hysiological Essay on the Thymus Gland. 4to. London: 184

the temporary and the permanent function of the gland, viz., that in both, *waste of tissue* is at a *minimum*. In the younger animal, muscular activity, which mainly contributes to this waste, has not commenced; in the hybernating animal it is suspended. Now the waste of tissue being at a minimum, the pabulum for the support of the respiratory process must be supplied from some other source."

This source Mr. Simon declares to be the nutritive matter laid up in the central cavity of the thymus as in a reservoir, and he therefore assumes the office of that gland to be that of sequestrating nutritive matter, whereby it becomes "a sinking fund of nourishment in the service of respiration."—*Ranking's Digest.*

SURGERY.

ON THE USE OF THE PIPER ANGUSTIFOLIUM (MATICO) IN CERTAIN HÆMORRHOIDAL AFFECTIONS.

By Dr. O'Ferrall.

There is a form of disease, engaging the verge of the anus, and a portion of the mucous membrane above it, in which I have found this vegetable astringent to produce unequivocal and rapid amendment. As the matico will, probably, be much employed, and as it may occasionally disappoint our expectations, we should endeavour to observe and define the cases, to which its properties bear a therapeutic relation.

The condition, to which I allude, presents some characters in common with the "vascular tumour of the rectum," in which the nitric acid recommended by the late lamented Dr. Houston, is so often useful. But it does not, like the vascular tumour, require the nitric acid,—it is not, like the inflamed varix, much influenced by leeching—and the operation for fissure, is unnecessary for its cure.

It appears to be the simple result of chronic inflammation of the integument, at the verge of the anus, and of a portion of the mucous membrane above it, the latter assuming the appearance of that hypertrophy, which is usually termed the villous state.

When examined externally, the verge of the anus presents a considerable swelling, of a purple colour, and divided into separate tumours or prominences, by fissures or folds of the skin. When these tumours are separated, (which gives exquisite pain if hastily done) the bottom of the clefts is exposed, and the cuticle is there found to be abraded, and the surface covered with a sero-purulent discharge. These fissures are, sometimes deep, and penetrate through the cutis to the cellular tissue beneath. The consistence of the swellings is firmer than that of the true hæmorrhoid in the recent state, but wearing its purple tint. They cannot be emptied by pressure. They are, on the other hand, less firm than the hæmorrhoid in the state of chronic consolidation. The cellular tissue of the part appears to be in a state of œdema, and covered by a thickened skin. Where the parts are forced or drawn out, the mucous membrane is found to be tumid, vascular, and apparently deprived of its epithelium; it is easily made to bleed.

This condition of the mucous membrane, does not extend very far upwards, and its prominence is little, compared with that of the vascular tumour of the rectum. It is not protruded at stool, and therefore, perhaps, yields little blood, compared with what oozes from the former when occasionally strangulated by the sphincter.

These are the anatomical characters of the condition, in which the matico will be found to succeed. It appears to consist of chronic inflammation of the inner and external ntegument and cellular tissue, the prominence of the skin throwing it into folds, the clefts of which are apt to ulcerate, and, when stretched during defecation, may occasion pain, which resembles, in some respects, that of fissure. I have not seen any trace of true varix, internally or externally, in this affection. The purple tint appeared to depend on congestion of the extreme venous radicles only.

This complaint begins gradually, and is chronic in its formation, but at length becomes so painful, that the erect or sitting posture, can scarcely be borne. There is pain in defecation, which persists for a short time only afterwards. There is occasional, but not constant bleeding, and only in trifling quantities, but there is constant painful uneasiness, with sense of weight, increased by walking, and at length rendering the erect position almost intolerable.

I have seen this state, in several persons, at, or beyond, the middle periods of life. Both sexes are liable to it. It is called "piles," but leeching and cold applications produce only temporary benefit, and warm applications have been found to increase the morbid sensibility of the parts.

The mode of employing the matico, in this affection, is in the form of ointment, or lotion. Dr. Young of Winslow recommends the ointment in "external hæmorrhoids." In the affection here described, the decoction appeared to me to succeed best. A dossil of lint, soaked in a decoction, made by boiling two drachms of the leaves in six ounces of water, is to be introduced within the anus three times daily; another piece of lint, in form of a compress, similary charged, is laid outside, and covered by oiled silk: the whole is supported by a T bandage.

If the resemblance to vascular tumour should induce the application of nitric acid in this affection, it will be found to have done too much. The tumour of the mucous membrane, is too slight to bear the escharotic, and the patient will be worse than before. It may, therefore, be found practically useful, to describe a state of parts in which the matico is really an innocuous and adequate remedy.

In the following case, which requires no subsequent comment, one of the instances of its efficacy is afforded:—*Chronic Painful Swelling of the lower extremities of the Rectum—Superficial Fissure—Treatment by Matico—Cure.*

J. Walsh, aged 30, a servant, admitted into hospital August 24, 1845.

He states that he is suffering severely from "piles," under which he has laboured for a length of time; latterly, however, within the last month, the pains have become very excruciating, being greatly aggravated when he goes to stool. He has a most anxious, distressed expression of countenance, avers that he has not closed his eyes in sleep for several nights, and earnestly implores that something may be speedily done to relieve him. Upon examination, several large, swollen, and intensely painful tumours, of a purple hue, are found to surrround the anus; there are two or three fissures with the usual cracked edges and ulcerated bases, and the opposed surfaces of two of the tumours have become red, and denuded of cuticle. Upon being desired to force down, the mucous membrane of the gut is protruded of a highly red and inflamed appearance, and presentin very much the character of "vascular tumour;" bowe generally confined, has never had much hæmorrhage fro them.

August 24th—

Electuarium Lenitivum,

Nocte, maneque, ad alvi solutionem.

℞

Folior: Piper: Angustifol: drachmas duas,

Aquæ Puræ, uncias sex,

Coque s. a. fiat. lotio.

a piece of lint, moistened with the lotion, to be kept constantly applied, internally and externally.

26th.—The tumours are smaller, and much less inflamed. Continue.

30th.—Tumours have become quite flaccid, and of a natural colour; the pain has entirely left him, and he sleeps perfectly well at night. The application was continued for some further time, and he then left the hospital perfectly well.—*Dublin Hospital Gazette.*

RESEARCHES ON WOUNDS OF BLOOD-VESSELS.

By M. Amussat.

M. Amussat, before stating the conclusions to which his experiments have led him, pointed out the difference between the method he pursued and that followed by former experimenters. Hitherto the vessels experimented on had been always isolated from the adjacent parts, but he always inflicted a simple open wound, without any previous dissection, so as to place the animals operated on in exactly the same position as a man who receives a wound. M. Amussat's conclusions are as follows:—

1. The spontaneous clot that plugs a completely divided artery in a large tranverse wound forms very quickly, in fact under the eyes of the experimenter.

2. This clot consists of the fibrine of the blood, and is supported by the external cellular coat of the artery or the fourth membrane, and not by the sheath of the vessel, as would appear to be the case from a superficial examination and the ordinary description of the structure of arteries.

3. The central cavity in the spontaneous clot affords an important character for the discovery of an artery marked by a clot.

4. Contrary to the opinion of Jones, Beclard, &c., an artery possesses in itself the power of arresting hæmorrhage, as a clot may form at the extremity of an artery, projecting from the surface of a wound.

5. The clot is larger and firmer, the tenser the artery and the cellular membrane were at the moment of its division. The practical deduction from this fact is, the necessity of putting arteries considerably on the stretch, so as to place them in circumstances favourable for the formation of firm clots almost analogous to those formed in arteries lacerated by avulsion.

6. Some of the results may, perhaps, be valuable in a medico-legal point of view. Thus, if both carotid arteries are transversely divided together in a living animal whose spinal marrow is uninjured, clots always form in the cardiac extremities of the arteries, which are bulky in proportion to the greater or less tension of the neck and of the arteries at the moment of their division.

7. On the contrary, if the carotid arteries are severed one or two minutes after an animal has been killed, either by a blow on the head, by simple division of the spinal marrow, by strangulation, or by asphyxia, clots do not form in the cardiac extremities of the carotid arteries; or if they do form, they are small, quite unlike those that occur in vessels which are divided in a vigorous living animal that dies of hæmorrhage.

8. It is therefore of the utmost consequence to examine the cardiac extremities of divided arteries in certain medico-legal cases; as we can thence conclude with much more certainty than from an examination of the other soft parts, whether they were divided during life or after real or apparent death. —*Dublin Medical Press.*

PRACTICE OF MEDICINE AND PATHOLOGY.

ON ŒDEMA OF THE GLOTTIS.

By F. Valleix.

The French Academy of Medicine proposed the following subject for their prize. *State the causes of œdema of the glottis, describe its progress, successive symptoms, and differential diagnosis. Discuss the advantages and inconveniences of tracheotomy in its treatment.*

Prior to the proposition of this question the attention of M. Valleix had been drawn to the subject during the composition of his much esteemed *Guide du Medecin Practicien.* Although œdema of the glottis was described by Bayle in 1808, its right of reception into our nosologies as a distinct affection has been frequently contested: and certainly of the forty recorded cases collected by M. Valleix for the present essay, there are several to which this designation can be ill-applied. Indeed, as will shortly be seen, the description of our author embraces all inflammatory affections of the upper orifice of this tube capable by their resulting depositions of obstructing the admission of air. Practically this is of little consequence, since the same principles of treatment are applicable. He adds three cases from his own practice, and refers to two occurring in children, as reported by MM. Rilliet and Barthez in their work. To proceed with our analysis.

Anatomical Lesions.—The author finds the cases in which the infiltration consisted of serum only to have been comparatively few in number, in three-fourths of those recorded pus existing also. The cases of simple infiltration generally arose in the progress of a general anasarca, as in that supervening upon scarlatina. The folds of the mucous membrane extending from the epiglottis to the arytenoid cartilages, are especially the seat of the disease; and in three cases only have the *cordæ vocales* themselves been noted as presenting a certain degree of infiltration. The quantity of fluid effused is sometimes sufficient to produce enormous tumefaction, but few observers have supplied any exact details upon this point. The superior orifice of the larynx then presents two roundish pads, more or less projecting, and according to their size, offering a greater or less obstruction to the passage of air. They have a tendency to sink down into its aperture, when the larynx is open, and thus, as M. Lisfranc proved by experiments with a bellows, air obtains a far easier egress than ingress, the pads separating in the first case, and approaching each other when air was forced from above downwards. In three cases only has the *mucous membrane*, near the infiltration, been found in a healthy condition. In a third of the cases it was red, and in a sixth ulcerated. In one case, there was ramollissement, and in another gangrene. In sixteen cases more or less serious lesions of the *cartilages*, especially the cricoid, were found—the infiltration in fact being produced in consequence of the inflammatory action of the mucous membrane, induced by the carious, or other diseased state of the cartilages. The *epiglottis* was infiltrated in four cases, and in eight it was notably thickened. In one case it was ulcerated, and in another covered with a false membrane. In more than half the cases lesions of the *pharynx* were observed, such as coloration, ulcers, or abscess. It thus appears that œdema hardly if ever occurs without being preceded by organic lesions of the adjacent parts.

Causes.—The *exciting* causes are therefore the lesions just alluded to; but the *predisposing* ones have for the most part been imperfectly observed by authors. Age seems to exert some influence. Of 38 cases, four only occurred in children less than ten years old; and the greatest number were observed to occur between 18 and 30—the period in which phthisis, the most frequent cause of ulceration of larynx, so often the precursor of œdema, is most prevalent. So, too, this is especially the age for typhoid fever, during the convalescence of which œdema glottidis often occurs. The *sex* has been observed in 40 cases, of which 29 were males and 11 only females. This does not militate against the statement of phthisis being so frequently a predisposing cause; for, although that disease is most prevalent in women, M. Louis has observed that ulcerations of the air-passages are three times more frequent in men than in women. The effects of temperament, constitution, and

seasons, have been too seldom observed to allow any conclusions concerning them to be drawn. As to the *prior state of health*, in 4 cases out of 40 only did the disease show itself as a suffocative angina, the patients being in good health at the time. In ten instances the affection appeared in the course or convalescence of typhoid, or other severe form of fever; and in 12 in the course or convalescence of various other diseases, as pneumonia, scarlatina, erysipelas, &c., &c. In nine cases it followed laryngeal phthisis, in one cancer, and in two syphilis of the larynx. In two cases the state of health was not indicated.

"When an inflammation is developed within, or only even near to, a part of the body where there is abundance of cellular tissue, we soon observe it become more or less engorged with serum or sero-purulent fluid, according to the violence of the inflammation. This is seen to be the case in the subcutaneous cellular tissue in inflammation of the skin; as also in the palpebral cellular tissue, when there is inflammation in the vicinity of the eye, or in the eye itself. This is also seen after a simple section of the prepuce, when the cellular structure often becomes infiltrated in a very notable manner This effect may be observed in subjects otherwise in good health, but it is much more frequently produced when they have been enfeebled by prior disease, and the blood has become impoverished; or there is a tendency to general œdema. We find here an explanation of what occurs in the larynx when a violent angina affects a healthy subject, and when even a slight angina, having its principal seat in the larynx or pharynx, attacks a subject affected with, or convalescent from, another disease. But to pursue the comparison: if an ulcer is developed with a certain degree of irritation in one of the portions of the body already mentioned, its edges are seen to swell, and the irritation spreading farther and farther, the neighbouring cellular tissue is infiltrated. This effect is remarked in chronic ulcers, when by some cause they become much irritated, as well as in acute ulcers. The same thing is seen passing around an abscess, whether a simple one, or one connected with caries of bone. In studying the facts I have now indicated, one may see, so to speak, demonstrated on the surface of the body, the various phenomena which terminate by producing the serous or sero-purulent infiltration of the larynx, and further, we see the reason of the predilection the œdema assumes for the arytено-epiglottic folds of mucous membrane, the cellular tissue being here much less compact than elsewhere."

Symptoms.—Pain and tenderness in the region of the larynx or pharynx, with or without difficulty of deglutition, has been noticed in nearly all cases. The *cough* and *expectoration* have frequently not been even remarked upon by authors, and are only of a secondary importance. The change of *voice* is a very frequent, if not constant, sign. "It is at first raucous, then marked, then low, becoming in most cases extinguished, or almost so, towards the end of the disease. In one case alone it has been designated as croupal." Although *dyspnœa* is usually a principal symptom, it is in some cases not very marked. In 35 cases out of the 43, however, it has become at times suffocative. As observed by Bayle, the difference of the difficulty in inspiration and expiration is frequently very great, the former being far more noisy and laboured than the latter. In most cases, the inspection of the *fauces* seems to have been neglected; but in all the 13 in which they were examined, lesions of the pharynx, to a greater or less extent, were observed. It is, however, sometimes difficult to get the mouth sufficiently open. The examination with the finger, too, seems to have been seldom practised, although, in those cases in which it has been done so adroitly, the tumefaction of the glottis has been felt satisfactorily. The digestive organs are not usually much disturbed, but there are great fever, thirst, and restlessness. The countenance exhibits marked change, especially during the paroxysms.

Progress and termination.—The debut of the disease is hardly ever sudden, but once developed, it is often very rapid in its progress. When it results from a chronic lesion of the pharynx, its first announcement may be a suffocative paroxysm. When it is produced by simple inflammatory action the progress is rapid in proportion to its intensity, and it is then more uniform and less interrupted in its progress. In lesions of the larynx the paroxysms are more distant, and separated by intervals of calm. In some cases the paroxysms are truly dreadful to behold, of frequent occurrence, and long duration. Of the forty cases alluded to only nine were cured. Three only died during the existence of the paroxysm, and seven during a calm interval, in which all seemed going on well. In the other cases, death, although not actually occurring during the paroxysm, did so in the condition of asphyxia, which had become permanent. One perished during the operation of tracheotomy, one ten hours, and another 52 hours, after its performance. The *duration* of the affection is very variable, as the circumstances attending it are so different; and death at periods varying from a few hours in one case, to 26 days in another, has been observed.

Diagnosis.—This, which would seem easy enough, has nevertheless in some cases been attended with difficulty. If, with the precursory symptoms already mentioned, and paroxysms of suffocative dy-pnœa, we are able to feel an œdematous swelling at the top of the larynx, by means of the finger passed rapidly into the mouth, this being widely opened, the diagnosis is almost certain; not quite, indeed, for some tumours, in the vicinity, have simulated these œdematous swellings, as may collections of matter in the pharynx or œsophagus. Other affections of the larynx itself may render the diagnosis also obscure, as laryngitis terminating in suppuration, the seat of the formation of matter being the posterior walls of the larynx, and generally just above the cricoid cartilage. In one such case only was the pus found in the aryteno-epiglottic folds—the usual seat of œdema. The suffocative paroxysms in this case are much less severe. In *false croup*, we observe that children are almost always the subjects, the symptoms nearly disappear in the intervals of the paroxysms, when the voice becomes almost natural, and no tumefaction is found on the exploration of the larynx. In *croup*, children are also the subjects, and false membranes are usually found in the pharynx. The only pathognomonic sign of œdema is, however, the presence of the œdematous tumours at the superior aperture of the larynx. Œdema glottidis is sometimes *latent*, and M. Louis reports two or three cases in which the symptoms did not manifest themselves until just prior to death—these patients being already brought into a dying state by the severity of other long-continued disease.

Prognosis.—This is of the gravest character, since whatever is done, almost all die. The less the lesion which has given rise to the œdema has disorganised the tissues, the more chance there is of a cure being effected, if active means are employed.

"In pronouncing upon the degree of gravity from the symptoms observed, each case must furnish its own elements for decision. In a general manner only we can say that if the strength yet continues, the pulse is regular and strongish, if the features are not much changed, and the face not livid; if the efforts to enable the air to penetrate into the lungs are yet energetic, and if the wheezing or other noise is heard in the larynx with power enough to show that the air does, although with difficulty, penetrate into the lungs, we may have hopes that the disease will terminate favourably. If, on the other hand, the patient is prostrated; if his features are changed, his lips blue, his eyes haggard, his face cadaveric, as described by Bayle, if he has no longer the power of making the same respiratory efforts he did before, if the inspiratory *sifflement* has lost its energy, without respiration becoming deeper and easier, we

must not allow an apparent and deceptive calm to deceive us; for the patient is devoted to a speedy death."

Treatment.—Of the whole number of cases collected, nine only were cured. General *bleeding* has been only put into force in seven cases, in some of which it has produced at least temporary benefit. Leeching has been tried in fifteen cases, and in the same number have *blisters* been applied to the neck. In two cases related by the author, *blisters* and *emetics* have been simultaneously employed, and a cure resulted in both. In the one, the œdema came on in the course of a syphilitic laryngitis. Emetics were given, a large blister applied to the neck, and two others to the thighs. In the other case the œdema came on in the course of phthisis. Incision, or tearing of the œdematous tumours, and thus lessening their size, has been advocated by some, and the operation of *tracheotomy* by others. Of the 40 cases here reported, this has been practised but nine times, and in three of these life was saved. It must be remembered that the operation has been delayed until the last moment, when asphyxia was imminent, and yet out of the nine cases it has succeeded three times, while in the 31 remaining cases six cures only have resulted. Moreover, in only one case was the disease simple and primary, the others occurring in the course of an acute disease, or of chronic laryngitis. To be successful, the operation must not be delayed until the last moment, but should be put in force as soon as other methods have been found unsuccessful; but it should not be performed in those patients in whom the original disease is about terminating their career. —*Med. Chirurg. Rev.*, July, from *Memoires de l'Academie Royale de Médecine*, tom. xi., 1845.

CHEMISTRY, MATERIA MEDICA, AND PHARMACY.

METEOROLOGY.

Meteorology is a subject which bears very closely on Medicine. It is perhaps less studied in the Medical Profession than it deserves to be. It is not merely a study of speculative interest, as bearing on the possible explanation of the mysterious effects exercised over the prevalence of diseases by those agencies which have been termed Atmospheric and Epidemic Influences, Epidemic Constitution of the Year, and the like; it is also a study of practical use. For nothing else but the study of Meteorology can give the proper interest to the nicer varieties of climate, among those places to which invalids from this country are sent—a kind of knowledge far more difficult of attainment than is commonly believed—and in the application of which errors cannot but be sometimes committed, even by those who have had the best opportunities and have taken the greatest pains to make themselves acquainted with the subject.

These remarks have been suggested to us by a Work which has recently appeared, entitled "A Complete Course of Meteorology, by L. F. Kaemtz, Professor of Physics in the University of Halle," a translation of which, by Mr. C. V. Walker, is before us. A work of this kind, namely, a Manual of Meteorological Facts, is not well adapted for a review in our pages; but we propose to extract a few passages, such as may probably possess some interest for our readers:

"*Causes of Atmospheric Electricity.*—After having discovered that storm-clouds were highly charged with electricity, it was perceived that rain was almost always electric, and that there was electricity in the air, even during the calmest weather; and the question of its origin presented itself. Friction was then the only known productive cause of electricity; it was thought that that of the atmosphere proceeded from the friction of masses of air against one another. Notwithstanding the objections of several philosophers, I do not think that this cause is completely null: when we shake in the air a piece of silk, it is electrised; why then should it not be the same with two masses of air? If the temperature, moisture, &c., of the two masses are the same, there will be no production of electricity, in the same way that there will be none if we rub two perfectly similar rods of resin together. But, as soon as one of them becomes warmer than the other, the cooler becomes positive, the warmer negative: a law verified for all bodies of the same nature when rubbed against one another. Thus, then, the upper masses of air would be positive, the lower ones negative.

"Chemical actions, which are constantly taking place in the atmosphere, are infinitely more powerful; we shall place evaporation in the first rank. Volta first showed that evaporation produced electricity; de Saussure confirmed this opinion. But M. Pouillet has described the details and conditions of the phenomenon. Pure and simple evaporation does not produce any electricity, provided there be no chemical decomposition: if distilled water evaporates on platinum plates, there is no production of electricity; but if we add portions, however small they be, of salts, acids, &c., then there is a production of electricity as soon as the vapour of water is evaporated from the bodies to which it was united. The vapour is positively electrised, the vessel negatively; now, as the earth incessantly emits vapours, and the water in nature always contains foreign substances in solution, the vapours rise charged with positive electricity, whilst the earth preserves negative electricity.

"Combustion is another productive cause of electricity. When coal is burning, a current of carbonic acid escapes positively electrised, whilst the coal remains negative. The atmosphere, therefore, contains all the electricity that results from combustions made on the surface of the earth. Indeed, when plants spring up, the carbonic acid they exhale carries off the positive electricity, whilst the vessels through which the gas escapes remain charged with negative fluid; the same thing probably takes place during the life of the plant, from whence results a great proportion of the positive electricity which vegetation pours into the atmosphere."

"*Electricity during Serene Weather.*—When the sky is clear and without clouds, a sensitive instrument placed in an open place almost always indicates positive electricity; it only becomes negative in the case where there are distant storms. But this positive electricity varies in intensity; passing clouds, puffs of wind, modify it in a few seconds. The causes of these changes have not been as yet sufficiently studied. If we always observe at stated hours, we find in our countries the existence of a curve, the elements of which de Saussure and Schubler have endeavoured to determine.

"At sunrise the atmospheric electricity is feeble; it continues to increase as the sun rises and the vapours are collecting in the lower regions of the atmosphere. This increasing period lasts in summer till 6 or 7 o'clock in the morning; in the spring and autumn, till 8 or 9; and in winter, till 10 or 12 o'clock in the day. By degrees the tension attains its *maximum*; during this time the lower regions are filled with vapours, the humidity of the air increases, and the hydrometric tension is stronger than in the morning; in the cold season there is often fog. Generally electricity decreases immediately after attaining its *maximum*, at first rapidly, then more slowly. The visible vapours of the lower strata disappear, the fogs disperse, the atmosphere becomes clear, and distant objects seem to approach the spectator. Towards 2 o'clock in the afternoon, the atmospheric electricity is very feeble, and scarcely stronger than at sunrise. It continues to diminish till about two hours before sunset; in summer, till 4, 5, or 6 o'clock in the evening; in winter, till 5 o'clock. Its *minimum*

lasts longer than its *maximum*. As soon as the sun approaches the horizon it again begins to advance, increases sensibly at the moment of sunset, goes on increasing during twilight, and attains a second *maximum* an hour and a half or two hours after sunset. Then vapours form in the lower regions of the air, damp increases, and the night-dew falls. This second *maximum* usually equals that of the morning, but it continues a shorter time, and the electricity decreases slowly till the next morning."

"*Electricity of Dew and Fogs.*—When the vapour of water is precipitated into the atmosphere, a greater or less quantity of positive electricity becomes free. However, whether the augmentation of electric tension is due to the damp air permitting the more distant particles to act on the electrometer, or whether the electricity becomes free through the precipitation of vapours in the same manner as latent heat, is difficult to decide. Indeed, electricity is very strong when the dew is deposited; if this is abundant, then the *maximum* of the diurnal period takes place towards evening. The signs of electricity are also very marked during fog; all observers have acknowledged it, and de Saussure affirms that he never saw a fog without a notable development of electricity. In general, it is positive and stronger in winter than in summer, according to Schubler's observations. The electricity is stronger as the fogs are thicker; they rarely give signs of negative electricity: yet these phenomena are too little known for me to be able to enter into further details.

"The received opinion, on the increase of electricity during the formation of fogs, deserves to be submitted to new experiments. We must not forget that but few experiments on atmospheric electricity exist. For whole months, meteorologists do not observe the instruments. If a storm arises, or rather, if the straws of the electrometer diverge strongly, then they look at them and note their indications. But we cannot conclude from these indications whether the divergence was strong or weak relatively to the mean divergence. From my own observations at Halle, I should be tempted to believe that, during a fog, the electricity is weaker than in clear, and damp weather. On the Alps, I have always found, under these circumstances, a strong positive electricity; but as soon as clouds approached, its intensity diminished, and it was almost null when I was surrounded by clouds: at Halle, the same remarks. It is for experiment to decide if these are exceptional facts, resulting from the fact that electricity easily flows into the earth because air is damp, or if it is the normal and usual state.

"*Electricity during Rain.*—When rain or snow falls from the upper regions of the atmosphere, there is, at the same time, a production of a quantity of electricity, more or less strong: it is only during mild and continued rains that we observe no traces of it: in this case the electricity is sometimes positive, sometimes negative. According to Schubler's observations, there are, in South Germany, 100 positive for 155 negative rains: according to those of Hemmer, at Mannheim, 100 positive for 108 negative: in the two series, the latter are the more common. The direction of the wind is not without influence over these differences. If we designate by 100 the number of positive rains with each wind, we find the following numbers for the number of negative rains with the same winds:—

	SCHUBLER.	HEMMER.
N.	91	52
N.E.	109	75
E.	166	95
S.E.	175	95
S.	260	101
S.W	232	117
W.	145	106
N.W.	128	67

"With the north winds the number of positive rains is, therefore, relatively greater than with the south winds; the difference of the two numbers obtained by Schubler and Hemmer are due to local circumstances and climacteric conditions, which are not the same. To sum up: their observations prove that, during the course of one year, most of the rains are positive, whilst they are negative in another. Thus the annual results may be very different from the general mean.

"What is the origin of this negative electricity? Schubler, Tralles, Volta, and others, explain the phenomenon by the evaporation of drops of water: when they traverse dry air, they partially change into vapours, which carry away the positive electricity, whilst the drop remains in the negative state. This hypothesis is confirmed by the fact of observation, that in the neighbourhood of cascades, where a great many drops are thrown into the air, we always find traces of negative electricity, more or less marked. Several experiments made by Belli render this hypothesis improbable. If we insulate an artificial fountain, such as Hero's fountain, and place it, in fine weather, in an open place, where the atmospheric electricity is strong, the drops will be negative and the vase positive: if the experiment be renewed in dry weather, on points where there are no signs of atmospheric electricity, there will be no electricity either on the vase or the drops, although the evaporation is the same: it is not then to evaporation, but to induction, as Belli very well remarked, that the electricity is due. When the fountain rises towards a clear sky positively electrised, it acts by induction: the fountain is positively electrised below, and negatively above; but, as soon as the air is without electricity, the action by induction no longer exists, and there is no trace of electricity. It is the same with a cascade; it is negatively electrised above, positively below; the vitreous electricity flows into the earth, the other remains united to the liquid drops.

"Thus, then, although evaporation may develope negative electricity in the drops which fall, the action by induction is much more energetic: clouds have often a strong positive electricity, whilst that of the earth is negative. If there are two strata of clouds in the sky, and the rain falls principally from the lower, both are positively electrised; but the electric state of the lower is modified by that of the earth: it becomes positive in its lower surface, and negative in its upper; the rain is then positive. Soon, not only does the lower face of the cloud become neutral, but also the earth; thus, at the end of a certain time, not the slightest indication of electricity is found until, when under the influence of the upper cloud, the lower one becomes charged with a great quantity of free negative electricity. The drops which fall will then be negative: but, if a breeze condenses anew the vapour of water in the cloud, then we find once more that the drops of water are positively electrised.

"Every time I have been able to follow this phenomenon, I was assured of the action of the upper cloud upon the lower. In other cases, the cloud acts on the drops of rain themselves, and changes their electric state. This being well understood, the influence of the winds over the electric state of the rain is easily deduced.

"From what we have previously seen, the origin of rain from north and south winds is very different. If, in a clear sky, the temperature rises for several days, the barometer begins to sink, a few *cirri* form in the high regions, at the same time that the south wind becomes predominant; the *cirri* extend, the sky becomes whitish, and positive electricity increases in its lower strata. The barometer continuing to fall, *cumuli* are formed in the lower parts, and the rain begins. At the moment when they are produced, the *cumulus* and the rain are both positively electrised. Soon negative electricity accumulates at the upper part of the *cumulus*, and the rain itself finishes by becoming negative

but as, by the north winds, there is often but one stratum of clouds, this action by induction no longer occurs, and the rain is more frequently positive. In winter, the snow falls generally from a single stratum; it is almost always positive."

DISCOVERY OF NEW ELEMENTARY BODIES.

Professor Henry Rose, professor of Chemistry at Berlin, has a few months ago announced the discovery of two new elementary bodies of a metallic nature, in a mineral—the Tantalite of Bavaria. He has proposed for them the names of Pelopium and Niobium. These, together with Lantanium, observed by Mosander, and more recently of Didymium, discovered by the same chemist, increase the number of bodies, in the meanwhile recognised as elements, to 58.

ABSTRACT OF A MEMOIR ON THE LEECH COMMERCE OF FRANCE.

By M. Chevalier.

France has been for some time supplied with leeches for medical use from Hungary, Turkey, Wallachia, Russia, and Egypt. This branch of commerce is chiefly in the hands of large dealers, and, indeed, at the present time, it is carried on almost entirely by a single company at Strasbourg, where the animals are kept in large ponds for the supply of retailers. They are conveyed from their native marshes to the French frontiers overland, in ten or twelve days, by means of spring waggons, in which they are disposed in bags from 100 to 120 in number, and each weighing about eight pounds avoirdupois. They are watered occasionally on the way. But, contrary to what has been often alleged, they are not fed either before or during the journey; for in that case the mortality on the way is greatly increased. The supply has been falling off for some years—the annual importation into France prior to 1834 having been 44 millions, while now it is only 17¼ millions; and the price has risen in the same ratio as the importation has diminished, namely, from three-halfpence each to fivepence. The source of supply is therefore obviously becoming exhausted.

In French trade five denominations of leeches are distinguished, viz., great leeches, cow-leeches, middlings, little-middlings, and thread-leeches. The last quality consists of young ones gathered a great deal too soon, and comparatively unfit for use. The relative prices to the wholesale dealer are 200 shillings, 165, 180, [illegible], 54 shillings the thousand. The relative size may be judged of from the relative weight of a thousand of them; which varies from 6⅛ to 6 9-10 avoirdupoise pound, for the great leeches; from 2⅛ to 2¾ for the middlings; from 1 38-100 to 1 43-100 for the little-middlings; and about 88-100 for the thread-leeches, Cow-leeches, an inferior sort, are the largest of all, for a thousand of them usually weigh about 20 pounds. At least two species of the leech occur in French commerce, the *Sanguisuga officinalis* and *S. medicinalis*; and M. Moquin-Tandon, who has studied their natural history attentively, finds that two other species, the *S. interrupta* and *S. obscura*, are also occasionally made use of in France.

The relative utility of the four principal qualities, deduced from the quantity of blood they draw, appears extremely different. In a careful trial made with ten leeches of each quality, which were selected for the purpose by one of the principal leech-dealers in Paris, it was found that each great leech, which weighed on an average 46 grains, drew 247 grains of blood: that each middling-leech, weighing 19⅛ grains, drew 129 grains; that each little-middling of the weight of 11 grains, drew 51 grains; and that each thread-leech, which weighed only 7¾ grains, sucked no more than 19 grains. It is worthy of remark, that every one of these forty leeches fastened upon the skin at once, and without any preparatory measure whatever.

The principal cause of the tardy and imperfect action of leeches is, that they are partially gorged by the dealers, either expressly, or simply because they have been previously used. The practice of expressly gorging leeches prevails to a great extent in France. The reason is, that the lower qualities of them, when allowed to remain in blood till they are satiated, will, in this way, double their original weight, and thus pass with the inexperienced for leeches of a higher quality, and much greater price. Leeches treated in this way are not always easily known. Though generally torpid, they are sometimes active enough; and when squeezed in the hand, they contract themselves into a ball, which is therefore not an infallable character, as some suppose, of the leech being good. They are best known by the following characters:—When pressed between the finger and thumb, they do not flatten so easily or so completely as when fasting, and they present a reddish appearance: If squeezed between the fingers from the head to the tail, a tumour forms at the end, consisting of blood: If the leech be dusted over the forepart of its body with finely-powdered salt, and a little more be sprinkled on its two ends, when it elongates them in its efforts to escape, the blood will be emitted within thirty seconds. The last test will even detect the minutest traces of blood left in a leech that has been used and stripped, unless the operation of stripping has been performed with unusual care. A virgin-leech never emits any blood when touched with salt.

Many interesting practical deductions follow from these facts. The most important to the medical practitioner is, that *an experienced dealer can choose from his store leeches which will, to a certainty, fasten upon the skin at once without any preparatory measure, and will suck on an average half an ounce of blood.* In ordinary cases, much annoyance is occasioned to the patient by the sluggishness with which they adhere; and the average quantity of blood drawn by suction does not exceed one drachm.

FORENSIC MEDICINE.

TESTS FOR OPIUM.

Where opium cannot be detected by the smell, Mr. Taylor prefers the sesqui-chloride of iron as a test, discovering as it does meconic acid in one hundred and sixtieth of a gr. of opium.

It might be supposed, says he, that if, on adding strong nitric acid to a portion of the liquid, a bright red colour resulted, this would be a sufficient indication of the presence of morphia, and therefore of opium; but a serious mistake might be committed in such a case, unless the operator had previously employed the iron test, and determined the presence of meconic acid in the liquid. It is worthy of remark that the nitric acid test, while it destroys the colour given by the meconate of iron (a dark red,) will bring out, when added to excess to the same portion of liquid, the peculiar bright amber red tint which it is known to give in a solution of morphia. The tests for meconic acid and morphia may be thus applied to one quantity of liquid.

Mr. Taylor, after explaining the fallacies these tests, and that of iodic acid, may give rise to, next describes some experiments he instituted for the discovery of the smallest quantity of *morphia* which can be detected by each. He found that nitric acid detected one-fifteenth gr. of muriate of morphia, diluted in 300 parts by weight of water; sesqui-chlor. iron detected the one-eleventh gr. in 231 parts of water; and iodic acid the one hundredth gr. in 1300 parts of water. Thus *iodic acid* is by far the most delicate test, discovering, as it does, morphia in less than one-fifth of a grain of opium; but

it is also the one most open to fallacy, and cannot be employed in coloured organic liquids, containing these small quantities. Practically its utility is far less than would be anticipated from the result of experiments upon the pure salts of morphia. Other experiments were performed for the purpose of ascertaining how small a quantity of *meconic acid* need be present in a fluid, to admit of its separation by acetate of lead, and subsequent identification by sesqui-chlor. of iron. No precipitate of meconate of lead occurred when the proportion of meconic acid was less than one-fortyeighth, gr. —*i.e.*., about 0.34 gr. common opium. Unless, indeed, soluble matter of several grains of opium exists in the liquid for analysis, it will be difficult to obtain meconic acid and morphia separately. The *iron test for meconic acid* is far more delicate than any of the tests for morphia, and is much less liable to be interfered with. The one-fiftieth gr. or smallest visible portion of solid meconic acid is easily detected when free, while in solution, in a small quantity of liquid, even one-five-hundreth gr. may be discovered. Thus, the presence of this acid may be determined in a liquid from a much smaller quantity than would suffice to form a separable precipitate of meconate of lead; for, while for this latter one-third of a grain of opium is required, less than one-hundredth of a grain suffices for the exhibition of the acid by the direct application of the iron test. The procural of the precipitate of meconate of lead does not increase the certainty of the iron test, but merely enables us to obtain the meconic acid in a concetrated and solid form.—*Braithwaite's Retrospect.*

DR. TAYLOR'S REPORT ON THE PROGRESS OF TOXICOLOGY.

(*Continued from page* 195.)

It is remarkable that in this case there was neither vomiting nor purging. The salt does not appear to have operated so much by its irritant properties, as by its indirect effect on the nervous system. This, however, is by no means an unusual occurrence, even with irritants, far more powerful than the bichromate of potash.

Antidotal treatment in cases of poisoning. This subject has been lately examined by M. Bouchardat, and the conclusions at which he has arrived for the different irritant poisons are as follows: For *corrosive sublimate*, he recommends a mixture of zinc with iron filings, or iron reduced from the oxide by hydrogen, the moist per-(proto-?) sulphate of iron. The same may be employed in cases of poisoning by copper and lead. In arsenical poisoning, the moist hydrated peroxide of iron, and the moist per-sulphuret may be used. This last preparation, it is alleged, decomposes the compounds of all these poisons, and should, therefore, be exhibited when the nature of the irritant is unknown. The heavy metallic powders may be given in an electuary; the fauces should be tickled to promote vomiting. It is said to have been found that 100 parts of the powder of iron or zinc was a complete counteragent to fifteen parts of the acetate of copper, but it required a much larger quantity of the moist magma of the pre-sulphuret of iron, to produce the same effect. (See Ed. Med. and Surg. Journal, April, 1844.)

An ingenious paper has lately been communicated by Sir George Lefevre to the *Lancet*, (June, 1844,) in which will be found a summary of the common antidotes employed in cases of poisoning, with some excellent remarks on medical police, in reference to the sale and use of poisons. In a case of poisoning by *oxalic acid*, where the usual antidote is not at hand, Sir George recommends the administration of old mortar, finely powdered, or even the plaster scraped from a wall. In respect to other poisons, the only novelty of treatment which appears is in reference to *prussic acid*, where he states, that "a solution of sulphate of iron is found to be the best antidote," and even "*ink*" may be administered if the salt of iron should not be at hand.

There must surely be some mistake in reference to the use of sulphate of iron under such circumstances. The sulphate of iron cannot possibly act as a chemical antidote, for in solution it mixes with prussic acid in all proportions, without any chemical change whatever, a fact easily demonstrated by experiment. So, again, ink could have no more effect on the body than so much water, unless, as it sometimes happens, it should contain corrosive sublimate, (put into it for the purpose of preventing mould,) when the effect would be the reverse of favorable. Indeed it is difficult to conceive on what principle, except on the wrong supposition that Prussian blue might be formed by the admixture, such substances could be recommended as antidotes in cases of poisoning by prussic acid.

New antidote to prussic acid. Although neither sulphate of iron nor ink can be considered to possess the least antidotal power in cases of poisoning by prussic acid, yet there is one form in which iron may be used with some hope of success. The production of Prussian blue by an admixture of the protoxide and peroxide of iron, precipitated from the green sulphate by caustic potash, has been long known as an admirable test for prussic acid. The application of these mixed oxides, as an antidote in poisoning by prussic acid, has been lately proposed by Messrs. T. and H. Smith of Edinburgh; and it may be said of this antidote that, whenever it can be administered sufficiently early, there is a very reasonable prospect of its success; for, by mere contact, it speedily converts this formidable poison into the insoluble inert, compound, Prussian blue. These gentlemen have not, so far as I know, yet published any detailed account of their experiments; but it is stated, that when the acid with the antidote was given to dogs, the animals lived, while the same dose or acid without the antidote, proved fatal. The method by which Messrs. Smith prepared the antidote is not announced; but I have found that it may be prepared by precipitating, in a closed vessel, a strong solution of the common green sulphate of iron by caustic potash, and washing the oxide repeatedly with water recently boiled, until the alkali and the surplus sulphate are removed.

The following experiment was performed, in order to test the efficacy of this antidote in a chemical view. Four drachms of prussic acid, containing 1 per cent. of anhydrous acid—a dose sufficient to destroy an adult in a very short period of time—were agitated with the mixed oxides of iron, precipitated in the manner described, from a solution of one ounce of crystallized green sulphate of iron. That Prussian blue was almost instantly formed was evident on testing the mixture. It was allowed to remain an hour digesting; and then distilled at a very gentle heat. The clear liquid obtained by this distillation, was tested both by nitrate of silver and sulphate of iron. These tests had given abundant evidence of prussic acid in a few drops of the poisonous liquid, before the oxides of iron had been added; but now, not a trace of the poison could be discovered, neither by the odour nor by the action of nitrate of silver, which will detect the 1500th part of a grain of anhydrous acid; and for this experiment, as much as one fourth of the distilled liquid was used. No Prussian blue could be obtained, by the use of the sulphate of iron in the usual way, in operating upon another fourth of the distilled liquid; although this test is adequate to the detection of the fiftieth part of a grain of anhydrous acid, in a large quantity of water. It is therefore evident that the views of the Messrs. Smith are strongly confirmed by the results of these experiments; and now two questions will probably arise in the mind of the reader, respecting this antidote: 1. Whether, considering the great rapidity with which this powerful poison operates, any antidote whatever can be of the least service? 2. Admitting that the antidote is administered, is the conversion of the poison to the state of Prussian blue so complete and so rapid as to counteract its effects?

With regard to the *first* question, it may be remarked, that if in only one case in a hundred, there is sufficient time for its administration, a life may be saved; and much credit is therefore due to the Messrs. Smith for the ingenious suggestion of such a remedy. It is true that the symptoms from a powerful dose of prussic acid come on commonly in about ten or twelve seconds; but so long as life continues, there may be a hope of recovery by neutralizing the effects of the poison; and the recent case of Mrs. Belany, who lived twenty minutes, and respecting the death of whom a trial has recently taken place in London, shows that instances do occur in which there may be time for antidotal treatment. With respect to the *second* question, the answer to this must depend in a great measure on the results of experiments. No inference could be fairly drawn from the administration to an animal of the oxides of iron already mixed with prussic acid; although this was the way in which the alleged iron-antidote, in cases of arsenical poisoning, was, in the first instance, most improperly tested. Such an experiment may prove, it is true, the inertness of the compound formed; but it is quite unfitted to illustrate

the antidotal powers of the substance used; for a human being is never likely to swallow, as this experiment assumes, the poison and antidote together. In the case of prussic acid, more than in that of any other poison, it is necessary that the alleged antidote should produce its effects when administered *a few seconds or minutes after the acid has been taken.* On adding a small quantity of the mixed oxides to about one drachm of prussic acid, agitating and rapidly filtering, I found the poison still existing in pretty large quantity in the filtered liquid. I have reason to believe, however, that the chemical change would have been expedited by the use of a larger quantity of the mixed oxides; and as they are inert, there is no objection to their being given in very large doses. At any rate, it *must*, I think, be admitted, that, both in a chemical and pathological point of view, no remedy for prussic acid has hitherto been proposed, with a greater prospect of success than this possesses. If it should fail, its failure cannot be ascribed so much to any *defect* in its chemical operation as to the *extraordinary* rapidity with which the poison acts upon the system. The mixed oxides of iron may be prepared from the sulphate, and kept in a closely-stoppered bottle, filled with water previously deprived of air by boiling. Protoxide of iron may be speedily obtained in large quantity by agitating iron filing with a solution of sulphurous acid for a few minutes; filtering, adding caustic potash, and washing the precipitate with well-boiled water. It is important to state, that *peroxide of iron*, (the substance used in cases of arsenical poisoning,) cannot, in this case, be substituted for the mixed oxides; although it may serve to mix with the protoxide prepared in the way just described. The peroxide of iron alone will not form Prussian blue under any circumstances with prussic acid. In poisoning by the essential oil of bitter almonds, or by cyanide of potassium, the mixed oxides of iron are equally applicable; and in one case related in this Report, of poisoning by the oil of bitter almonds, the antidote might, had it been then known, have been used, and have accelerated recovery. It is possible, indeed, that it may become of more frequent use as an antidote to the oil, than to prussic acid. With respect to cyanide of potassium, we may at once administer a solution of green sulphate of iron to the patient, as the oxides are immediately precipitated by contact with the salt, and Prussian blue is formed. In the short account which I have seen, the Messrs. Smith appeared to have confined their observations to the effects of the oxide on prussic acid.*

Animal irritants In a late number of the *Edinburgh Medical and Surgical Journal*, (July 1844,) it is observed, in reference to the poisonous properties of the *flesh of diseased animals* used as food, that "in America there are certain regions, extending for many miles in length and some miles in breadth, on the herbage of which, if an animal feeds, its milk and flesh acquire poisonous properties, yet itself enjoys tolerable health. The disease which the use of the flesh or milk of the animals fed on these districts produces is known over all America by the name of the milk-sickness, or 'trembles.' All the infected spots occur west of the Alleghanies; and it is well known, that of the early emigrants whole communities, on account of the prevalence of this malady in a particular locality, which is generally distinctly circumscribed, were often compelled to seek another; and even at this day, those who venture within the boundaries of an infected district, are constrained, as a condition of their residence, to abstain from the flesh of the cattle living within the same limits, as well as from the milk and its preparations. It appears from the late report of Drs. Hosack, Post, and Chilton on this subject, that in some of these infected districts, the inhabitants, with a recklessness of human life which seems incredible, carry the butter and cheese which they themselves dare not eat to the markets of the towns west of the Alleghanies, and that thus there are frequently produced symptoms of poisoning and even death, for which the medical attendant cannot account, or he is induced to consider as some new or anomalous form of disease. From the same report we learn that the cattle from these districts are sent in great droves over the mountains, but in order to deceive the buyers as to the place whence they come, they bring them to New York by a southern route, and style them 'southren cattle. The flesh of these animals produces, in those who make use of it, symptoms of aggravated cholera morbus. The viscera of the animals are often found diseased, and the livers almost invariably so."

Owing to the symptoms of poisoning which have followed the use of such beef, butter, and cheese, the American government, caused a medical inquiry to be instituted into the matter; and it is probable that they will adopt the recommendation of the reporters, i.e., prohibit its sale. In the event of this occurring, it has been suggested as not improbable, that this poisoned food may find its way into England, and from its cheapness, be diffused among the poor. It would therefore be advisable, that practitioners should be on their guard, and note any suspicious circumstances that may rise. As we are without a system of medical police in England, it is not likely that government will have it in its power to prohibit the sale of such food, until many cases of the serious effects produced by it have occurred.

There is another more common article of food, namely, *bread*, upon which some observations have been lately made by toxicologists. In the *Annale d'Hygiene*, 1843, pp. 35 and 347, will be found communications on this subject from M. M. Guérard, Chevallier, and Gaultier de Claubry. The changes which take place in the decomposition of flour and bread, and the production of various kinds of *mouldiness*, are here investigated, together with the effects of such bread upon the animal system. It would appear that in some parts of France the peasantry manifest no repugnance to the eating of *mouldy bread*; and that in many instances the practice appears to be attended with no ill effects. The nature of the mould produced, however, is subject to great variation and it is not improbable, as M. Chevallier suggests, that in some cases a poisonous principle is actually developed. In two instances of children, who had partaken of mouldy rye-bread, symptoms resembling those of irritant poisoning supervened. The countenance was red and swollen, the tongue dry, the pulse quick, there were violent colics, with pain in the head and intense thirst. Vomiting and purging supervened with a state of collapse, but the children eventually recovered. These symptoms were ascribed to the production of "*mucor mucedo*" in the bread. In 1823, alarming effects having followed from the use of a certain kind of bread in Paris, M. Burruel was called upon to determine whether or not any irritant poison had become accidentaly intermixed with it. The bread was simply in a mouldy state; there was no trace of poison. It is unnecessary to enter further into this subject; the facts adduced, together with experiments performed on animals, show that bread in a state of mouldiness, may not only produce symptoms of poisoning, but actually cause death; and as it is impossible to distinguish the noxious from the innoxious kind of mould, the use of all bread in such a condition should be avoided.

Even fresh bread may occasionally seriously affect the body. The brown bread of London has been known to produce vertigo, lethargy, and other unpleasant symptoms, indicative of an affection of the brain and nervous system. This has been ascribed, with some probability, to the "*lolium temulentum*" becoming accidentally mixed with the corn. Rye-bread is not much used in this country, but the presence of the ergot might here, in some cases, account for the symptoms which have been observed.

Sulphate of potash. The question whether this is to be regarded as a poisonous salt, of an irritant nature, has been much debated within the last year among numbers of the profession, owing to a case which was tried at the Central Criminal Court in October, 1843. (The Queen v. Haynes.) The prisoner had given to the deceased, the night before her death, two ounces of sulphate of potash, dissolved in water; and it was alleged that she had, a fortnight previously to this, taken, in divided doses, as much as a quarter of a pound of the salt. The woman supposed herself to be pregnant, which was disproved by an examination of the body; and it was charged that the prisoner had given her the salts with the intention of causing a miscarriage. After the last dose, she was seized with sickness, and died within a very short time. The stomach was found empty, but highly inflamed, and there was blood effused on the brain. One medical witness referred death to the action of this salt as an irritant poison; the other to apoplexy, as an indirect result of a violent vomiting caused by the salt. The prisoner was acquitted of the charge of murder, but subsequently found guilty of administering the drug with the intent to procure abortion. Both of the witnesses admitted that, in small doses, the salt was innocent; but that in the dose of two ounces it would produce dangerous effects. A portion of the sulphate in this case was examined by Mr. Brande, as it was suspected that some poisonous substance might have

*It will of course be understood, that cold affusion, with stimulants, should be at the same time resorted to; and if the power of swallowing is lost, the antidote may be introduced by a stomach-pump.

become accidentally mixed with it; but it was found to be pure.

It is not improbable, from the symptoms and the inflamed state of the stomach, that the salt acted here as an irritant poison; and the fact of its being an innocent medicine in small doses appears to be no sound objection to this view; for the same circumstance is observed with respect to many substances, the poisonous properties of which cannot admit of dispute. Some have ascribed the irritant properties of this and other saline medicines—such as cream of tartar, in large doses—to their insolubility, and to the fine spicula of the powdered salt acting mechanically upon the mucous membrane of the stomach. This explanation does not appear sufficient: 1st, because some of these saline medicines, when taken dissolved—such as alum and nitre—have had a similar action; and, 2d, the effects are very different, and far more rapidly fatal than in those cases where mechanical irritants—such as fine sand or iron filings—have been taken. In short, there is no doubt that if the same quantity of the salt were taken perfectly dissolved in water, it would have an equally irritant effect; and sulphate of potash has been known to act in this way, when taken in divided and therefore very soluble doses. A case in which it thus proved fatal in *two hours*, is reported in the *Annale d'Hygiène*, April, 1842. According to Mr. Mowbray, *Medical Gazette*, *v.* 33, *p.* 54, sulphate of potash is a salt much employed in France as a popular abortive. He quotes several instances in which, in large doses, it produced severe symptoms, resembling those of irritant poisoning, and even death. In one case, two drachms acted powerfully; and in another, that fell under his own observation, four drachms of the salt, administered to a lady after her confinement, had all the effects of an irritant poison. The case of Haynes is the first instance in which, I believe, it is publicly known to have proved fatal in England; and it shows that substances, commonly regarded as innocent, may give rise to important questions in toxicology.

NARCOTIC POISONS.

Opium.—It has been frequently observed, in cases of poisoning by this drug, that the individual has recovered from the first symptoms, and has then had a relapse and died. There is some medico-legal interest connected with this state, which has been called secondary asphyxia from opium, although there appears to be no good reason for giving to it this name. In December, 1843, a gentleman swallowed a quantity of laudanum, and was found labouring under the usual symptoms. The greater part of the poison was removed from the stomach by the pump; and he so far recovered from his insensibility, as to be able to enter into conversation with the surgeon; but a relapse took place, and he died the following night. It is not improbable that, in these cases, death may be occasioned by a portion of the poison which has been carried by the absorbents into the system.

Recovery from a large dose without vomiting.—A case occurred at the Westminster Hospital, in December, 1843, (*Lancet*, Dec. 1843,) in which a woman, ætat. 25, was brought into that institution while labouring under the symptoms of poisoning by opium. She was perfectly comatose, the features devoid of expression, the lips purple, and the pupils contracted to the size of a pin's head. The eyes were everted and fixed. Sulphate of zinc and tartar emetic were given without effect, and the stomach-pump was not brought into use until about an hour after her admission. The contents of the stomach were entirely free from the smell of opium. The woman was kept roused, coffee was administered, and she recovered. It appears she had swallowed *one ounce of laudanum*, but at what time before her admission is not stated.

It is difficult to say on what the recovery of this woman depended, for a very long time had elapsed before the contents were removed from the stomach, and then there was no trace of opium to be perceived by the smell. A better plan for determining the presence of opium in the discharged liquid is to dilute it sufficiently, and observe whether it acquires a red colour with the sesqui-chloride of iron. This change is always produced where opium is present even in very small proportion, owing to the meconic acid which it contains. The test will act where no odour is perceptible, either from the quantity of the drug being too small, or its being concealed by other odours. It is certainly remarkable that this woman recovered, considering the largeness of the dose, and the time which had elapsed before the stomach was evacuated.

Dover's Powder.—The following case of poisoning by Dover's powder has been reported by Mr. Griffiths, (Medical Gazette, March, 1844.) About ten grains of Dover's powder were given by mistake to an infant seven weeks old, and it died in twenty-four hours afterwards. The following is an account of the post-mortem appearances. The countenance was placid, and the fingers of both hands were firmly contracted. On opening the abdomen, the colon was seen to be distended with flatus; the spleen, kidneys, and intestines were healthy; the liver gorged with blood; the stomach contained a very small quantity of colourless viscid matter. The inner coat was vascular; and at the great curvature, as well as in other parts, were small patches of highly injected vessels. The lungs were gorged with blood; the upper lobes being infiltrated with a greenish serum. The pericardium was vascular, and contained about a drachm of fluid. The right auricle was empty; the left ventricle contained some thin fluid blood, and a small coagulum. The sinuses of the dura mater were filled with dark coagula; the surface of the brain appeared covered by a complete network of vessels, distended with light coloured blood. On the surface of each posterior lobe of the cerebrum, slight extravasation had taken place. The brain was soft, and the difference of colour between the gray and white matter barely discernible. The vessels in the substance of the brain were gorged with blood, presenting, on section, a thickly-studded appearance—the spots of a deep dull red, and in many places coalescing. There was a small quantity of fluid in each lateral ventricle, and on the floor of each were large distended blood-vessels. There was serous effusion on the surface and at the base of the brain, to the amount of about half an ounce. The contents of the stomach were carefully analysed, but neither morphia nor meconic acid could be detected.

This case is interesting in several particulars. In the first place it is surprising that so young an infant should have lived so long after taking a dose equivalent to one grain of opium. Making every allowance for the great vascularity of the brain in young subjects, it appears from the inspection, that the opium had here affected that organ, and caused a general congestion as well as effusion and slight extravasation, which last condition is somewhat rare in poisoning by opium. The non-detection of the poison in the contents of the stomach was sufficiently accounted for by the small quantity of opium in the Dover's powder, and by the length of time which the child survived. The opium contained in ten grains of Dover's powder is equivalent only to about the twentieth of a grain of morphia, and probably about the same proportion of meconic acid. It is extremely rare that opium is found in the stomachs of young children poisoned by small doses.

Dr. J. B. Beck has lately published, in the *New York Journal of Medicine*, some excellent remarks upon the effects of opium on the infant subject. He shows that while this drug has a much greater effect on an infant in consequence of the greater impressibility of the nervous system, than on an adult, it is at the same time much more uncertain in its operation, and thus is liable to prove fatal in very small doses. Among the instances which he has accumulated, illustrative of the powerful action of the drug, he mentions one where a young child was narcotized by fifteen drops of paregoric elixir. This essay has been re-published in the *Medical Gazette* for March, 1844, (vol. xxxiii., p. 767.)

Quantity of opium required to destroy life.—The smallest quantity of opium in the solid state which has been known to destroy the life of an adult was four and a half grains mixed with camphor. This case is quoted by Dr. Christison. In September, 1843, an instance occurred in this metropolis of a woman, aged 38, being killed by eight grains of the drug given in two doses. These facts are interesting in a medico-legal point of view, by showing how small a quantity of this substance may, in some instances, destroy life.

Solubility of opium in water.—So far as I am aware no experiments have been performed to determine the quantity of this drug taken up by water in the form of infusion. In November, 1843, a case of poisoning by opium was referred to me by Mr. T. O. Duke, of Kennington, in which the question arose. An ignorant nurse made an infusion by pouring hot water on powdered opium in a bottle, and gave, at short intervals, three teaspoonfuls of this infusion to a child aged about fourteen months, and it died poisoned by the drug in about eighteen hours. It was found that the infusion contained only 1.6 per cent of solid matter, i.e., of the soluble part of the opium; and that the principal part of the meconate of morphia had been taken up, was proved by an infusion subsequently made, retaining only faint traces of that salt.

The results of some experiments on this subject were as follows: fifteen grains of finely-powdered opium were infused, for twenty hours, with six drachms of boiling distilled water. On examination, the filtered infusion was found to contain 4 per cent of solid matter, i.e, of the soluble part of opium. In another experiment, opium sliced was employed with water in the same proportions. The quantity dissolved averaged, on several trials, from 3 to 4 per cent., depending on the proportion of water, and the length of contact. By boiling the residue in each case a further quantity of meconate of morphia was obtained, showing that an aqueous infusion, while it will not extract the whole of the meconate at once, will yet take up sufficient to render it actively poisonous to young children.

Prussic Acid.—It has been a seriously debated question among medical jurists, whether an individual, after having swallowed a strong dose of prussic acid, could retain the power of performing certain acts indicative of volition and the preservation of sense. Two cases have occurred within the last year in England, which throw some additional light upon this important question, on which a charge of murder may sometimes depend. In one case, the deceased, an adult, swallowed three drachms of prussic acid from the phial in which it was contained, while another person was in the room with his back turned to him. This individual was alarmed by hearing the deceased exclaim "it's gone," and in answer to a question put by witness, said, "I have taken it." He was again about to speak, but his articulation failed him, he became insensible, and died immediately afterwards.

The other case was referred to me from Suffolk, by Mr. Newham, surgeon of Bury St. Edmunds. In March, 1844, a commercial traveller was found dead in his bed at an inn. The evidence given at the inquest showed that he had died from the effects of prussic acid, and there could not be the slightest doubt that he had taken the poison himself. The point of interest connected with the case is, that when discovered dead, he was found lying on his left side in the natural position of rest, the legs being slightly drawn up to the abdomen; the arms bent over the chest; and although rigid, the hands were not clenched, nor did they appear in any way to have been spasmodically affected. The bedclothes were smoothly drawn up to his shoulders, and there was no appearance whatever of disorder about them. On a chair beside the bed, at his back, was a phial holding about six drachms, and still containing a small portion of a liquid smelling strongly of prussic acid, mixed with the essential oil of lemons, which had probably been purposely mixed with it to disguise the odour. This phial was found with the cork in it. Mr. Newham correctly observes, that this condition of things clearly indicates a sequence of several voluntary acts performed by the deceased immediately before death; as, for instance, swallowing the acid from the bottle, then corking the bottle, placing it on a chair at the back of the bed, the turning over in bed, drawing up the bedclothes, and composing himself into a position of rest. From the evidence at the inquest, it appeared that not less than three drachms of prussic acid had been taken, and probably even a larger quantity; and the question arose, whether all the events above mentioned could have occurred between taking into the stomach so large a dose of this poison as to cause death without inducing convulsions, of which there were no signs? The fact that this was really a case of suicide, left it beyond doubt that the deceased had, after swallowing this dose, performed the series of acts above mentioned; and it was equally evident that convulsions had not taken place, at least so as to leave any sign of their existence in the dead body.

The reader will observe that this case is very similar in its details to that of Judith Buswell, for the alleged murder of whom, a young man named Freeman was tried at the Leicester Spring Assizes in 1829. (See Med. Gazette, vol. viii. p. 759.) The medical opinions in that case, from a similar series of acts, were rather against the presumption of suicide, and in favour of homicidal interference. It has been supposed, that when a strong dose of prussic acid destroys life so slowly as to give time for the performance of such voluntary acts, this would be indicated by the body being found in a convulsed state; when, on the other hand, death takes place so rapidly that there are no convulsions, then the inference should be that the deceased could not have retained sense or power sufficiently long for the performance of these acts. The above, with other similar cases, proves that we cannot trust to an assumed criterion of this kind. There may be no mark of convulsion about a dead body,—circumstances may show, that sense, volition, and a power of motion were actually retained for a certain period; and yet all this is compatible with the act being one of suicide from a large dose of prussic acid. We are not justified in inferring that a dose of this kind, when it operates slowly, is always and necessarily indicated by the body of the deceased being found in a convulsed state.

This question has acquired still greater interest from the late trial of Belany for poisoning his wife by prussic acid (Cent. Crim. Court, Aug 1844.) The prisoner declared that the deceased shrieked, and afterwards told him that she had swallowed some "hot liquid." The medical witnesses are reported to have stated (although only from experiments on animals) that this shriek or cry was the immediate precursor of insensibility, and the last act of vitality,—in short that the power of speech would be then entirely lost. Hence the prisoner's statement would be inconsistent with truth. However strong the circumstantial evidence may have been against the accused, and it could scarcely have been stronger,—this medical opinion is not borne out by observation. In one instance, just related (p. 551), a larger dose of the poison was probably taken; but the deceased was able to answer a question and say, "*I have taken it*," before he became insensible. A very similar case, reported by Dr. Gierl, is to be found in most works on toxicology. These cases then clearly prove that, whether a shriek or cry be a *constant* accompaniment of poisoning by prussic acid or not,—a point which yet remains to be proved,—an individual may speak and even answer a question rationally after having taken the poison, and immediately before falling into a state of insensibility.

(*To be Continued.*)

THE

British American Journal.

MONTREAL, NOVEMBER 15, 1845.

THE AMERICAN SOCIETY OF DENTAL SURGEONS.

We perceive in the September number of the American Journal and Library of Dental Science, one of the standard medical periodicals of the United States, and the organ of the American Society of Dental Surgeons, a report of the sixth annual meeting of that body, on the 5th of August last. The proceedings, to that class of practitioners more immediately concerned, must partake of considerable interest; but certain resolutions were adopted at an adjourned meeting held on the 9th, which we consider highly important, and deserving of general promulgation. A committee had been appointed to suggest some plan of action for the adoption of the society, in reference to the very prevalent nefarious practice of stopping carious teeth by amalgam. Having obtained the opinion of the most enlightened dentists in the city of New York and Brooklyn on the subject, the committee reported, "that they have deliberated carefully upon the matter referred to them, and that their unanimous opinion is, that any amalgam is not only unfit, but dangerous when used for the purpose of filling carious teeth or their fangs, and they call upon the society to express in decided terms, its disapproval of the practice:" whereupon it was resolved, "That the American Society of Dental Surgeons, under the conviction that any amalgam whatever, used under the name of 'mineral paste,' 'adamantine

cement,' 'succedaneum,' 'diamond cement,' 'lithodeon,' alabaster cement,' chinese cement,' or in any other way designated, is not only unfit but dangerous, when used for filling the teeth or their fangs, do hereby pronounce the use of all amalgams as malpractice," and they furthermore resolved, "That any member of this society who shall hereafter refuse to sign a certificate pledging himself not to use any amalgam, and moreover protesting against its use under any circumstances in dental practice, shall be excluded from the society."

The society, at the same sitting, adopted another important resolution, "That this society view the publication by Dentists, in connection with their advertisements, of letters of recommendation from Divines, Doctors of medicine, and in short all who are not acquainted with dental practice, with decided disapprobation, and they would specially recommend to all its members, who may be pursuing this course, to *discontinue a practice savouring so much of quackery*, and which is so well calculated to degrade the profession."

This society is doing its utmost to place Dental Surgery in that position which is its due among the subdivisions, to which attention to specific departments of surgery tends. By the first resolution which we have recorded, the public will be permitted to judge for themselves of the rationality and safety of the practice which is thus by competent authority condemned; for there can be no doubt that it *is* frequently "destructive to the teeth, injurious to the healthy condition of the mouth, and not unfrequently exciting and promoting bad effects in constitutions disposed to the injurious action of mercury, which invariably constitutes an ingredient in all these compounds." And the second will have the effect of separating the proficient dentist, who requires no such puffing, from the itinerant quack, and will go far to purge the profession of a very numerous class, which by unprofessional conduct in this respect is continually degrading it.

ACTION FOR SLANDER.

In the *Brandford Courier* of October 4, we find reported, what is fortunately rare in this country, the details, at the Gore District assizes, of an action for slander, brought by Dr. Alfred Digby, against Dr. Peter Mercer, both of Brandford, in which a verdict was obtained by the Plaintiff, £25 damages. The facts of the case appear to be the following. Dr. Digby had been attending a patient in her accouchement, an inversion of the uterus followed, which, whether partial or complete, does not appear, succeeded by hæmorrhage, under which she died. Failing in his attempts at immediate reduction, Dr. Digby sent off for Dr. Mercer, who in consequence of some coolness previously existing refused to attend: on the receipt of a second message, however, he went. The placenta was *now* separated by Dr. Mercer, "and they both then attempted to put the uterus back." It is but justice to Dr. Digby, to observe, that one of the witnesses stated, "that the substance came away while Dr. Digby was tying the cord; that she did not think he was using any violence," and that to a remark made by the patient "that she felt as if her inside was coming out," he observed "that he was not touching her." These circumstances would lead us to the supposition, that the inversion was not the result of any injudicious and over-active interference in the extraction of the placenta, but that it may be attributed to the supervention of some untoward occurrence, after the completion of the second stage of labour, consequent upon the cord or the uterus. Be the cause, however, what it may, Dr. Mercer indulged in severe remarks concerning it to various parties, attributing the fatal issue of the case to Dr. Digby's ignorance, and even insinuated *to the husband of the deceased*, "that Dr. Digby had used violence towards his wife," upon all which, after the reports had reached Dr. Digby, the present action was instituted. Such are the facts of the case, as have transpired from the trial. The defendant was not permitted to put in any plea of justification; but whether the court had permitted it or not, he will scarcely be able to justify himself before the Profession, of the ethical rules of which he appears to have committed a most aggravated breach.

PETRIFIED HUMAN BODY.

We observe in the *Boston Medical Journal*, the notice of the exhibition of a petrified human body in that city, imported into the United States from Berthier in this district. In the first number of this journal, some observations will be found relative *to the same body*. Shortly after, we had an opportunity of inspecting it, having been requested to meet a deputation from the Literary and Historical Society of Quebec at Berthier, for the express purpose. However much in appearance the body may "resemble soft sandstone," we can assure the Editor of the *Boston Journal* that it is nothing but *adipocere*, and is very far from possessing "the same specific gravity" as sandstone. We have a specimen of it, removed by a pen-knife from the fleshy part of the fore-arm, and a beautiful specimen of *adipocere* it is. The *external surface* of the body was of a brownish color, and presented evidence of mould. On chemical examination, it gave evidence of the presence of iron. After this explanation, our contemporary will be at no loss in discovering the reason why the body should be

"tightly screwed up in a box," and "secured beyond the reach of touch" of the profane and curious, whose minute inspection might most seriously interfere with "the assertions of those most interested in the receipts." Our object in noticing this, is to expose a humbug, and to defeat the cupidity of parties deprived of the finer feelings of humanity.

QUEBEC MEDICAL SOCIETY.

This Society held an extraordinary meeting on the 25th instant, for the purpose of receiving the report of its delegates to the convention held at Montreal on the 21st of August last.

Dr. Sewell read the following report:—

The delegates appointed by the Quebec Medical Society, to represent their interests at the convention called at Montreal for the 20th of August last, beg to report that they proceeded to that City, and met on the above mentioned day the following gentlemen:—

Drs. Valois, Kimber, Arnoldi, Nelson, } Delegates from the District of Montreal.

Drs. Marsden, Gilmour, Fortier, } Delegates from the District of Three Rivers.

Dr. Hodder, } Delegate from the Toronto and Niagara Districts.

AND,

Drs. Badgley, Crawford, McDonnell, Fraser, David, } Delegates from the Medico-Chirurgical Society of Montreal.

Dr. Morrin was called to the Chair, and Dr. Badgley requested to act as Secretary.

Your delegates regret extremely, (as well, no doubt, the Profession at large), that the objects of the Convention were not so fully carried out as might have been wished, in consequence of a misunderstanding having arisen between the delegates of the District of Montreal, and those of the Medico-Chirurgical Society; as to the right of the latter to be present at a meeting of the delegates from the different *Districts*, they being *merely* representatives of a Society.

In this question your delegates, (being also the delegates of the *District* of Quebec,) were necessarily obliged to take part; and a division being called for, it was found that a *simple* majority of the meeting were of opinion, that the said delegates did not represent any *district*, and that by consequence, had *no* right to vote upon any question which might come before the Convention. The gentlemen, therefore, forming the Delegation from the Medico-Chirurgical Society, after having made a verbal protest, retired, accompanied by Drs. Hodder and Marsden.

The Society will perceive, that by this first step its delegates were left to act in their single capacity as delegates from the District of Quebec.

In conclusion your delegates deeply deplore the result of this, the first attempt to bring together in convention, the members of the Medical Profession scattered over this extensive province; a measure which when effected, (as your delegates fondly anticipate will shortly be the case), must tend not only to the elevation and advantage of our own body, but also, to the interests of the public at large.

All of which is humbly submitted.

(Signed) Jos. Painchaud,
J. Blanchet,
Jos. Morrin,
Jas. A Sewell,
Ed. Rousseau.

Quebec, *October* 1845.

The following resolutions were unanimously adopted:—

1st. That the report now read, be adopted and entered upon the minutes.

2nd. That the best thanks of this Society are due, and are hereby given to the delegates, who proceeded to Montreal to represent its interests at the Convention.

3rd. That this Society learns with regret, that the efforts of its delegates have not been crowned with more satisfactory results. But this Society is disposed to attribute this circumstance more to the misunderstanding in the manner of calling the Convention, than to any material difference of opinion on matters affecting the general interests of the profession.

Dr. Painchaud then laid before the meeting, a copy of the report of the delegates of the Medico-Chirurgical Society of Montreal, erroneously addressed to him as Secretary of the Quebec Medical Society.

The report having been read, the following resolutions were unanimously adopted.

That the Quebec Medical Society views with regret the 4th resolution of the Montreal Medico-Chirurgical Society, adopted at its meeting of the 30th of August last, but at the same time, in consideration of the circumstance alluded to in the 3rd resolution adopted this day, does not feel itself called upon to give any expression of opinion on the votes of its delegates at the late Convention.

That a copy of the minutes of this day's proceedings be transmitted to the Medico-Chirurgical Society of Montreal, and that they be published in the British American Journal of Medecine.

J. Z. Nault, *Secretary.*

BILLS OF MORTALITY.

We are happy to announce, that in pursuance of the suggestions thrown out on this subject in the fourth number of our Journal, the corporation of this city has perfected a measure, with the above object in view. A copy of the by-law has been, we understand, forwarded by the city clerk to the different medical gentlemen of the city who will, we doubt not, cheerfully further the end which it is the object of the act to secure. We now hope that the other Provincial cities will follow the example of the metropolis, and we shall soon have valuable statistic returns of disease and mortality, afford-

ing unerring criteria of the comparative salubrity of different localities, the prevalence of particular diseases therein, and yeilding among other results, the only sure method of obtaining rates of life assurance on an equitable and just foundation.

We acknowledge with many thanks the receipt of the Meteorological report for Toronto, from Lieut Lefroy, the officer in charge of the observatory in that city. Toronto may, with propriety, be viewed as the centre of the Western, as Montreal may be regarded that of the Eastern portion of this Province, and the Meteorological observations recorded in both the cities may not inappropriately be taken as the averages of the respective territories.

At a meeting of the Medical Board, for the District of Montreal, held on the 5th instant, the following gentlemen were recommended for license to practice Physic, Surgery, and Midwifery. R. L. MacDonnell, M. D., Jean Lukin Leprohon, M. D., M. Calder, Surgeon, and, after examination, Messrs. J. B. Valiquet, S. Tassé, and M. Poisson. To practice as Apothecary, Chemist and Druggist.—Mr. James Sheridan.

At meetings of the Medical Board for the District of Quebec, held on the 4th and 5th instant, the following gentlemen, after examination, were recommended for license to practice Physic, Surgery, and Midwifery. Ludger Tetu, P. N. Mâsse, J. L. Robichaud, Duncan McCallum, and G. Dillon Gernon.

REPORT OF THE MONTREAL GENERAL HOSPITAL FOR THE MONTH OF OCTOBER.

DISEASES AND ACCIDENTS.

Anchylosis,	5	Lepra Syphilitides	1
Ambustio,	1	Lupus	1
Anasarca,	1	Morbus Cordis,	1
Bronchitis,	1	" Brightii,	1
Catarrhus Senilis,	4	" Coxarius,	1
" Vesicæ,	1	" Splenii,	1
Colica	1	Necrosis,	1
Cynanche,	4	Neuralgia,	1
Conjunctivitis	1	Œdema	1
Contusio,	7	Ophthalmia,	1
Diarrhœa,	5	Osteo Sarcoma,	1
Delirium Tremens,	3	Paronychia,	1
Dysuria,	1	Phthisis,	4
Dysenteria,	2	Prolapsus Uteri,	1
Dyspepsia,	1	Rheumatismus,	8
Erysipelas,	1	Rubeola,	2
Febris Com. Con.,	28	Schirrhus Gastris,	2
" Typhus,	3	Sciatica,	1
Fractura,	4	Subluxatio,	1
Hæmorrhoids,	1	Syphilis,	10
Herpes,	1	Trichiasis Favosa,	1
Hypertrophia Mammæ,	1	Talapus	1
Hypochondriasis,	1	Ulcus,	9
Icterus,	3	Variola,	3
Impetigo,	1	Vulnus,	1
		Total,	133

Dr. Crawford, } Attending Medical Officers
Dr. Sewell, } for October.

NUMBER OF PATIENTS TREATED DURING THE MONTH OF OCTOBER.

Remained,	101	Discharged, Cured,	125
Admitted,	133	Do Irregular Conduct,	1
Total treated,	234	Died,	4
		Remaining,	104
		Total,	234

IN-DOOR PATIENTS TREATED.		OUT-DOOR PATIENTS TREATED.	
Belonging to Montreal,	95	Belonging to Montreal,	176
Immigrants,	28	Immigrants,	32
Seamen,	10	Seamen,	5
Total,	133	Total,	213
Males,	86	Males,	101
Females,	47	Females,	112
Total,	133	Total,	213

Alexander Long, M. D., *House Surgeon.*

RETURN OF SICK IN THE MARINE AND EMIGRANT HOSPITAL, QUEBEC, FROM THE 1st TO THE 30th SEPTEMBER, 1845.

J. Painchaud, M.D. *Physician.*
J. Douglas, *Surgeon.*

DISEASES AND INFIRMITIES.

Febris,	24	Fistula In Ano,	1
Variola,	3	Hydrocele,	1
Bronchitis,	1	Phlegmon,	1
Catarrhus,	11	Syphilis,	30
Rheumatismus,	11	Orchitis,	6
Diarrhœa,	9	Strictura Urethræ,	1
Cynanche (Tonsil)	1	Fractura,†	9
Herpes,	1	Contusio,	12
Rubeola,	1	Vulnus,	5
Delirium Tremens,	1	Abscessus,	5
Ophthalmia,	2	Ulcus,	2
Paralysis,	1	Concussio Cerebri,	1
Amenorhœa,	1	Morbi Alien,	6
Ruptura Urethræ,*	1		
Carcinoma,	1	Total,	149

NUMBER OF PATIENTS TREATED DURING THE MONTH OF SEPTEMBER.

Remained,	86	Discharged,	159
Since admitted,	149	Died,	2
Total,	235	Remaining,	74
		Total,	235

* Produced by a fall from the rigging, twenty four hours before admission. There were extensive sloughing of the *Perineum Scrotum and Penis.* An inch of the *Urethra*, just anterior to the bulb, came away with the sloughs, the *corpora cavernosa* being exposed a great part of their length.

† One of the *cranium*, compound of the *humerus and olecranon* on the same individual. One of the *radius*—one of the *humerus* alone—one of the the lower maxillary bone—one of the clavicle—one of the *sternum*—one of the *femur*—one of the *fibula*—one compound of the finger.

OPERATIONS.

One of lithotomy for the extraction of four calculi, from the bladder of a child of six years of age.

One for the removal of a diseased Testicle.

One for the removal of the entire lower lip.

One for *fistula in ano.*

One for the amputation of a finger, and sundry smaller operations.

J. F. J. Landay, House Surgeon.

BOOKS, &c., RECEIVED DURING THE MONTH.

Boston Medical and Surgical Journal. Nos. 11, 12, 13, 14, 15.
Dublin Medical Press. Nos. 351, '52, '53, and '54.
American Journal of Medical Sciences. October Number.—Philadelphia.
American Journal of Science and Arts. July and October Numbers. New Haven.
Northern Journal of Medicine, Vol. II. Nos. 1, 2, 3, 4, and 5. Edinburgh.
Illinois Medical and Surgical Journal. No. 7.
Wiley and Putnam's Literary News Letter. November. New-York.
Armour and Ramsay's " " November. Montreal.
Buffalo Medical Journal. November.
Southern Medical and Surgical Journal. November. Augusta.
New Orleans Medical and Surgical Journal. November.
St. Louis Medical and Surgical Journal. November.
New York Journal of Medicine and the Collateral Sciences. November.
Annual Report of the Vermont Asylum for the Insane.

According to the desire of the Editors of the Southern Medical and Surgical Journal, *we have sent off to their address the back numbers.*

We would request the New York Journal of Medicine *to mark on its exchange our proper designation. The* Montreal Medical Gazette *has been defunct since the 1st May last. As we have reason to believe that a regular exchange has been intended since that period, and as none of the numbers have come to hand, except the present, we would consider it a favour if the back numbers were forwarded.*

NOTICE TO CORRESPONDENTS.

We acknowledge the receipts of letters during the month, with enclosures, from Dr. O. Newell, (Durham); Dr. Bicknell, (Clarke's Mills); Rev. E. Denroche, (Brockville); J. Musson, Esq. (Quebec.)

The journal has been forwarded in accordance with Mr. Denroche's request. The back numbers have been sent to Dr. Case, (Hamilton), and Drs. Skinner and Ross, (Burford). *The request of* Dr. A. Fournier (St. Pierre les Becquets) *has been complied with, as also that of* Mr. F. H. Parent, (St. Constant.)

Letters have been also received from Dr. Nault, (Quebec), *accompanying report of the proceedings of the Quebec Medical Society, which appears in this number;* from Dr. Grasset, (Toronto); and Lieutenant Lefroy of H. M. Magnetical Observatory, Toronto. *These two gentlemen have our warmest thanks for their attention.*

We have received a paper on "a case of Infanticide," *from* Dr. Smallwood, (St. Martin.)

We earnestly request those of our country subscribers who have not paid their subscriptions to the Journal, to do so without further delay. The amount is, to each, a mere *bagatelle*; but its loss, when collectively considered, proves a very serious inconvenience to the publisher. We certainly conceive that there is a sufficient *esprit de corps* in the profession in these Provinces, to support a journal representative of their interests; and as the experiment is now tried on a scale commensurate with their importance, and as the Editors conceive with their deserts, it remains for them, in a pecuniary point of view, to contribute to its success, if they deem the attempt worthy of it.

MONTHLY METEOROLOGICAL REGISTER AT MONTREAL—October, 1845.

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,	+59	+71	+57	65	29.74	29.74	29.72	29.73	S. W.	S. W.	S. W.	Fair	Fair	Cloudy
2,	" 51	" 61	" 53	56	29.93	29.89	30.02	29.95	W.	W.	W.	Fair	Fair	Fair
3,	" 55	" 60	" 51	57.5	30.05	30.14	30.27	30.15	W. by N.	W.	W.	Rain	Fair	Fair
4,	" 47	" 61	" 50	54	30.30	30.20	29.98	30.16	N.W.byW	N.W.byW	W.	Rain	Fair	Fair
5,	" 50	" 54	" 43	52	29.89	29.83	30.03	29.89	W.	N. by E.	N.	Fair	Rain	Rain
6,	" 40	" 58	" 44	49	30.29	30.28	30.28	30.28	N. by W.	N. by W.	N. by W.	Fair	Fair	Fair
7,	" 42	" 57	" 50	49.5	30.28	30.21	30.14	30.21	N. by W.	N. by W.	N. by W.	Fair	Rain	Rain
8,	" 49	" 67	" 55	58	30.18	30.12	30.05	30.12	N.E.	N. E.	N.E.by E	Fair	Fair	Fair
9,	" 53	" 64	" 51	58.5	29.86	29.87	29.90	29.88	S. E.	S. E.	S. E.	Rain	Rain	Rain
10,	" 50	" 60	" 54	55	30.00	29.97	29.92	29.96	E. N. E.	N. E.by E.	N.E.by E	Rain	Cloudy	Rain
11,	" 55	" 62	" 59	58.5	29.86	29.61	29.77	29.75	S.E. by E.	S. E.	S. E.	Rain	Rain	Rain
12,	" 60	" 68	" 53	64	29.55	29.48	29.67	29.57	S. E.	S. E.	W.	Rain	Rain	Rain
13,	" 41	" 55	" 42	48	30.04	30.09	30.24	30.12	W.	W.	W.	Fair	Sh'wrs	Fair
14,	" 46	" 59	" 46	52.5	30.16	30.16	30.16	30.16	S. W.	S.W. by S.	S.W.by S	Fair	Rain	Cloudy
15,	" 39	" 44	" 30	41.5	30.21	30.30	30.41	30.31	W. by N.	N.W.	N.W.	Fair	Fair	Fair
16,	" 29	" 40	" 35	34.5	30.50	30.44	30.35	30 43	N.W.	W.	W.	Fair	Fair	Fair
17,	" 31	" 50	" 43	42	30.33	30.29	30.22	30.28	W.	W.	W.	Fair	Fair	Fair
18,	" 33	" 60	" 45	46.5	30.28	30.17	30.05	30.17	W.	W.	W.	Fair	Fair	Fair
19,	" 48	" 62	" 42	55	29.90	29.85	30.18	29.98	W. by S.	S.W.byW.	W.	Fair	Fair	Fair
20,	" 35	" 44	" 32	39.5	30.36	30.34	30.33	30.34	N. W.	N. W.	N.W.	Fair	Fair	Fair
21,	" 28	" 40	" 29	34	30.40	30.43	30.50	30.44	N.E. by E.	N.E.by E.	N. by W.	Fair	Snow	Fair
22,	" 26	" 40	" 31	33	30.53	30.48	30.45	30.49	W.	W. by S.	W.	Fair	Fair	Fair
23,	" 30	" 50	" 40	40	30.40	30.32	30.21	30.31	W.	W.	S. W.	Fair	Fair	Fair
24,	" 40	" 49	" 35	44.5	30.24	30.31	30.36	30.30	S. W.	S. W.	S. W.	Fair	Fair	Fair
25,	" 28	" 41	" 34	34.5	30.43	30.39	30.23	30.35	N. W.	N. W.	N. W.	Fair	Fair	Fair
26,	" 31	" 55	" 44	43	30.32	30.22	30.20	30.25	N. W.	N. W.	S. W.	Fair	Fair	Fair
27,	" 46	" 60	" 51	53	30.20	30.20	30.21	30.20	S. W.	S. W.	S. W.	Fair	Fair	Fair
28,	" 50	" 62	" 56	56	30.16	30.09	30.06	30.10	W. S. W.	W. S. W.	W. S. W.	Fair	Fair	Fair
29,	" 52	" 65	" 58	58.5	30.03	29.94	29.75	29.91	W.	W.	W.	Fair	Fair	Fair
30,	" 39	" 51	" 36	45	30.02	30.09	30.15	30.09	N. W.	N. W.	N. W.	Fair	Fair	Fair
31,	" 30	" 40	" 48	35	30.15	29.93	29.74	29.91	N.W.byN.	N.W.byN.	N.W byN	Fair	Rain	Rain

Therm. { Max. Temp., 71° on the 1st
Min. " 26° " 22d
Mean of the Month, 57° 8'

Barometer, { Maximum, 30.53 Inches on the 22d.
Minimum, 29.48 " " 12th.
Mean of Month, 30.123 Inches.

MONTHLY METEOROLOGICAL REGISTER AT H. M. MAGNETICAL OBSERVATORY, TORONTO, C. W.—October, 1845.

Latitude 43°. 39′.4. *N.* *Longitude* 79°. 21′.5. *W.* *Elevation above Lake Ontario,* 108 *Feet.*

Day.	Barometer at Temp. of 32°.				Tension of Vapour.				Temperature of the Air.				Humidity of the Air.				Wind.			Rain or Snow.	Weather.
	7 A.M.	3	10 P.M.	Mean.	7A M	3 P.M	10P M	Mean	7 A M.	3 P.M	10P.M	Mean	7A M	3P.M	10P.M	Mean	7 A.M.	3 P.M.	10 P M.		
1,	29.313	29.371	29.549	29.4524	.340	406	.260	.306	52 3	57.0	44.5	50.81	.88	.89	.90	.84	S. W.	W.	Calm.	0.170	Cloudy a m. Slight rain 4 p.m.
2,	.698	.647	.641	.6647	.301	.424	.344	.363	49 0	59 0	54.7	55.35	.89	.87	.82	.84	S. W.	S.	Calm.	—	Clear a.m. Clouded p.m.
3,	.753	.866	.872	.8438	.357	.360	.361	.349	54 5	56 4	51.8	53.38	.66	.81	.96	.88	N.N.W.	S. E.	Calm.	—	Clouded all day. Rain 7 to 8 a.m.
4,	.804	.596	.466	.7304	.330	.426	.369	.327	49.6	58 2	51.2	48.39	.94	.99	1.00	.94	N.N.E.	E. by N.	Calm.	.240	Clouded a.m. Clear p.m.
5,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	.050	Showery, clouded,& clear alter'ly.
6,	.944	.890	.879	.8888	.182	.235	.203	.200	37.3	50 0	36 6	43 18	.82	.66	.95	.79	N. by E.	S.S.E.	Calm.	.080	Generally clear. [p.m.
7,	.816	.766	.753	.7728	.228	.345	.365	.330	39 6	54 2	50.0	50.23	.94	.84	1.00	.91	Calm.	Calm.	Calm.	—	Clouded gen'ly. Slight rain 8 to 9
8,	.774	.621	.426	.5617	.335	.406	—	.400	49.1	55 0	55.6	55.48	.98	.96	—	.93	Calm.	E. by N.	E.	—	Clouded all day. Rain all aftern.
9,	.414	.559	.604	.5522	.438	.409	.374	.389	58.0	63 3	52 8	55 96	.93	.72	.96	.88	Calm.	W.N.W.	Calm.	.720	Clear a.m. Clouded p.m.
10,	.571	.450	.379	.4455	.393	.413	.462	.420	53.4	59 0	59 4	57.65	.98	.84	.93	.90	E N.E.	E.	E.	—	Clouded all day.
11,	.450	.459	.355	.4768	.403	.400	.316	.336	56.3	55.6	51 3	49.92	.91	.92	.84	.91	N.N.W.	E.	N.N.E.	—	Clouded all day. Rain 7 to 12 p.m.
12,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	.470	
13,	.726	.757	.745	.7389	.210	.285	.285	.278	38.1	53 5	52 5	50.58	.93	.71	.73	.76	Calm.	S.S.W.	S.S.W.	—	Clouded all day. Showery. [p m.
14,	.784	.894	.954	.9070	.280	.155	.166	.191	47.2	46.8	39 8	41 86	.88	.49	.69	.72	W.N.W.	W.	W.	.050	Gen'ly clear. Wind brisk to fresh
15,	30.048	30.085	30.137	30.1085	.149	.137	.147	.149	28.1	40 8	30 6	34.83	.96	.51	.85	.74	Calm.	N.W.	Calm.	—	Clouded a.m. clear p.m. rain 6 to 7 a.m.
16,	30.189	30.074	30.036	30.0824	.159	.182	.136	.158	33 2	45.7	36 0	38 12	.84	.60	.65	.69	W by N.	S. by W.	Calm.	—	Generally clear, particles of snow falling
17,	30.001	29.898	29.885	29.9170	.171	.258	.190	.206	36.1	52.2	36.6	41 49	.81	.67	.88	.80	Calm.	S. by W.	Calm.	—	Generally clear. [first of the season.
18,	29.886	.762	.633	.7926	.199	.343	.298	.268	36.0	58 0	47.7	47 87	.95	.73	.91	.81	Calm.	S.	Calm.	—	Generally clear.
19,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Clear a m. Clouded p.m.
20,	.938	.944	30.101	30.0194	.212	.164	.112	.157	38.6	38.6	29.4	33.27	.92	.70	.68	.79	Calm.	N.N.W.	N.W.	.070	Generally clouded. [at night.
21,	30.158	30.209	30.205	30.2044	.113	.118	.134	.120	26.3	32.9	28.0	28.50	.79	.63	.87	.76	Calm.	N. by W.	Calm.	—	Clouded a.m. Clear p.m. Aurora
22,	30.233	30.137	30.091	30.1275	.105	.166	.136	.135	21.8	40.4	26.6	30.71	.87	.66	.92	.76	Calm.	S.	Calm.	—	Generally clouded.
23,	30.017	29.888	29.870	29.8914	.120	.246	.225	.219	23.9	49 2	44.2	41.70	.92	.71	.79	.83	Calm.	Calm.	Calm.	—	Mostly clouded.
24,	29.901	.900	.937	.9194	.239	.264	.206	.232	42.4	52.0	41.3	44.71	.90	.70	.80	.79	Calm.	Calm.	N.W.	—	Clear a.m. Cloudy p.m.
25,	.981	.943	.945	.9375	.240	.304	.293	.275	42.4	48.4	44.8	44 82	.90	.90	1.00	.93	Calm	E.	Calm.	—	Clear all day.
26,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Mostly clouded.
27,	.907	.856	.875	.8819	.216	.316	.248	.279	37.3	60.3	44.2	48.27	.98	.61	.87	.84	Calm.	S. W.	Calm.	—	Mostly clouded.
28,	.889	.812	.801	.8261	.265	.332	.241	.273	45.4	59.9	49.0	49.42	.88	.66	.70	.78	Calm.	Calm.	Calm.	—	Clear all day.
29,	.758	.580	.572	.6221	.188	.299	.316	.311	37.0	60.4	50.6	54.59	.86	.58	.87	74	Calm.	S. W.	Calm.	—	Mostly clear. [6 to 7 p.m.
30,	.605	.665	.718	.6671	.386	.355	.292	.340	57.3	52.5	48.7	52.51	.84	.91	.86	.87	Calm.	E.	E.N.E.	—	Clear a.m. Clouded p.m. Sheet lightning
31,	.617	.403	.336	.4307	.319	.386	.393	.361	50.0	55.2	54.3	53.22	.89	.90	.95	.90	E.N.E.	E.S.E.	S. W.	—	Clouded all day.
Mean	29.8217	29.7790	29.7691	29.7949	.255	.301	.264	.273	42.23	52.39	44.90	46.55	.90	.74	.86	.83			Total,...	1.850	Clouded all day. Rain 6 to 7 p.m.

Highest Barometer, ... 30.242 at 9 a.m. of 22d.
Lowest do. .. .. .. 29.362 at 6 a.m. of 1st.
Highest Temperature, ... 64°.0 on 19th, p.m.
Lowest do. .. .. .. 19°.7 on 22d, a.m.
Mean Daily Range, ... 18°.33
Extreme Daily Range, ... 28°.8 on 5th, p.m.—6th, a.m.

Proportion of Wind from each Quarter--
N.W. 76
S.W. 113
N.E. 68
S.E. 52
Proportion of Calm, ... 337

Under the head of Tension of Vapour, is given the elastic force of the Aqueous Vapour in the Atmosphere at each Observation, in decimals of an inch of Mercury, or the proportion of the Barometric pressure due to its presence.
Under the head of Humidity of the Air, is given the proportion the Aqueous Vapour bears to the quantity the air is capable of sustaining at the existing temperature, saturation being represented by 1.00.
The Instruments are Standard Instruments. The Rain Gauge 27 feet above the soil.
The Means entered are the Means by 24 hourly Observations, from 6, a.m., to 6, a.m.
The quantity of Rain received each 24 hours, is noted at 9, a.m.