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"Je prends le bien où je le trouve."

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ORIGIRAL AND ECLECTIC.

ARTICLE XII.

LETTERS FROM SAML. D. HOLT, M. D., UPON SOME POINTS OF GENERAL PATHOLOGY.

LETTER NO. 17.

MONTGOMERY, ALA., February 16th, 1857.

Messrs. Editors—My last letter having been devoted chiefly to the consideration of the subject of Yellow fever in its essential character, and an endeavour to show that in that character, and in its first or early stage, it is often, if not generally, a curable or abortable disease,—it is my desire in this, to show the contingencies upon which such an issue depends, and that when, in this or other kindred affections, the typhoid, or necræmic, condition becomes fully formed and established, it is not curable by any known or certain process, except the gradual elimination of the specific poison, and others which may have been generated in the system, and a restoration of the blood to its normal and healthy condition. And as this process necessarily depends upon the sanative efforts of nature, and the recuperative powers and energies of the system, for its accomplishment, requiring a longer or a shorter period, according to the essential type and character of the disease, the most consummate skill and judgment of the physician is generally required to determine, how much it is his duty to perform—how
much he should leave to the efforts of nature, and what aids he may be able to lend, to hasten it.

With respect to Yellow fever, ample experience has shown that when it has passed unchecked into its second stage, it is no longer controllable by potent or heroic remedies; that great caution is necessary in the use of all remedies of an active or perturbing character; that nature requires an absolute state of quietness and repose for her successful operation, and that slight disturbance from officious interference is often sufficient to interrupt and suspend those operations upon which alone the safety, and often the life, of the patient depends. It is not, however, to the second stage of Yellow fever, or to other confirmed typhoid conditions or forms of disease, that these measures of caution, with respect to the use of active remedies, are confined, but they will apply as well to all those zymotic fevers which have their origin in a blood poison, (not necræmic or typhoid,) and which have a definite course to run—such as small-pox, measles, scarlet fever, &c. So far as my experience has gone, in the management of all these diseases, and conditions, the safest and most proper course to pursue, is to observe a "masterly inactivity," and an "armed neutrality;" by which, I do not mean that we should stand idly and indifferently by, and leave everything to the operation of nature, allowing her to struggle through difficulties which art could easily overcome; but I mean, that having placed the patient in the most favorable condition for sustaining the struggle, which we are satisfied, from a knowledge of the disease, its peculiar and characteristic symptoms, and the course which it has to run, according to its essential type and character, that we have not the power to prevent or arrest. Our duty must be confined to the task of endeavoring to conduct it to a favorable termination, (which by judicious means we may sometimes hasten) by carefully watching its progress, and combating such symptoms, and warding off such extrinsic influences as do not belong to the disease in its essential character, and such as threaten to interfere with or interrupt its regular and natural progress. It often happens in these diseases, that no interference on the part of the physician is required by the exigencies of the case, beyond the task of watching their progress—especially have I found it so with respect to typhoid and scarlet fever. Yet, how few of the profession have the moral courage, in the treatment of these or other dangerous diseases, to adopt such a course, and to
withhold medicine when urged to its administration, and to prompt and vigorous action, by the fear and anxiety, and even the entreaty and remonstrance of the patient or friends, whose ignorance of professional duty and responsibility and, no less, of the nature of disease, will make no proper allowance for such a course. They expect, and require that something should be done, and the physician generally finds it an easier and more agreeable task to gratify their desires, in this respect, by seeming to do something, even when he knows, or believes, it to be useless, so far as the arrest and cure of the disease is concerned, (unless he deceives himself,) than it is to endeavor to convince them, that the patient would do better without his interference and his physic. I would not charge upon the profession a want of honesty of purpose in this, for it is right and proper that all reasonable desires of the patient should be gratified, even to the taking of physic, provided it will be attended with no danger or inconvenience; but I do say, that the administration of medicine, or other interference, merely as a professional requirement, when uncalled for by the exigencies of the case, though sanctioned by therapeutic authority, argues a weakness, and a want of independence and moral courage, to stem the tide of popular ignorance and prejudice, which comparatively few of the profession are willing, single handed, to encounter, not less with respect to the administration or the use of certain remedies, than to withholding all remedies, when such a course would seem to be most proper.

The truth is, that the Medical Profession has assumed too much and promised too much, and the world has thus been led to expect and require from the profession, more than it is able to perform,—hence confidence has been shaken, and even destroyed, and thus the doors have been thrown open, and every species of Charlatanry has been invited to enter. To close the doors against quackery, to restore lost confidence, and to elevate the character of the profession, it becomes the duty of every honest member of the profession, to keep in mind himself, and to let the world know, that he possesses no power of himself to heal—that he is but the "handmaid" (as it were) of nature, to whose voice he is bound to listen, and whose mandates he is bound to obey, and that every act performed, or measure adopted, which is not in conformity to her suggestions, in compliance with her wants, or in obedience to her demands, is an unauthorized and unwarrantable act of assumption
and usurpation. When the world has been taught, and comes to understand this, more confidence and a better understanding will be established than now exists between the world and the profession; less action, and less meddlesome interference, will be expected, and less required, and the physician will have less to dread from the interference and the intrigues of quackery.

These remarks are not intended as a fling at the moral honesty of the profession, generally, nor are they dictated in a malevolent or a Pharisaical spirit, but from an experimental knowledge of the difficulties to be encountered in adopting the course which I have indicated in the treatment of a certain class of diseases—difficulties which grow out of, and are inseparable from, the general popular ignorance, as I have said before, with regard to professional duty, and professional responsibility, and of medical matters in general—an ignorance, whose baneful influence the united efforts of the profession only can counteract; but an ignorance, alas! which opens too wide and fruitful a field, and offers too rich a harvest, to justify the hope, even, that such an effort will ever be made. But I will forbear, as such reflections must be painful and humiliating to every one who has cultivated an attachment to, and entertains a proper regard for the honor, the dignity and the independence of his profession.

Although some of the most gratifying reflections arising from a retrospect of my professional course are derived from the favorable termination of cases of great apparent danger, which I had refused to interfere with, or to take out of the hands of nature—when I believed her to be the better physician in the case, and for which I claim the greater credit—yet, I must confess, that I never felt my responsibility diminished on that account, but sometimes painfully increased. Nor have I always found this the most easy mode of procedure, or free (for a time at least) from a sacrifice of individual interest, to which, and the allurement of popular applause, I have never willingly forfeited my independence, or compromised the honor and dignity of the profession, by a resort to any species of dissimulation or intrigue, believing that it is always more honest and creditable to endeavor to enlighten mankind, than it is to play upon and take the advantage of their ignorance and credulity. Hence I have never allowed myself to tamper with Thompsonianism, Homeopathy, and other such abominations, for the purpose of catching the popular breeze, but my constant prayer has always been—from all such sins good Lord deliver us.
As, however, I am not delivering a homily on professional honesty, or the duty and obligation of physicians generally, or desire to write my own panegyric, I will bring this digression to a close, with a few remarks, by way of caution to my junior readers, of which the senior are at liberty to avail themselves of any advantages which the suggestions may offer, which is, to guard against the fallacious, though popular dogma, that "desperate diseases require desperate remedies," which, in consequence of its general reception, and indiscriminate application, has done, and will continue to do, an immense amount of mischief, as long as it retains a hold upon the mind of the medical profession. Whatever truth there may be in the adage in certain diseases, or a certain class of cases, in which force is required to repel force, every day's experience exposes its falsehood, when applied to those malignant and dangerous diseases which, according to their essential character, have a definite course to run, and which we have no power or means to arrest, and can only conduct to their termination, such as typhus, typhoid and scarlet fever, small-pox, measles, &c.; and more especially is it so, when these diseases assume an epidemic form. It is true, that all these diseases, when they require active treatment, and all others having a dangerous and malignant tendency, which require energetic treatment, require it promptly, at their commencement, while the vital powers are in their fullest and most perfect exercise, as it is the rapid failure, or giving way of those powers which constitutes their chief malignancy and danger, and which it is the main object and design of treatment to prevent. But it is a great mistake, in my opinion, to suppose that, because these diseases assume, at times, the character of greater malignancy, that they become altered in their essential character, or, in consequence, require a resort to extraordinary means, or extraordinary measures, for their proper management. For if the ordinary and appropriate means and measures fail in the early stages of these diseases, in consequence of their extraordinary malignancy, a resort to more active and powerful ones (when, from their progress, and the further loss of vital power, they become still more malignant) will generally prove a profitless, if not a hazardous experiment, not always justified or sanctioned by a sound discretion. If the question should arise, as to what constitutes a desperate disease, and what a desperate remedy, about which there might be a difference of opinion, I would say that all diseases
which tend rapidly to the destruction of human life, and over which ordinary remedies have little or no control, might be considered as desperate. And all remedies may be considered as desperate, when used on the score of their extraordinary power and activity, and in improper or immoderate quantities, and when there is a probability of their doing more harm, than there is a reasonable expectation of their doing good, or when used as a reckless experiment, or without regard to the consequences which may follow their use. Remedies are valuable and proper in proportion to the aid which they are able to give to the struggling efforts of nature, without reference to the degrees of their power and activity; and remedies which would be perfectly safe and proper, under one set of circumstances, would, under others, be properly considered as dangerous and desperate. The question, then, resolves itself into the mode or manner, and the time and circumstances of their administration, whether remedies are to be considered desperate or not.

There are some other lights in which this subject might be viewed, going to show, how mild, and even impotent or inert remedies may become desperate ones, by their indirect or negative operation; as, for instance, the substitution of a few homoeopathic drops of the tinct. of phosphorus,aconite, and bryonia, in the treatment of pneumonia, for such effective remedies as calomel, tartar-emetic, and the lancet; or, in the carrying a buck-eye in the pocket, for the cure of the piles; or, a "brick in the hat," to cure the tooth-ache, or a fit of the blues,—and many other such acts of desperation. But it is not to such cases as these that my remarks of caution are intended to apply; they require no buoy or beacon, but show for themselves. But it is to those dangerous and often malignant forms of disease, which show, sometimes from their commencement, and throughout their progress, a low and feeble state of the vital forces, and all those diseases which tend rapidly to such a condition, that I would caution against the use of active and perturbing remedies, especially when the diseases in question have assumed an epidemic and malignant form, or the remedies, however proper under other circumstances, have failed of their proper effects, in the first or early stage of those diseases.

Yellow fever, which presents the most striking example, and furnishes the best illustration of my views, is usually characterized by a full display and exercise of the vital powers of the system in
its first or febrile stage, requiring, as I have urged, the necessity of prompt and energetic treatment, (even to the point of desperation, as some might say.) Yet, having passed uncontrolled into its second stage, which is equally characterized by a prostration of the vital powers, active or energetic treatment becomes as useless, and even injurious, as it was necessary and beneficial in the first stage. In such an emergency, which may very safely be pronounced as desperate, what course does it become the duty of the physician to pursue? He cannot, with propriety, or a reasonable hope of success, renew, or continue, a course of active treatment which has already failed to arrest the progress of the disease. He should not jeopard the life of his patient by tampering with physic, especially as a matter of desperate experiment. He cannot, or should not, abandon his patient in his fearful extremity. But, without suffering himself to be forced to action, or into the adoption of measures, which his judgment does not fully approve, he should stand firmly at his post, patiently and carefully watching the operations of nature, upon which the issue of the case mainly depends, and which it is often in his power materially to aid; and though he may not, by the use of any known antidotes, be able to neutralize the action of noxious and poisonous matters received into or generated in the system, he may, to a considerable extent, counteract their influence, by a judicious use of such remedies as are calculated to raise and sustain the prostrate energies and vital powers of the system, thus affording aid to the depurating and excreting organs in eliminating the poisonous matters from the blood, and restoring it to its normal and healthy condition. It will be perceived that the therapeutic principles which should govern the treatment of Yellow fever, according to my views, are about the same, both in its first and second stadii—with this material difference, however, that in the first, the object is to preserve the vital powers, and prevent the breaking down of the healthy constitution of the blood, which is to be accomplished by prompt and energetic measures; and that, in the second, the object is to reinvigorate the vital powers, and restore to the blood its normal condition, which is a slow and uncertain process, and only to be accomplished by mild and gentle measures. Such, indeed, are the principles which should govern the treatment of all those diseases which cannot be subdued or controlled by active or heroic remedies, especially those which I have before named, as well as others belonging to the zymotic class.
Having given my general views with regard to the treatment of Yellow fever, particularly in its first stage—for the subsequent treatment, and the best and most appropriate means for effecting the objects and the purposes indicated, I must refer the reader for more accurate and reliable information to the systematic writers, and the many valuable monographs upon the subject, my own experience having been too limited to allow me to speak with confidence, upon such matters; besides, it is out of the line of my general intentions to enter into the details of practice in this, or any other diseases, of which I may have occasion to speak.

I shall now proceed to an examination of some other typhoid diseases, and endeavor to show, that though they may all be classed under one general head, they are, nevertheless, separate and distinct in their essential, suigeneric character, and however closely they may simulate each other, in their general character, and the nature of the causes which produce them, yet the causes are essential and specific to each, and each is distinguished by its own peculiar and characteristic phenomena and symptoms.—In a previous letter, I had occasion to speak of the typhoid condition, as a condition merely, being the result or product of previously existing morbid actions, in diseases, not typhoid in their origin, and consequently not entitled to hold rank with those diseases which are so; yet the near relationship which exists between them, pathologically, and the importance which attaches to it as a condition, renders it proper that it should be included in the general family, and particularly as its further examination will probably enable us to understand better the nature of typhoid diseases generally. In order to prevent any misunderstanding, or ambiguity, with respect to the terms which I have, and may hereafter use, to convey my meaning, it would perhaps be better that I should make a few remarks, explanatory of the precise sense in which those terms are to be understood.

The word typhus, signifying stupor, is a time-honored term, applied to a particular form of fever, which is supposed to have that condition (stupor) as its principal characteristic feature. So far, I would not object to a use of the term; nor do I object to a continuance of its use, or of its correlatives typhous and typhoid, for the purpose of distinction, between one form or variety of fever and another; but I think it rather unfortunate that, in this, as well as many other diseases, terms more expressive of their
essential and special pathology have not been employed; and it is upon this ground, that I would base any objections to the use of the term typhus, and its correlatives. For though *stupor* may be a prominent and uniform trait in their character, yet it cannot be regarded as an essential or primary element in their pathology; and if it was, it could hardly be pronounced characteristic, in as much, as *stupor* is often observed in diseases having no other typhus or typhoid traits of character. The correlative terms, typhus and typhoid, are understood to represent or specify those particular diseases, and conditions of diseases, which, though not identical, yet in their general character, bear a striking resemblance to typhus, not so much, however, with respect to stupor (which is but consequential to, and indicative of, deranged innervation, or impaired function of the animal or senso-motory nervous system), as in other pathological phenomena, not always so apparent, but more uniformly present, if not more characteristic and essential to what is considered and understood to be the typhoid condition—namely: a depraved and vitiated condition of the blood. Now, this condition of the blood, to which the term necrämic has been applied by a distinguished pathologist, (Doct. Williams,) signifying, according to the etymology of the word, *death of the blood*; or, according to Dr. W., “death beginning with the blood,” which is, perhaps, more expressive,—and the correlative term necrämic, which I have repeatedly used as synonymous with typhoid, to express that condition, or a tendency to it, fully expresses, according to my understanding, the primary essential element in the pathology of all typhoid affections, and which brings into one general family every disease, and condition or modification of disease, which has this element in its pathology.

This necrämic condition, as I understand it, consists in such molecular changes in the blood, as to destroy the relative proportion which, in a normal state, exists between the several constituent principles of the blood, and which are essential to its vitality. Or, it may be, that the *loss of vitality* results from the *direct action* of a poison, destroying the plasticity of the blood, whereby it is rendered unfit and incapable of undergoing those molecular changes which are necessary and essential to the vital processes, without affecting materially the relative proportions of its constituent principles. However that may be, it cannot be doubted, that in all malignant typhoid affections, such as, typhus and typhoid
fevers, yellow fever, plague, &c., the blood manifests evidences of a change, in its vital and chemical properties, at some time during their progress—except in aborted cases—often at their commence-
ment, and (during the prevalence of epidemics) even antecedently to the invasion of the disease, as shown in its want of plasticity and coagulability, and a rapid tendency to putrescency. These facts alone, without reference to the pathognomonic signs of the condition, or of those diseases, are sufficient, in my estimation, to justify the assumption that necræmia is an essential and primary element in the pathology of all typhoid diseases. It would be folly to assert, that the circulation of the blood, and its vitality and integrity, could be long preserved without a healthy nervous influence; and I think it would be equally so, to assert that the nervous system is not equally dependent upon an equal distribution, and healthy constitution of the blood, for the performance of its functions. No violence, therefore, can be done to reason or to common sense, in supposing that certain morbid agents may effect primary changes in the condition or constitution of the blood, and through and by the blood, upon portions, or all, of the nervous system, according to the nature of their respective elective affinities, as well as to suppose the primary action of those agents to be seated in the nervous system, or some portions thereof. That diseases may have their origin, or first link of their morbid concatenation—sometimes in the nervous, and sometimes in the circulatory systems, does not, I think, admit of a doubt; and I have endeavored to show, on a former occasion, that those diseases, which had their origin in the nervous system, and are regarded as dynamic, did not require, as an element in their pathology, any notable or appreciable change in the character or constitution of the blood, and that disturbance in the circulatory system in those diseases, had reference to the distribution, and not the constitution of the blood. It is true, that the blood often becomes changed, vitiated, and depraved in its character, during the progress of these diseases; but when it does so, a corresponding change occurs in the nervous system, and in the character of the disease, which, from a dynamic, becomes an adynamic disease, with such a train of symptoms as is generally characteristic of the necremic or typhoid condition.

In connection with this subject some very important questions arise, both as to the nature of this condition, and the causes which
produce it. Is the condition which we recognize as *typhoid* in
certain protracted or advanced stages of disease, such as bilious
fever, pneumonia, dysentery, etc., *really* *typhoid*? It is so, as far
as appearances go; and if it is so in fact, it will furnish us with
some little insight into the nature of the causes of typhus and ty-
phoid diseases. This *condition* we know, or have every reason to
believe, is the result of the action of septic and poisonous matters
generated and retained in the system, consequent upon the sus-
pended secretory and excretory functions of certain organs, as the
skin, the kidneys, the liver and the intestines; and we know that
in consequence of the action of those poisons, certain changes af-
flecting the vitality and chemical properties of the blood take
place, as manifested by a change of color and consistence, becom-
ing darker and more liquid and rapidly putrescent, and giving
rise to a general hemorrhagic tendency from *internal* mucous sur-
faces, and to eruptions, ulcerations, sudamina, petechiae, etc. And
we know that this changed condition of the blood is followed by,
or *accompanied* with, a corresponding change in the nervous sys-
tem, or parts thereof, and particularly the *animal* or senso-motory
nerves, as manifested by a dullness of the perceptive and intellec-
tual faculties; by drowsiness and stupor, by a loss of muscular
power, and often by other signs which show a general *adynamic*
condition extending to, and including the *organic* nervous system.
On a previous occasion, speaking of the functions of the brain and
nervous system, and the causes which influenced them, I adverted
to the fact, that in many of those diseases of *depression* and *congestion*
which have been miscalled "*adynamic,"* and which owe their ori-
gin chiefly to miasmatic, meteorologic, and atmospheric influences,
the intellectual and animal powers were often preserved, com-
paratively unimpaired amidst the almost *total* prostration of the
*organic* nervous system. And it is no less remarkable, that in
those diseases, which are more properly "*adynamic,"* or *conditions*
of disease, having their origin in animal poisons and animal efflu-
via—as in the condition and diseases under consideration—it is
often the case that while the animal powers are almost completely
stricken down, the *organic* powers continue to act with apparently
little interruption. Many cases I could adduce in proof of this
fact, but one must suffice: I attended a young man in an attack
of typhoid fever, and for fifteen days he laid in a drowsy, semi-
comatose state, from which he could be aroused with some little
difficulty, to take food, (for which he had a relish most of the time,) to have his bed and clothing changed, etc., during which time, his pulse, which varied little from natural in volume and strength, did not vary three beats from ninety. On the sixteenth day it came down five beats; on the seventeenth, five more; and his stupor and fever left him; and on the twenty-second, he left his bed and room only seven pounds lighter than when he took them. This case I may have occasion to refer to again, as it furnishes other points, besides the one attempted to be shown, in the character of typhoid diseases, and the nature of their causes: but, to resume my argument.

We know, also, that this condition, which may originate in any disease, as the consequence of the defective, interrupted or suspended secretory and excretory functions, and varies in degree accordingly, is the same, or apparently the same, in its general pathological signs, with respect to the nervous and circulatory systems, as is observed in those diseases essentially typhoid in their character, which are the product or result of specific animal poisons or effluvia, not generated in the system but operating from without, and when taken into the system, sooner or later, commence the work of regeneration by their diffusion through, and contamination of the blood, constituting what is recognized as the zymotic process, or action of those poisons which is of longer or shorter duration, according to their essential and specific nature. This condition differs from the typhoid diseases in its pathognomonic signs, (such as it has,) as those diseases differ in those signs from each other; and they differ materially, also, in their mode of production, one requiring the zymotic process as essential in its production—the other, not, unless the production or generation of poisons in the system from suspended functions, where they did not before exist, or their action upon the nervous system, when produced, be considered as zymotic; in which light, I hardly think it ought to be considered—for if it should be, certain of those diseases would be liable to a double zymotic action, in as much, as the condition in question is often superadded to typhoid and other zymotic affections, to all of which it imparts increased malignancy and danger, sometimes bringing them to a very sudden and fatal termination.

As time and space will not allow me to conclude my remarks upon these subjects, I will close them for the present, to be resumed in my next letter.
I feel as though an apology was due the reader, for my ramblings in the first part of this letter; but really there are so many side-issues—so many stations, switches and turn-outs, that I find it difficult to avoid running out of the right track, every now and then; and as I do not profess to belong to the regular train, I hope I may be excused for running off occasionally.

Yours, very respectfully,

Saml. D. Holt.

ARTICLE XIII.

A Case, resembling Hydrophobia, produced by the Bite of a Dog, supposed not to be Mad; with Remarks on the Pathology of Hydrophobia.

By W. H. Doughty, M. D., of Augusta, Ga.

June 8th, 1856, 7 o'clock, A.M., was called to visit Mary, the property of W. L. of this city, said to have been bitten by a dog. She is about 65 years of age, infirm and weak. She states that upon entering a yard, about two weeks previously, she was bitten by a dog (very much enraged—seemed always to have a special enmity to her,) on the calf of the right leg. The wound was dressed shortly afterwards with adhesive plaster. She suffered but little pain or inconvenience from it, until the 6th, when she experienced slight difficulty in swallowing, accompanied with rigors and chilly sensations; this, however, attracted no attention until the afternoon of the 7th, at which time she was seized with great difficulty of breathing, and a choking sensation upon attempting to swallow. These distressing symptoms continued to recur up to the present time, which reveals her situation, as follows:

Great disquietude and anxiety of mind; her hands continually brought up to her throat, as if to remove something; occasional rigidity of the muscles of the neck; intermitting spasms of the muscles of respiration, including those of the pharynx and larynx, recurring every five or ten minutes; great disfiguration of the face during the spasm; dysphagia induced by attempting to swallow water, tea, or other fluid—the patient seemed to dread even their approach; during the spasms (some of which I witnessed,) the patient was purple and livid in the face, almost asphyxiated; extreme irritability of the body; currents of air, motion of the limbs, or even the access of light, readily exciting the frightful spasms;
Doughty, on Hydrophobia—with Remarks. [April,

anticipating the spasm, she would plead most piteously for pressure (firm) to be made upon the sternum. The wound was situated upon the inner side of the right leg—of a lacerated character—two inches in length by one in breadth; ragged at the edges, foul looking and painful; pulse frequent and small, 130; tongue loaded; bowels obstinately constipated.

Treatment.—Sulph. morphone, quarter grain every half hour.
Visit at 10 o'clock, A.M. Patient seemingly better; spasms recur at longer intervals; situation otherwise the same.

Treatment.—Calomel, grs. xx.; camphor, grs. viij.—into two powders—one every two hours. Injections of castor oil, to be repeated every hour, until bowels are moved; blister 6½ to the back of the neck; dilatation of the upper part of the wound (dark, granulous blood issuing); application of lunar caustic to same; ley poultices; beef-tea and chicken soup, as much as possible.

Visit at 5, P.M. Patient the same; has slept some since last visit.

Treatment.—Croton oil, gtts. ij., every two hours, until bowels are moved; nourishment, &c.

June 9th, 9 o'clock, A.M. Patient dead. Spasms recurred at midnight with increased severity, but ceased about daylight; shortly afterwards, she died from exhaustion.

Remarks.—The pathology of the nervous system, has ever been, and must necessarily remain, enveloped in much obscurity, until the science of physiology, aided by all the appliances of art, has developed much more satisfactorily than it has hitherto done, that branch of it which refers to the function of the nerves in health. It affords, however, a pleasing gratification to those who have devoted themselves to this scientific study, that their labor has not been entirely unrewarded; for, if they have not succeeded in demonstrating to the letter, the absolute function of this part of our mysterious organism, yet the present state of efficiency of the practice of medicine, is due to them—a proper understanding of its function in health being necessary, before we can appreciate its morbid states. It is not our purpose to go into a lengthened disquisition on the diseases of the nervous system, but simply to examine some of the views entertained in regard to the pathology of that subtle disease, Hydrophobia. It is but seldom that a physician has the opportunity of studying this disease
in the human subject, many men of large professional experience, never having seen or met with a case. It is to the veterinary surgeon that cases of hydrophobia most frequently present themselves, being a disease which has its origin amongst the lower animals. It is ascertained, in the study of this disease, moreover, where the practitioner of medicine is brought in consultation with the veterinary surgeon, that a knowledge of it, as it exists in animals, is necessary to a proper appreciation of it in man. Two different opinions are held in regard to its pathology, and whilst the advocates of each agree, that the perverted action of the nervous system is the principal agent in determining the fatal issue, (nearly every case terminating so,) yet they differ in regard to the seat of the primary constitutional irritation. Upon an examination of the bodies of those (men and animals), who have died of hydrophobia, the lesions most generally found, are an inflammatory appearance of the mucous membrane of the pharynx, larynx, and oesophagus, sometimes extending as far down as the stomach and intestines; also, congestion and irritation of the brain and its membranes, the medulla oblongata, cervical spinal marrow and their membranes, together with, congestion and dark discoloration of the lungs.

No change in the substance or structure of the nerves seemingly affected, can be demonstrated, either by the eye, the microscope, or any other means. It is necessary to state, however, that these marks of inflammation, more particularly those of the throat, are frequently wanting—no trace of them being discoverable. The principal nervous phenomenon and most characteristic symptom of this disease is dysphagia. Now, the point as to which the difference exists, is, whether the indications of inflammation found in the throat are primary or secondary to the irritation of the nervous system which accompanies it. Some pathologists conceive, that the inflammation of the throat demonstrated in most cases after death, is the primary manifestation of the disease in the system, and that the nervous state which gives rise to the spasmodic stricture is due to irritation of the sentient extremities of the pharyngeal nerves, claiming in its support, in those cases where no signs of inflammation are found, its latent form. They also assert that this inflammation is of a specific character, not from any demonstrable differences from ordinary inflammation, but to accommodate their ideas to the precedence of the inoculation. That
hydrophobia is a specific disease produced from inoculation with a specific poison, is also held by those who locate it in the nervous system primarily. The following quotation from an author* who is an advocate of the inflammation being specific, will serve as an exponent of the class:

"To my mind, (says he,) the evidence that there is specific inflammatory irritation in the mucous membrane of the mouth and pharynx in this disease, stops little short of certainty. The poison, in the first place, comes from the mouth of the dog, and following the general law of morbid poisons, especially of those that have a period of incubation, it is most likely to locate itself in a similar part in man, as well as in other animals. Secondly, appearances of inflammation after death, though not constant, are much oftener found here than any where else. Thirdly, the spasmotic symptoms commence in those muscles, whose nerves are in immediate connection with the surface in question; and are such as would naturally arise from reflex action of these nerves. Fourthly, if the disease is communicable by the saliva of man, as there is reason to believe, then there must be a perverted action of the salivary glands themselves, or of the surfaces on which these secretions are poured out; and this action must be a specific one, inasmuch as the secreted product when inoculated anew, uniformly gives rise to the same set of symptoms."

We shall notice these, in the order in which they are laid down; and in the first place, we remark, that no significance can be attached to the derivation of the poison from the mouth of the dog, when we remember that the mouth is the only aggressive, and at the same time, defensive weapon with which he may operate, and this explains why this secretion ("poison from the mouth") is thus deposited in the system of the person or animal bitten. I know of no general law, whereby any animal poison introduced into the system, has the tendency to manifest itself in a part similar to that introducing it; to suppose, that because a poison is communicated to one animal from the mouth of another, that, therefore, it must manifest itself first in the mouth of the one bitten, is simply ridiculous. The poison communicated by the bite of the rattlesnake ought, according to this, manifest itself first in the mouth of the animal bitten, because the mouth was the agency employed in

* Essays on the Physiology of the Nervous System, with an Appendix on Hydrophobia, by Benjamin Haskell.
the inoculation. Following the law which regulates the action of animal poisons, its influence would be exerted as soon as its entire absorption takes place, and the manifestations of that influence would be general and not local, inasmuch, as we know of no special affinities of those poisons for particular parts of the system. The syphilitic virus certainly has no general law of "similarity of parts communicating it;" for, wherever deposited, and by whatever means introduced, it is certain of the reproduction of its own kind. The same is true of gonorrhoeal matter, whether deposited in the eye or the vagina of the female. Smallpox also, whether induced by contagion or inoculation.

In the investigation of the nature of this disease, no experiments, I believe, have ever been instituted to ascertain whether or not, it might be communicated by some other secretion of the rabid animal, than the salivary, exclusively; but it is presumable that it might, from the following circumstance, furnished me by a medical friend, which occurred under his own observation: "A bitch of his, having seven pups, was poisoned, together with two other dogs; one of the pups immediately before the act of poisoning, was removed by a friend to whom it was given. Shortly after receiving the poison, she nursed her pups. In the course of two hours, one of the dogs and the bitch were dead, and by dark all the pups died, manifesting the same symptoms as did the mother and dog. The pup that was removed did well and grew to full development." Now, the effect of an animal poison introduced, would, we suppose have the same influence, as did the mineral (arsenic as was supposed) in this instance: every secretion would become impregnated with it sooner or later. We find in Druitt's Surgery, the following language in reference to this point: "It is uncertain, whether the whole solids or fluids of the animal are not poisonous also. In fact, there is some reason for believing that the disease may be communicated by the mother's milk." He cites the following instance—"Two ewes were bitten by a mad dog and died hydrophobic. One had two lambs, the other, one; all three of which were seized with the disease a week afterwards, although they had not been bitten by the dog, nor, as was supposed, by the mother." This case certainly throws its testimony in favor of the general impregnation of the secretions; for, in the absence of all proof to the contrary, we are bound to believe that

* Druitt's Surgery by Sargent, p. 167.
the disease was communicated to the young by the milk of the mothers. The following quotation from Youatt* is directly opposed to the inferences which we would be justified in drawing from the above cases: "A portion of it (virus) is taken up and carried into the circulation and acquires the property of assimilating the secretions to its own nature, or it is determined to one of the secretions only." Further on, he says: "So it is with the salivary glands; in them it is formed, and to them it is determined, and from them and them alone, it is communicated to other animals." This expression seems to be unsubstantiated by any experiments or arguments, as given by him, for in all the cases which that author gives in his treatise upon this disease, not a case is reported which would warrant such an exclusive inference, whilst the case of the bitch, and that of the ewes before spoken of, go to prove, the first by analogy and the second positively, that it may be communicated by at least one secretion of the animal other than the salivary.

Passing from this point to the consideration of the second, we remark, that were the disease attributable to a local inflammation of the throat, following the order of all the phlegmasiae, symptoms of a local nature should be the first to manifest themselves, but instead of finding sore-throat in the commencement, we have the following constitutional symptoms, viz., "a rapid and irregular pulse—not inflammatory;" a peculiar disorder of the mind; chilly sensations running down the back and spine; pain in the bitten part (even after it is cicatrized) often following the course of the nerves.

After these have continued some time, "perhaps a couple of days," the difficulty of swallowing comes on. It is said that "in the horse, the disease commences with great distress and terror and profuse sweating; he soon becomes frantic and outrageous—stamping, snorting and kicking." It is recorded of "eight sheep which were bitten and became rabid, they were exceedingly furious, running and butting at every person and thing, but did not bite. They drank freely." There is no case recorded, within my knowledge, wherein inflammation of the throat was evident, prior to the long-continued spasmodic action of the muscles of the part. In the case, accompanying this article, the gums and mucous membrane of the mouth were of a pale and whitened aspect, yet, possibly injection of the capillaries of the throat might have been

* Youatt on the Dog, p. 221.
discovered after death. We conclude our remarks to this, by giving the following quotation from Dr. James Johnson: "We must conclude (says he,) that it cannot be denied but that the most evident indications of inflammatory action attend and distinguish the symptoms of hydrophobia; that we have often inflammation of the oesophagus, pharynx, larynx, and occasionally of the brain and spinal cord; yet, it is generally admitted, that these appearances are more the consequence, than the cause of the disorder, and that although frequently present with, they are by no means essential to the existence of hydrophobic action."

In the third proposition of the author, (Dr. Haskell,) he seems to regard the spasmodic symptoms as the exaggerated reflex action of the nerves distributed to the mucous surface of the throat, caused by the inflammation, but disregards the idea that these are the result of irritation of the nervous centres. All physicians are perfectly familiar with the fact, that excitation of the peripheral extremities of the nerves distributed on the membranous surfaces of the body, will often prove the exciting cause of a convulsion in the epileptic; yet, it cannot be said, that those surfaces whereon the nervous extremities are distributed, are the seat of the disease—the excitation simply developing the evidences of the already diseased nervous centres (cerebro-spinal axis). As pertinent to the issue, we give the following extract from Todd & Bowman's Physiology: "Nothing (say they) is more certain than that an affection of the central extremities (nervous centres) of the nerve fibres, is sufficient to excite sensations precisely similar to those which the excitation of the peripheral portion of the same fibres would produce. Hence it is that a morbid irritation at the centre is frequently referred to the periphery."* It is the direct application of this certain principle of nervous action which fully explains the production of these spasmodic symptoms of the throat, and all the respiratory muscles, so distressingly manifested in this disease. All the nerves distributed to the respiratory apparatus take on this extreme excitability, and manifest reflex nervous action under the slightest stimulus. It is not necessary that the first impression should be made upon the pharyngeal nerves, to excite spasm, for a draft of air, a motion of the limb, or the access of light, may give rise to the dysphagia, as well as the other convulsive movements of respiration. That the pharyngeal nerves may and do perform reflex

* Todd & Bowman's Physiological Anatom. and Physiology of Man, p. 214.
actions in this disease, admits of no question, but their extreme susceptibility to impressions is the result of primary irritation at their nervous centres.

The consideration of the fourth proposition involves the question of the communicability of the disease by other secretions of the body, besides the salivary. Having expressed our view upon this point at some length, in the discussion of the first proposition, we dismiss this, with the statement, that the case of the bitch recited, and that of the ewes, prove almost conclusively the first by analogy, and the second positively, that the communication of the disease is not confined to inoculation with the salivary secretion alone.

Having thus endeavored to give a general exposition of this distinctive pathology of hydrophobia, we dismiss the farther consideration of it with the remark, that those changes found after death, are rather the consequence than the cause of the disease, and that they are emphatically secondary to the constitutional irritation, and that this latter exists primarily in the nervous centres. There may seem to be a discrepancy existing between the character of the arguments adduced and the caption of the case reported, but I have not hesitated to argue the pathology of the true hydrophobic disease, inasmuch as, this case resembles it in every outward manifestation. The difficulty of swallowing, the intermitting spasms of respiration, the peculiar disorder of mind, and the extreme irritability of the body, taken in connection with the bite, serve unequivocally to confirm it a case of hydrophobia. But it may be objected, that this disease has its exclusive origin from inoculation with the poison by an animal actually laboring under rabies at the time of communication. It is proper to state, however, that there are those who believe, that under a predisposition to the disease in the individual, that the bite of a dog simply enraged may have the effect occasionally of producing hydrophobia. Without adopting the latter view, I think that it derives plausibility from some general facts ascertained, in regard to the influence of the nervous system upon the secretions of the animal body, and it likewise, receives support from the case reported. That influence may be exerted to the effect of producing changes, either in the quantity or quality of the secretions. The first is exemplified, when under the influence of fear or fright; an increase in the secretion of urine takes place—it being sometimes discharged invo-
luntarily. The second, in the change produced in the milk of the nurse, whilst laboring under violent passion, producing in the infant irritation of the alimentary canal, convulsions and even death. Will it be denied by those who require the dog communicating it to be laboring under rabies, that the nervous system of the dog or other animal, is capable of exerting the same changes, and producing similar modifications in their secretions? Reasoning from analogy, why may not modifications of the saliva of the dog, for instance, under the influence of rage or anger, be possessed of equally deleterious and poisonous properties, as those of the milk in the case of the mother and child? The mode of its absorption cannot possibly be an argument against it. That it receives support from the case reported will not be denied, when it is recollected that there were no circumstances in the history of the dog to warrant suspicion of rabies. The dog had observed his usual habits, but seemed to have always entertained a hatred for this person. I saw the dog shortly after the occurrence, there was nothing strange or rabid, either in his looks or behavior, but on the contrary, he seemed to be good-natured and friendly-disposed towards myself. Eight months have now elapsed since the accident, and no symptom of rabies has yet manifested itself in the dog. If it were not a case of hydrophobia, what was it?

Hoping that the report of the above case may call attention to certain points of interest therein discussed, I here close these remarks, already extended beyond my original design.

ARTICLE XIV.

Spina Bifida—three Cases from one Mother. By E. M. Pendleton, M. D., of Sparta, Georgia.

In a practice of twenty years, I have seen but four cases of that terrible congenital disease, or malformation, termed Spina Bifida. The first, was in consultation with Dr. Lynah, of Warren county, which terminated fatally, at several years of age. The sac containing water and connecting with the brain through the spinal column, was at the end of the os coccygis. The other three cases have occurred within the last five years, and singularly enough, were all the offspring of the same mother, a lady of this county, of
the first respectability. Her first child, a son, had a very small sac on the left side of the spinal column, in the lumbar region, which did not seem to connect specially with the spine, and but for the further developments of the case, would not have produced much apprehension. Hydrocephalic symptoms, however, supervened in a few months, the head became enlarged and the child had occasional spasms; it died in a short time.

The second child was apparently healthy; but as the parents had removed from their former residence, I lost sight of the case, until summoned to attend it, in consultation with another physician. It labored under the effects of catarrh and dentition, the brain suffering greatly. It died in a few days after I saw it.

In the third case, I attended the accouchement, and found as soon as the child was born, that it presented symptoms of paralysis. Upon examination, the same fearful sac, at about the same point of the lumbar vertebrae presented itself, only it was much larger than the other; the legs crossed and were perfectly paralyzed. The head was larger than natural, and soon exhibited hydrocephalic symptoms. It lived several months, and cried nearly all the time of its waking existence.

Several months since, I was summoned to the same lady in her fourth confinement. I went with fear and trembling, feeling a strange premonition that I would have the same difficulty to contend with as formerly. Anxiety and apprehension were depicted on the countenances of both parents, and I could but offer a silent prayer that this one might be well formed. But, alas! as the child presented itself to our vision the first time, we detected the same inability to move its lower extremities, the same malposition of the legs, and the same fearful fissure in the back, only larger, apparently, than either of the others. We turned away sickened at the sight. In other respects, the child seemed to be healthy and sprightly. It too, soon followed its predecessors to the grave.

What can be the cause of this singular concatenation of unfortunate births, from parents who are both well formed, vigorous and healthy, in every possible respect? The father is of a bilious, lymphatic temperament; the mother, sanguino-nervous—the parents of both, still alive and healthy. This would seem to be one of the best crosses imaginable. The maternal grandmother, however, springs from a family of oversanguineous temperaments and
A Few Thoughts on Epilepsy. By L. M. Lawson, M.D., Professor of the Theory and Practice of Medicine, in the Medical College of Ohio.

This disease, (which has well nigh been ranked among the opprobria medicæ,) has of late years received a large share of attention from practitioners and pathologists. But notwithstanding these laborious and extensive investigations, it still remains, (so to speak,) a terra incognita. It is to us, as it was to our predecessors, a morbus herculeus or a morbus sacer—too often defying our most cherished remedies, mocking alike the skill of the physician and the miseries of the patient.

But in the midst of this darkness and confusion a few glimmering rays of light now and then steal in upon us; and while, in some respects, they serve only to heighten the horrors of the scene, they do reveal a few tangible points, which may assist us in reaching more rational conclusions.

We cannot say that epilepsy has, in fact, any pathological anatomy; indeed, the morbid changes which have been observed after death, exhibit but little uniformity, and therefore cannot be regarded as essential to the disease. Probably the only condition which throws much light on the malady, is the state of atrophy observed in the cortical portion of the brain in old epileptics. This condition indicates a derangement of the nutrition of the part, the result of diminished action.

The low state of therapeutics in relation to epilepsy may be traced to two causes: 1, The absence of any recognizable pathological anatomy; and, 2, An effort to supply this great hiatus by the use of specifics. Hence, even our French frères, who usually exhibit so much philosophy and careful discrimination, do
little more than employ, in the most routine manner, some fancied specific. Trousseau, for example, finally fixes on the belladonna treatment, which he thinks must be continued from two to four years.

Dr. Todd, of London, has recently attempted to bridge over this great chasm, by suggesting that a polarized state of the brain, (or certain parts of it,) occur, and that it is the "disruptive discharge," (chemically speaking,) which induces the paroxysm. He recognizes two degrees: one involving the cerebral hemispheres, leading to loss of consciousness and impaired intellect; the other, more profound, extending to the tubercula quadrigemina and mesencephale, causing the convulsions. All this he ascribes to a change of nutrition of the part, which induces a highly charged or polarized state, and the tension which ensues leads ultimately to the disruptive discharge, and all the phenomena of the paroxysm. He does not admit that inflammation, congestion, or anemia produce the disease; but that it often arises from the specific influence of some poison circulating in the blood, among which may be mentioned the influence of retarded urea.

These expressions, however, are only feeble approaches toward an explanation; for, although they convey some faint idea of what may possibly be occurring, they are so dim and shadow-like as to leave the inquirer still faltering and undecided. The only suggestion of practical value, embraces the idea that the foundation of the disease is essentially deranged nutrition.

Dr. Radcliffe has offered an explanation of the principal phenomena which occur in epilepsy and analogous diseases, which embraces as a fundamental idea diminished nervous action. According to this view, the spasmodic action is due to diminished circulation and innervation, in consequence of which molecular contraction of the muscles ensues. Spasmodic action, therefore, is due to the withdrawal of stimulants, instead, (as was before believed,) an increase of excitement.

The novelty of this doctrine will secure for it a hearty rejection by those who are accustomed to think only in a single channel; nevertheless, there are various facts and analogies, (which cannot be now enumerated,) which strongly favor such a conclusion, if they do not positively establish it. Let me name but one—by no means the most conclusive: We can bleed a patient into, first, syncope; second, convulsions. Here is diminished excitement followed by violent muscular contraction. Is that contraction due to an increase or diminution of excitement? But one answer can be returned.

Independent of either of these theories, I am led to believe that the essential pathology of epilepsy is diminished action, probably connected (at least ultimately) with impaired nutrition. It may, however, arise from the action of poisons, from sympathetic influence, or direct derangement. It is, in fact, connected with impair-
ed vitality, generally, such as sluggish innervation, circulation, secretions, mental manifestations, and so on. All this may result from onanism, retained urca, the elements of bile or other poisons, sympathetic derangement of the alimentary canal and uterus, and excessive and exhausting mental efforts or emotions. In each instance, however, the ultimate effect, (and that which leads to regularly developed epilepsy,) is exhausting in its character, and finally impairs nutrition.

It is a peculiar fact, and one which is very significant in this connection, that an intercurrent excitement—such as fever or inflammation—temporarily suspends epilepsy, which could hardly happen if the disease was not one of diminished vitality. An instance has come to my knowledge in which a severe fall, from some considerable height, had the same effect.

The conclusion which appears to me most in accordance with the phenomena of epilepsy is, that the essential pathological state is one of depressed vitality, including impaired nutrition. But while this is admitted, we must often look beyond the nervous system for some exciting or predisposing cause; and hence there is some justness in the following varieties of epilepsy, as enumerated by Dr. Cheyne: epilepsia cerebralis, sympathetica, stomachica, hepatica, nervosa, uterina, a dolore. It must be remembered, however, that these functional derangements may be a consequence and not the cause of an attack.

In regard to the urinary secretion, it has been shown by Dr. Hunt and Dr. Todd, that certain derangements of this function may lead to epilepsy, and that its cure consists in correcting that condition; and the same remarks apply with equal force to the hepatic function. Thus, Dr. Todd found the urine albuminous, with deficient urca; Dr. Hunt observed the secretion to manifest a feeble acid reaction, with low specific gravity, increase of mineral ingredients with diminution of ura and other organic matter. These facts, coupled with the observations of Dr. Prout, that when soda and ammonia are in excess, ura becomes diminished, and that soda and potash seriously injure the nervous system; and we have a key to at least some of the morbid changes which occur in such cases.

But, after all, the great object is to find a successful mode of treatment. Unfortunately, most of the specifics have failed, or if occasionally successful, they are not so with sufficient uniformity to establish for either one a particular pre-eminence. Thus, nitrate of silver, oxide of zinc, sulphate of copper, iron, arsenic, digitalis, valerianate of zinc, belladonna, the recently vaunted cotyledon umbilicus—and an innumerable host of similar agents—have each in their turn signally failed. It is true, each may at times succeed, but their application is altogether empirical, and therefore necessarily unsuccessful.

In view of the depressed state of vitality, the leading indication
with me is to improve the tone of the system by the administration of stimulants, tonics, and suitable nourishment. For this purpose I employ brandy, iron and animal food. These agents improve the tone of the system, and I have witnessed the suspension (and probable cure) of the disease while under this course of treatment. In one case of six years' duration, violent paroxysms occurring at least weekly, with the "petit mal" almost daily, the paroxysms were subdued, and the patient apparently restored, under the use of ounce doses of brandy three times a day, together with purgatives, and small doses of hyoscyamus and strychnine.

But I would by no means neglect the kidneys and liver. If there is diminished urea, employ diuretics; if the alkalies have increased in the urine, give acids, especially the nitro-muriatic. If the liver is torpid, (which is almost invariably the case,) give cathartics, containing more or less mercury. I place great reliance on the judicious (but decided) employment of cathartics; but none of these agents should interfere with the tonic and stimulating treatment. Restore the general health by means of alteratives and tonics, and by keeping the renal and hepatic emunctories acting freely, and then overcome the nervous disease by cardiac and nervous stimulants.

Among the class of remedies known as _specifics_, (so called because their mode of action is unknown,) none has gained more reputation than the _oxide of zinc_. M. Herpin (who received a prize from the Institute of France, in 1850, for his treatise on this subject,) eulogises the virtues of zinc, and indeed placed his chief reliance on that agent. The success of M. Herpin was very remarkable. He gave the zinc in doses of six to eight grains daily, in divided portions, augmented every week by two grains daily, until the dose reached _forty-five grains_! This was continued for months in succession. The nausea, which appeared at first, soon passed off, and no further inconvenience from the large doses was experienced. He mentions one remarkable case in which 1200 fits had occurred, cured by a combination of zinc and belladonna. Of 40 cases treated with the oxide of zinc alone, 28 were cured—a far greater success than has fallen to the lot of most practitioners.

It does not appear, however, that others have been equally successful with this agent. Thus, M. Trousseau, in the very face of Herpin's experiments, abandons the zinc, and now relies, mainly on belladonna. He employs a pill composed of the powder and extract of the roots of belladonna _à à_ one-seventh grain. One pill is given every night for the first month, which should be increased one for each month up to the fourth month. He has cured 20 out of 150 cases; and M. Blache has had about similar success.

In regard to prognosis, it may be remarked that the principal elements are age, duration of the disease, frequency of paroxysm, etc. The periods most susceptible of cure, are, first, between 10 and 20 years, and, second, above fifty; from 20 to 30 being the
most unfavorable. It is an important fact mentioned by Herpin, that when the paroxysms have not exceeded 100, he cured 74 per cent.; but when they exceeded 500 he did not succeed in curing a case.

One of the most important elements of success in treatment, is **perseverance**. Trousseau remarks that if, at the end of one year, a little mitigation can be perceived, there is ground for encouragement; but that the medicine must usually be continued from two to four years. I am fully persuaded that our want of success often depends on the frequent change of remedies, and the too early abandonment of even a correct course. We should study well our case, become perfectly sure of its essential points, and then adopt such course as promises most success, and **persevere to the end**. No doubt it was in this way that M. Herpin secured a higher percentage of cures than his cotemporaries, and it is by the same un-faltering course that others can obtain a like success.

Finally, I would enumerate the following points in the treatment:

1. Cathartics, more or less mercurial.
2. Tonics, especially iron.
3. Acids or diuretics, in deranged urinary secretion.
4. Stimulants, brandy, whisky, gin.
5. The special agents, oxide of zinc being preferable.
6. Belladonna, combined with the oxide or valerianate of zinc, in special cases.
7. Above all, **persevere to the end**.—[Western Lancet.

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**Stimulant and Tonic Treatment of Epilepsy.**

At one of the late meetings of the Medical Society of London, Dr. Radcliffe read a paper "On the Necessity of a Stimulant and Tonic plan of treatment in Epilepsy." His experience corroborates the views expressed by Professor L. M. Lawson, in our last No. We copy the following notice of Dr. Radcliffe's paper, and the report of one of the cases treated, from the London Lancet for January.—[Western Lancet.

"In this paper, the author related several cases in which a stimulant and tonic plan of treatment had been employed with apparent benefit. Before doing this, however, he directed attention to a point of some significance, both theoretically and practically, and this was, the marked improvement in the feelings of the patient, which was noticed as having taken place in more than one instance after dinner. More than once the patient had made this remark spontaneously, and he always made it when questioned upon the subject. This point is not always noted in the cases, but the author did not remember a single exception to the statement. Now, this point, it is argued, would seem to be a point of
some significance, both theoretically and practically, for (if the feelings of the patient can be taken as any guide) this improvement after dinner must show that abstinence is not the rule of the treatment in epilepsy. Certainly, prudence is required in arranging the meals of an epileptic, and especial care must be taken to prevent any over-loading of the stomach, but not less certainly is an empty stomach to be dreaded. Ceteris paribus, there is no sound practical reason for supposing that an epileptic ought to eat and drink less than another man, and there is some reason to the contrary. At any rate, there is no reason for supposing that he ought to drink less. The author was very incredulous as to any case of epilepsy to which these remarks did not apply. These remarks did not apply to all cases of an epileptoid character, but they applied, he believed, to all cases of real idiopathic epilepsy. Indeed, he found that the supposed exceptions to this rule would never bear examination. Dr. Radcliffe also referred to the manner in which improvement is generally manifested in epilepsy. It did not seem to be the rule, he said, for improvement to be manifested in the gradual mitigation of the convulsion. On the contrary, the rule would rather seem to be for the general health to improve gradually, and for the sopor following the fit to become less and less profound, and less and less prolonged, until the patient wake up immediately after the fit, or even retain his consciousness throughout the fit, the fit in this way becoming more and more transformed into the milder type of hysteria. Unquestionably, the convulsion may cease gradually, but the ordinary rule is rather that it ceases more or less suddenly at some point in the process of recovery; and this ought to be borne in mind, or much disappointment may ensue to both patient and practitioner.

Case 1.—Mr. C——, aged forty. During the last fifteen or sixteen years, this patient has been engaged as clerk and collector, and for a considerable portion of this time he has walked, upon an average, about twenty miles a day. This was the case until within a few months ago, when, his strength having failed, he became continuously engaged in in-door work. The first epileptic seizure was five years ago, the immediate occasion being the fright and grief consequent upon seeing one of his children killed under the wheel of a carriage; and since this time the seizures have recurred at continually shortening intervals, until these intervals are rarely shorter than a week. The fits are generally violent. They occur generally in the night, and the exhaustion following them is often sufficient to prevent him from going to his work on the following day. Mr. C—— is very abstemious in his habits, and for some time has been a rigid teetotaller. He is always better after dinner.

Dec. 9th, 1852.—His whole appearance is that of a man greatly exhausted, and much older than he really is. The countenance is
pale, and the expression inanimate; the pupil somewhat large and sluggish; the pulse slow (65), and very weak. For some time after the attack, he passes a quantity of pale urine, and he is very excitable. He was recommended to live more generously, taking malt liquor to his dinner and supper, and to have a draught containing half a drachm of naphtha three times a day. He was also recommended to walk no more than he could possibly help.

January 27th, 1853.—Much better. There have been two fits during the last month. No alteration in the treatment.

March 3rd.—Much better. He says that he occasionally walks over in an evening to a brother who lives in the neighborhood, and has a glass of whisky-and-water with him, and that he has a much better night, and is none the worse the next day, when he does this. He has had two fits since the 27th of January. No alteration in the treatment.

July 12th, 1855.—Mr. C— looks many years younger than he did when he called two years ago, and has altogether lost the pale and exhausted expression of his countenance. It appears that he has been carrying out the prescribed treatment, more or less assiduously, ever since he saw me last, and that the interval separating the fits became longer, until the last interval was full seven months. At present, however, he is not so well, and this alteration he ascribes to his having been obliged to resume his old walking habits. He had walked not less than twenty miles the day preceding his last attack. He was recommended to live more generously while the necessity for walking continued, and to return to the naphtha."


Within two months past a demand has arisen for the valerianate of ammonia, owing to the publication in the Medical Examiner of a notice of its successful employment in severe facial neuralgia by certain French physicians. Having been applied to for this substance, and having studied the subject to some extent, the following remarks bearing on the preparation and properties of the salt are offered to those desiring the information.

When valerianic acid, as it occurs in commerce, is neutralized with strong solution of ammonia, and the liquid is carefully evaporated at 150° F., a syrupy liquid results, which is a dense solution of the valerianate of ammonia. If left to stand for some time it shows little, if any, disposition to crystallize, especially if the atmosphere is moist; but under favorable circumstances crystallization occurs, and the solution becomes a mass of crystals.

After several trials, the following method was adopted, which proved successful. After concentrating the aqueous solution, it
was mixed with twice its bulk of alcohol of 95 per cent., and suffered to evaporate spontaneously. In a few hours, as the alcohol disappeared, crystallization took place without difficulty. As valerianic acid is expensive, and the use of this salt will depend much on its being obtained at a reasonable price, it will be preferable to make the acid and salt in one operation, which can be economically done by the following process, which I have found to yield a nearly pure product.

Take of Bichromate of Potassa, eighteen drachms,
  Sulphuric acid, thirteen fluid drachms,
  Fusel oil (Alcohol Amylicum), a fluid ounce,
  Water, a pint,
  Solution of ammonia, a sufficient quantity.

Reduce the bichromate to powder in a mortar, add the acid mixed with an equal bulk of water and triturate, and then the remainder of the water, so as to get a clear solution. Pour this into a quart flask, add the fusel oil and shake them together at short intervals, until the reaction has abated and the temperature decreased. Then attach the flask to a Liebig's condenser, (or use a retort and receiver,) apply heat, and distil a pint of liquid from the mixture. The distillate (which consist of a watery solution of valerianic acid, with an oily mixture of valerianic acid and valerianate of oxide of amyl, or apple oil, floating on its surface) should then be put in a flask, and solution of ammonia added with agitation, until in slight excess, and the liquid ceases to redden litmus paper. The apple oil floating on the surface should then be removed, and the solution evaporated on a water bath till syrupy, mixed with alcohol, as before noticed, and set aside to crystallize.

A very neat process is to pass gaseous ammonia through syrupy valerianic acid till super-saturated, and then, after slightly heating the dense solution, to remove the excess of ammonia, crystallizing by aid of alcohol, as above.

Valerianate of ammonia is a colorless salt, crystallizing in very thin micaceous quadrangular plates, soluble in water and alcohol in all proportions. When added to washed ether, a part of the salt seizes on the water and attaches itself to the sides of the vessel, whilst another is retained by the ether. Its taste is at first sharp, and then sweetish, its odor slightly valerianic, like valerianate of soda. When its aqueous solution is boiled, ammonia is perceptible in the vapor. According to Lowig it volatilizes without decomposition, and Gregory gives it the formula NH₄, O₁⁻C⁻¹₀⁻H⁻⁹⁻O₃. Although very soluble, this salt effloresces when exposed to the air. I have not determined its amount of water of crystallization, nor have I been able to find any statement of the dose of the salt, as the paper in the Examiner speaks of a "solution" without noting its strength.—[American Jour. of Pharmacy.
On the Preparation of Liquid Perchloride of Iron as a Hemostatic Agent. By M. Burin Du Buisson, of Lyons.

It is known that a great many substances have the property of precipitating albumen from its solutions. Almost all the acids precipitate it white; acetic acid converts concentrated solutions of albumen into jellies.

Strontia, baryta and lime, form, with albumen, precipitates which are insoluble in water. Almost all the metallic salts are precipitated by albumen, and the white precipitate insoluble in water, which this substance forms with bichloride of mercury, is well known. To the other metallic salts which possess this property, sulphate of copper, but more especially perchloride of iron, must be added.

Perchloride of iron possesses, indeed, in the highest degree, the property of combining instantaneously with albumen, and of forming with it a precipitate under the form of a consistent and insoluble magma, as Dr. Pravaz has just proved, and every one now knows the importance of the application which this skillful practitioner has recently made of the aqueous solution of this salt for instantaneously coagulating the blood in the arteries, as regards its special employment for the cure of aneurisms in man.

Perchloride of iron unites, indeed, all the qualities desirable (and even exclusive) for fulfilling the object to which Dr. Pravaz has so happily applied it—great hemostatic power, perfect harmlessness, and solubility in water: it remained, therefore, only to find a mode of preparation which would enable us to obtain this salt always very pure, and its aqueous solution at a maximum density, which might be always and everywhere identical, indispensable conditions for attaining the object proposed by Dr. Pravaz, who has been kind enough to entrust this task to us. The following are the results we have arrived at:—

LIQUID PERCHLORIDE OF IRON, OF DR. PRAVAZ.

Take, Commercial sulphate of iron, 1,000 Grammes.
Water, 3,000
Pure iron filings, 100
Sulphuric acid, 15

The whole is introduced into a matras, or better still, into an enamelled cast iron vessel, and allowed to digest on a sand bath until the disengagement of gas entirely ceases; it is filtered, and five hundred grammes of liquid hydrosulphuric acid are added to the liquor, and the whole is left to repose for twelve hours; at the end of this time, the solution is boiled for half an hour and filtered.

Two hundred grammes of pure concentrated sulphuric acid are added to the filtrated liquor; the mixture is placed in a porcelain capsule, or an enamelled cast iron vessel, which must not be more
than half filled, and boiled, and pure nitric acid is added in small portions until the last addition causes no disengagement of red vapors; it is then removed from the fire, the liquor is diluted with from twenty-five to thirty times its weight of cold water, and all the iron is precipitated in the state of peroxide with a slight excess of liquid ammonia: the precipitate is washed by decantation with pure water a great number of times, and it is dried in the air by spreading it in thin layers on a cloth.

The dry and pulverized oxide is afterwards calcined at a red heat in a shallow wrought iron vessel, so as not to raise the temperature too high; the astringent saffron of Mars, of the shops, is thus obtained, which is no other than pure peroxide of iron, when it is thus prepared.

The perchloride of iron is afterwards obtained in the following manner.—

<table>
<thead>
<tr>
<th>Grammes.</th>
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<tr>
<td>Peroxide of iron as above prepared, . . . 200</td>
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<tr>
<td>White and pure hydrochloric acid, . . . 1,000</td>
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It is allowed to act without heat for five or six hours, and then the vessel is placed in a boiling water bath and heated until the oxide is almost entirely dissolved; this operation must be performed in a porcelain capsule of known weight; the liquid is decanted in order to separate the undissolved oxide, and it is carefully evaporated on the sand bath, stirring continually to the consistence of a thick syrup, the weight of which is then determined: a quantity of distilled water equal to half this weight is then added; the heat is then continued for a short time, and the whole is poured into a filter; the capsule and filter are washed with a fresh quantity of water, equal to the first, and sufficient of this liquid is then added to the first liquid to obtain a homogeneous mixture having the constant density of 43.5 to 44°.

By operating thus, we obtain a very limpid liquid, having only a slight acid reaction, but perfectly pure, at the maximum of saturation, and always identical, which may be preserved without any deposition of salt, provided that it be kept in a well corked bottle; it is of a deep brown color by reflected, and of a greenish golden yellow by transmitted light, or in a thin layer.

Five or six drops of this liquid, mixed with the white of an egg, suspended in twenty grammes of water, are sufficient for causing the whole to assume, in less than a quarter of a minute, the form of a mass which, on reversing the vessel which contains it, remains adhering to the bottom of the vessel, and it detaches itself only after a very long time, when the water begins to separate partially, in the same manner as the serum of coagulated blood.

This preparation, therefore, combines all the conditions required for realizing all the anticipations to which the observation of Dr. Pravaz have justly given rise.—[Jour. de Chimie Med. Western Lancet.]

Dr. Lewis read the following history of a case of poisoning by laudanum, in which he successfully resorted to Marshall Hall's new method of recovering persons drowned, or otherwise asphyxiated:

On the 15th day of August, 1856, Mr. J., a young man, about 28 years; sound constitution and temperate habits; dined and passed the evening with a friend, in the course of which he was heard to complain of pain in his left side, about the region of the heart, for which mustard was applied.

At ten o'clock he left his friend's residence, and made his appearance at his hotel about midnight, and shortly after retired to his room.

In the morning, the door of his room was forcibly opened, and he was found lying upon his back; his respiration stertorous, and not exceeding five or six to the minute; his pulse slow and full; pupils contracted; countenance livid; exhibiting no sign of consciousness. An attempt was made to arouse the patient by dashing cold water upon the face and chest, shaking, applying the salts of ammonia to the nose; but so profound was the coma, that no indication of consciousness could be elicited. Weak brandy and water was next introduced into the mouth, and an attempt made to produce deglutition by exciting the muscles about the pharynx, when, much to the surprise of the bystanders, his countenance became darker, and all respiration ceased.

The patient was immediately turned upon his face, in order that the fluid might escape; sinapisms were applied over the entire length of the spinal column, also over the extremities and chest, and artificial respiration commenced without delay.

For a period of five hours and a half, artificial respiration was constantly continued, with an occasional brief interval to enable us to determine whether all normal respiration had ceased. Dry friction was made simultaneously upward along the course of the veins, the beneficial effects of which were apparent.

During the time when artificial respiration was performed, the aspect of the case was very variable. At times the pulse was irregular and thready; at others, it was less frequent, more regular and firm. Equally great were the variations noticed in the respiration. When artificial respiration was for a time discontinued, respiration would continue with some degree of regularity at longer than natural intervals, and then become less frequent, and more regular until artificial respiration was resumed. Once during the time that artificial respiration was continued, a pint of warm coffee was, by means of the stomach pump, introduced into the stomach with evident good effect, as indicated by improvement in the pulse.
and respiration, which, however, was not permanent. A stimulating enema of brandy and water was also administered.

After a lapse of four hours and a half, Dr. Cox saw the patient in consultation with me. At this time, the case was very unpromising. There had been no manifestation of consciousness; the pulse was irregular, frequent and feeble; the pupils still contracted; the extremities cold and covered with clammy perspiration; and dissolution was apparently so near, that further efforts with hope of success seemed useless.

A flannel cloth saturated with aqua ammonia was now applied to the spine, and artificial respiration continued one hour longer, when normal respiration was resumed, and with it was noticed a gradual return of consciousness. The following morning his consciousness was perfect, although there was extreme nervous exhaustion, great mental depression, vomiting, loathing of food, etc., from which the patient gradually, but slowly, recovered. In the course of the day, an ounce bottle labelled laudanum, a few drops of which it still contained, was found concealed in the chimney flue, behind the damper. It was also ascertained that the patient had recently met reverses in business, and was laboring under pecuniary embarrassments, which doubtless induced that species of "moral insanity" that led him to contemplate suicide.

The points of interest in this case are, first, the manner of performing artificial respiration, which was in accordance with the directions of Dr. Marshall Hall, contained in the London Lancet, for recovering persons asphyxiated by drowning, viz: by placing one hand upon the inferior and lateral portion of the chest, and the other upon the superior portion or shoulder, and rolling the patient upon the face, at the same time making moderate pressure, to force the air from the lung; the body was then rolled back, completing about one third of a circle. This was repeated slowly, sixteen times to the minute.

**DR. MARSHALL HALL'S RULES.**

1. Treat the patient instantly, on the spot, in the open air, freely exposing the face, neck and chest to the breeze, except in severe weather.
2. Send with all speed for medical aid, and for articles of clothing, blankets, etc.

_I.—To Clear the Throat._

3. Place the patient gently on the face, with one wrist under the forehead; [all fluids and the tongue itself then fall forward, and leave the entrance into the windpipe free.]

_Hi._—To Excite Respiration.

4. Turn the patient slightly on his side, and
   (i.) Apply snuff or other irritant to the nostrils;
   (ii.) Dash cold water on the face previously rubbed briskly until it is warm.
   If there be no success, lose no time, but—

_III._—To Imitate Respiration.

5. Replace the patient on his face, supporting the chest on a folded coat or other article of dress.
6. Turn the body very gently, but completely, on the side and a little beyond, and
then briskly on the face, alternately; repeating these measures deliberately, efficiently, and perseveringly, fifteen times in the minute only.

[when the patient repoes on the thorax, this cavity is compressed by the weight of the body, and expiration takes place; when he is turned on the side, this pressure is removed, and inspiration occurs.]

7. When the prone position is resumed, make equal but efficient pressure, with friction, along the back; removing it immediately before rotation on the side;

[the first measure augments the expiration, the second commences inspiration.]

All these movements are performed systematically by the same individual.

IV.—To Induce Circulation and Warmth—

continuing these measures:

8. Rub the limbs upwards, with firm pressure and with energy, using handkerchiefs, etc.;

[by this measure the blood is propelled along the veins toward the heart.]

9. Replace the patient's wet clothing by such other covering as can be instantly procured, each bystander supplying a coat or a waistcoat.

Meantime and from time to time—

V.—Again.—To Excite Inspiration—

10. Let the surface of the body be slapped briskly with the hand;

11. Or, let cold water be dashed briskly on the surface previously rubbed until it is dry and warm.

The measures formerly recommended and now rejected by me are,—the removal of the patient, as involving dangerous loss of time; the bellows or any forcing instrument, and especially the warm bath, as positively injurious; and the inhalation of oxygen, as useless.

The inhalation of dilute pure ammonia has in it more of promise.

The value of galvanism remains to be tested: can it excite the action of the heart, or stimulate the muscles of inspiration; or, by inducing contraction of the muscles of the limbs, propel the blood along the veins?—London Lancet, Dec. 18.

The greater success which attends this mode of performing artificial respiration, Dr. Hall attributes to the fact, that when the body is placed in the prone position, the tongue falls forward, while in the old method, with the patient in the supine position, it falls back into the throat, closing the glottis, and entirely preventing the ingress of air to the lungs.

The second point of interest is the manner of making dry friction of the extremities upwards along the course of the veins, forcing the blood towards the heart, as directed by Dr. Hall, the beneficial effects of which were too apparent to pass unnoticed.

The third point of interest is the length of time during which it was found necessary to keep up artificial respiration, it being full five hours and a half. From the partial examination which I have been able to make, I think it unusual for persons to rally who have been so thoroughly overcharged with narcotic poison, as to create the necessity for the continuance of artificial respiration so long a time. The details of but few cases are recorded, and I have noticed no instance in which artificial respiration was successfully performed for a longer period than four hours.

Dr. Peaslee remarked that this case of Dr. Lewis' was an extremely interesting one, as it is the first instance among us in which a practical application of Dr. Hall's method had been made. He considers this an improvement possessing advantages over all other
methods of treatment, as we can by it introduce a greater quantity of pure atmospheric air into the lungs than by any other means, it being three-fourths as much as in normal respiration. Another advantage is that we have the means of operating always at hand, and the treatment may be pursued as well in one place as in another, while other methods are subject to more or less delay in providing the necessary means. Each moment of delay is fraught with imminent peril to the patient. In restoring persons from drowning there is no time to be lost, for as long as the asphyxia continues the patient is in nearly as much danger as if he were still in the water; hence the necessity of prompt and energetic action. He is inclined to think favorably of the application of cold to the head, and heat to the extremities. If the pathology is congestion of the medulla oblongata, preventing impressions being conveyed through the pneumogastric nerve, our course should be to remove this congestion. He has made use of this treatment in cases of children poisoned with meadow parsley, and always with prompt effect. The medulla oblongata being the centre of the respiratory movements when it is disabled by congestion we should, in addition to removing the congestion, continue our efforts at artificial respiration until the cord resumes its function. Acting upon this principle, it would seem in theory, that if artificial respiration was continued long enough, these patients would all recover.—[N. Y. Journal of Medicine.

Raw Pork as an Aliment.

"Dr. Henry J. Bowditch gives, in a late number of the Boston Medical and Surgical Journal, a short account of a trip on the Penobscot, and tells us that the party were, for a time, forced to live on pork. From the guides he learned that the raw pork was considered much more nutritious, that it was much the most economical way of using it, and that those who ate it thus would resist the fatigue of the journey for a greater length of time. The custom is to cut the pork in very thin slices, and one or two drachms of a meal was sufficient."

We would be glad, did time and space permit, to make the above, from the New Orleans Medical News and Hospital Gazette the occasion of extended remark; but as a substitute for these, we here collect a few of the opinions in relation to the subject, which come under our observation daily while engaged in collecting matter for our Lectures on Comparative Anatomy in the Medical College of Georgia. In doing so, we leave the reader to draw the plain inferences in regard to the Hygienic influence of the course hinted at, though not recommended, by the Boston Medical and
Surgical Journal, on whose article the short comment is made. We refer, of course, to the pernicious practice of feeding upon raw meat, especially in a Southern climate.

When we read the following, from which we learn not only the immense fecundity, but also the great tenacity in the lives of these parasites, we cannot but be thoroughly penetrated with the conviction that it is of the first importance that our animal food, or at least some kinds of it, should be *thoroughly cooked* before entering our alimentary organs.

We copy first from *Prof. Owen's Lectures on Comparative Anatomy of Invertebrate Animals*:

"The ancient philosophers styled man the microcosm, fancifully conceiving him to resemble in miniature the macrocosm or great world.

"Man's body is unquestionably a little world to many animals of much smaller size and lower grade of organization, which are developed upon and within it, and exist altogether at the expense of its fluids and solids.

"Not fewer than eighteen kinds of parasitic animals have been found to infest the internal cavities and tissues of the human body; and of these, at least fourteen are good and well established species of Entozoa." (Lect. IV., p. 57.)

* * * * * * * * * *

"The evidence of the fertility of the compound cestoid Entozoa was sufficiently marvellous. That which I have now to adduce, from a calculation made by Dr. Eschricht in reference to the *Ascaris lumbricoides*, the commonest intestinal parasite of the human species, is scarcely less surprising. The ova are arranged in the ovarian tubes like the flowers of the plantago, around a central stem or rachis. There are fifty in each circle; that is to say, you might count fifty ova in every transverse section of the tube. Now the thickness of each ovum is \( \frac{1}{500} \) of a line, so that in the length of one line there are 500 wreaths of fifty eggs each, or 25,000 eggs! The length of each ovarian tube is sixteen feet, or 2,304 lines, which, for the two tubes, gives a length of 4,608 lines. The eggs, however, gradually increase in size, so as to attain the thickness of \( \frac{1}{150} \) of a line; we therefore have, at the lower end of the tube, sixty wreaths of ova, or 3,000 ova in the extent of one line. The average number, through the whole of the extraordinary extent of the tube, may be given at 14,000 ova in each line, which gives sixty-four millions of ova in the mature female *Ascaris lumbricoides*!

"The embryo is not developed within the body in this species: the ova may be discharged by millions; and most of them must, in large cities, be carried into streams of water. An extremely small proportion is ever likely to be again introduced into the
alimentary canal of that species of animal which can afford it an appropriate habitat. The remainder of the germs doubtless serve as food to numerous minute inhabitants of the water; and the prolific Entozoa may thus serve these little creatures in the same relation as the fruitful Cerealia in the vegetable kingdom stand to higher animals, ministering less to the perpetuation of their own species than to the sustenance of man.” (Lect. VI, p. 110.)

And in another place he remarks:

“Both, however, (the Bothriocephalus and Tenia,) agree in presenting the most extensive development and preponderance of the generative system that is known in the Animal Kingdom. In fact there is scarcely space left in the hinder joints of the tape-worms for the organs of any of the other systems.”

“It has been proved that the mature Entozoa will resist the effects of destructive agents, as extremes of heat and cold, to a degree beyond the known powers of endurance of the Rotifera, and which would be truly surprising were not the simplicity of the organization of the Entozoa taken into account. A nematoid worm has been seen to exhibit strong contortions—evident vital motions—after having been subjected above an hour to the temperature of boiling water, with a codfish which it infested; and, on the other hand, Rudolphi relates that the Entozoa of the genus Capsularis, which infest the herrings that are annually sent to Berlin, hard frozen and packed in ice, do, when thawed, manifest unequivocal signs of restored vitality. If, then, the fully developed and mature Entozoa can resist such powerful extraneous causes of destruction, how much more must the ova possess the power of enduring such without losing their latent life.”

We find in the Eclectic Magazine, March, 1857, p. 293, the following, from the London Review. It is given in a review of Dr. Carpenter’s recent work “The Microscope and its Revelations.” As it contains much of both interest and instruction, we copy it in accordance with the principles of our motto—“Je prends le bien où je le trouve.”

“Some extraordinary facts connected with the life of intestinal worms (Entozoa) have until recently perplexed orthodox philosophers: one especially anomalous example being more puzzling than the rest. A few examples of a curious worm, the Oysticerous oculi humani, have at long intervals been found in the anterior chamber of the human eye. From the size of the animal it is almost impossible that it should exist in any man’s eye without attracting his attention; and, from the inconvenience such a guest would occasion, it is equally improbable that the case would fail
to reach some medical man who, from its extreme rarity, would place it upon record in the medical journals. But, as just observ-
ed, the creature only appears on rare occasions. Dr. Mackenzie, of Glasgow, removed one from the eye of a patient some twenty-
five years ago; and we believe that a second, which came under
our notice a few years since, ultimately reached the same experi-
enced oculist. The question for solution is an obvious one. How
could such creatures be transmitted by the ordinary methods of
multiplication? Even had the successive instances occurred in
members of one family, (which they did not,) it would be difficult
to explain the preservation and transmission of the ova from one
individual to another, at the same time leaping over a quarter of a
century, "Lineal succession," say the advocates of spontaneous
generation, "is here out of the question;" and it was not very
easy for their opponents to explain the anomaly.

"But not content with asserting the anomalous origin of this
Entozoon, and its independence of the ordinary laws of reproduc-
tion, the attempts was made to invest the heresy with an atmos-
phere of philosophy, by advancing an hypothesis accounting for
the origin of such objects. Recognizing the vitality of each part
of man's animal organism, they contended that some portions of
his frame could become detached from the rest without losing their
inherent life; and that, after their separation, they became devel-
oped into independent creatures, endowed with all essentials of
individual animals. The supposition was not wholly devoid of
support from anomalous things occurring elsewhere; but the true
history of the entire race of Entozoa has recently been studied by
several continental naturalists, especially M. Seebold; and by his
masterly investigations the fallacy has been thoroughly exploded.

"It appears, from these researches, that the Entozoa, or intestinal
worms, pass the early part of their life in the body of one animal,
but complete their existence in that of some wholly different spe-
cies. Thus, the tapeworm found in the alimentary canal of the
human subject, spends its early, larval life in the liver, brain, or
other organs of some of the lower animals on which he subsists,—
especially the sheep and the pig. A similar worm, found in the
cat, commences its existence in the body of the rat and the mouse;
while the parasite of the dog spends its youth in the interior of the
rabbit and hare. The larval forms occurring in these animals
have long been known and described as so many distinct species,
their very close relation to the tapeworm being wholly unsuspect-
ed; but now their history is clear enough. The perfect worm can
alone produce eggs, which it does in vast numbers, but which un-
dergo no further development in the intestine of the animal in
which the worm resides. They are conveyed along with the ma-
nure to pastures; their marvellous vitality enabling them to sur-
vive the accidents of flood and field. Sooner or later they are
taken up by some of the grazing quadrupeds along with their
vegetable food, and are thus transferred to the animals stomachs, where warmth and moisture quicken them into active life. The germs now escape from the eggs, and become small worm-like larvae, each with a bladder at its tail, and a circle of cutting-hooks at its head. By means of the latter they penetrate the various tissues of the animal's body; some reaching the brain, some the liver; whilst there is nothing to prevent an odd wanderer from reaching any part of the body which is their temporary home. In this stage, as well as in the earlier one of ova, these objects marvellously resist destructive agencies. They accompany the sheep's head into the pot, and lurk in the mutton frizzling in the pan; but, phoenix-like, they often survive the ordeal. The digestive powers of living stomachs fail to digest them. The cat eats rats and mice; the dog consumes the wild animals of the field and the offal of the shambles; man enjoys his mutton and his pork, and the tapeworm larvae find their way to a resting-place. Their further development is now completed; they produce eggs by untold myriads; the cycle of worm-life has been run, and with the ova commences a new generation.

"How much is to be learned from this history! In the first place it gives spontaneous generation its death-blow. Cysticercus oculi humani is no larger a marvel. The two men referred to had eaten the larvae along with their pork or mutton, as myriads have done, are doing, and will do, to the end; but the larvae they consumed, instead of remaining in the bowel, had, by a rare accident, found their way to the interior of the eye, where they were seen as well as felt, and consequently attracted notice. Had they remained in the alimentary canal, they would merely have grown unobserved into tapeworms. What they would have become, had they not been removed by operation from the visual organ, it is impossible to say. Their limited accommodation might have arrested their development, and compelled them to remain larvae, as tadpoles are said to continue tadpoles when excluded from the light.

"A practical idea is also suggested by these discoveries. It is known that the rot in sheep, and similar diseases in cattle, arise from the presence of these cysticerci and their allies, these worm larvae, in the bodies of the affected animals. The dog is, in all probability, the active agent in diffusing the multitudinous germs of these pests of the agriculturist. It has been observed that cattle fed in stalls and pens, dispensing with the aid of dogs, are less liable to such affections than those reared in the open plain; and as the dog appears to play his part in diffusing the noxious germs, the propriety of dispensing with his services at once suggests itself. By so doing the grazier will materially improve his chance of escaping the rot and similar evils. As for us poor bipeds, we cannot subject all the contents of our larder to microscopic inspection in chase of Cysticerci and Echinororhynchi—nuisances with
armed heads and ugly names. Our only resource is to avoid half-cooked meats. We must see that the cook sufficiently roasts the mutton, or risk being plagued by the doctor with his armoury of turpentine, kousso, and oil of male fern."

H. F. C.

Galactirrhcea—its Treatment, etc. By J. W. Beech, M.D., of Coldwater, Mich.

Writers upon the peculiarities of the human female and her specific diseases, seem to have paid but little attention to the causes, effect and treatment of redundant lactiferous secretion. Although by no means a common deviation from health, its occasional occurrence, the grave results which accompany its march, or follow in its wake, and sparcity of authority in the current medical literature, afford sufficient excuse for our penning a few remarks upon the subject. Regretting that we have not at hand a more extensive collection of works, in which we should expect to find the disorder fully treated, we are aware that we hazzard much among the more favored, who may have elaborate and practical treatises at command. Professional duty has frequently required us to investigate its practical bearings, and, oral inquiries from some professional friend, encourage me in this communication. Excessive lactation may make its appearance in the latter months of pregnancy. If profuse it seriously impairs the energy of the "enceinte," increasing itself from the want of exercise, and seclusion, to which young and sensitive females are apt to resort, in fear of the caustic tongue of gossip. Impassioned connubial fondling may be the exciting cause; and abstinence—a sufficient remedy. Even in this case, if the secretion has been copious for some weeks, it may require medication, very similar to that applicable post partum. Venesection is frequently important, which we have not deemed requisite after delivery. Neither do we advise stimulating topical applications, as we shall propose in passive galactirrhcea, post partum, lest the uterus be sympathetically aroused to contraction. We have ventured to paint the upper half of each mamma with tr. Iodine, once in 24 or 48 hours, with none but good effects. Antiphlogistic dietetic regimen, abundance of exercise in open air, mild hydrogogue cathartics; "et id omne genus," are generally indicated at first, and in full habits. Later, tonics and astringents may be prescribed, some of which will be hereafter named.

After delivery, this difficulty seldom presents itself in a noticeable degree, until after the first week, or upon the cessation of the lochia. The grand panacea mammarum, of Prof. Dewees— vinegar and water, at low temperature—is our first, and often only remedy. If the lochia have suddenly ceased, and there is inordinate arterial action, venesection would be safer than to run the risk
of another metastasis of excitement. Brisk cathartics, tepid coxae-luvia, stimulating pediluvia, fomentations to the abdomen, sinapisms to the lumbar and sacral regions, or to the inner sides of the thighs, naturally come to the mind as important adjuvants. Sinapisms should not remain on one place more than 20 or 30 minutes, but may be repeated three or four times a day. Restricted diet, and cold water or ice, to quench thirst, are equally important. When the patient "has gained the feet," the physical annoyance of wet and souring clothes, etc., may be sufficient to induce a call for the attention and advice of a physician, while all other functions are normal. The clothing over the breast should be arranged in the coolest and lightest possible manner, as much exercise by walking as can be endured, and one of the following pills may be taken before the morning and evening walk:

- Antimoni Tartarizati, iij.
- Syrup. qs. Fiant pil. No. xxiv.

By these means, other organs may be excited to the relief of the mammae, and when the necessity for their extra secretion has ceased, they will more readily correct themselves than those newly called into functional life. It is remarkable what an amount of rich, nutritious material will flow from the breasts of some wasted women, whose emaciated and wasted limbs can scarcely sustain their own weight, or hold the infantissimus, who preys upon their vitality. The actual demands of the offspring by no means limit the supply. Cloths, glasses, sponges, and manipulations ("trayant") must be resorted to, for purposes of cleanliness and partial comfort; while constipation, aneuressis, excessive thirst and epithelial lesions with their attendant evils, render life miserable and doubtful.

This cause of debility is often entirely overlooked, or the changes in the secretion mistaken for the effect, and much time and strength wasted in futile attempts to restore other functional derangements without restraining this, until, in despair, the infant is weaned; when, if cachexia is not too far established, gradual reparation occurs.

We have mentioned changes in the lactiferous secretion, and it is not often that it continues of perfect quality, in galactirrhoea. The attenuated limbs, and venter tumescens of the recipient prove it deficient in alimentary compounds. Casein, butter, and sugar, are not in proper proportion to each other, or to the serum. In the absence of positive analyses, we can only presume (and we think safely) that the lacteal fluid resembles that of pregnancy and menstruation; and which have been described with so much care and skill, by Dr. N. S. Davis, in his report to the "American Medical Association," upon changes in the composition of the milk of the human female, produced by menstruation and pregnancy, &c. Well directed efforts to guide fluid excrements to
their proper outlets, at the same time restraining lactation, as suggested before, early in the attack, will often succeed to entire satisfaction.

In the treatment of a more obstinate case, according to the various derangements which may have resulted, nearly the ordinary "therapeia" are required; the varieties of which, it would be supererogation to suggest. Care must be taken lest the mammae convert all to the use of the child. Cool applications, used steadily, so as not to produce shock, or encourage reaction; systematic counter-irritation, adroitly managed for revulsive effect; and diet apportioned in quantity and quality, to the existing physical, or pathological condition of the patient, and her lacteal secretion, are "sine qua non." Exercise and mental diversion are not less important than for other valetudinarians, Coitus interdicetur. The family physician should not see a mother losing too much of her usual rotundity, without giving warning of the danger, investigating the cause, and advising proper hygienic regulations. The people seldom suspect the amount of mischief which may result from hyper-secretion, and are not aware of its amenability to control.

Gallic acid and decoction of Statice, have given us much satisfaction as internal remedies for specific action, before debility has become marked. The latter is also one of the most valuable washes in stomatatis nutriti, which, as we have hinted, often results from galactorrhœa. In the passive forms of this affection, astringent, tonic, and gentle stimulants must be used with care to prevent constipation. Acid Sulph. Aromaticum, or the acid saline solution cum quinia, are most valuable remedies. Ferruginous preparations are frequently, but we think not always, indicated. We were formerly partial to Tinct. Ferri. Muriatis, but it is more apt to meddle with other functions than Ferri. Sulphas. "Liquor Potass. Arsenitis," largely diluted with syrup or aqua destillata, has given us much satisfaction as an alterative tonic in inveterate cases.

When the stomach has become extremely irritable, cold infusion of gentian will generally be borne and produce tolerance of more active tonics, stimulants and food. Argent. Nitræ, with Ext. Conii, in pills, and where acidity prevails, Heberden's prescription in Commentary on "Linguae et Oris Dolor," are well adapted. ("R. Testæ Ostr. 3. ss., Rad. gentianæ gr. iv., Hiera. pier. gr. ss., morning and evening.")

The food must be varied according to circumstances, but should not consist of many kinds compounded. Animal jelly, albumen and fibrine in the most available forms for feeble assimilative organs, with but little drink, and that cold. But few condiments will be borne. If the stomach will bear it, a small quantity of cream cheese will be better than butter. Topical applications, in the form under present consideration, may be of more stimulating
kinds. Tr. Iodine, applied with C. hair pencil twice a day. Solution of Ammonia Murias, in diluted vinegar, or bay rum, with lint or cloths; Camphor plaster, (B. Mel. Roseæ 3. j.; Camph. Pulv. 9. ij. Misc.) to be spread on leather to fit one-half of each breast. Hot pediluvia, sinapisms to the sacrum and feet, or resinous plaster worn in the hollows of the feet are good derivatives.

Bathing, frictions to the general surface, and all other measures to encourage capillary circulation, have no less influence than in other abnormal conditions. We cannot think that the use of narcotic extracts or lead lotions is safe for either mother or child, unless watched more closely by competent medical attendants than is usually convenient.

Belladonna has been recommended by high authority, but in hyperaemia it is far inferior to many safer remedies, and in anaemia or passive galactirrhœa, its usual specific action would be contra-indicated.

When the infant has been removed from the patient entirely, there is less objection to the use of Belladonna, or leaves of Stramonium, from which we have seen great relief.—[Peninsular Jour. of Medicine.

Case of Gastrotomy.

Dr. John H. Bayne of Prince George county, Maryland, reports a successful case of Gastrotomy in a robust servant woman, 25 years of age, in labor with her fourth child. Her pelvis was evidently contracted, and her labors had been lingering from this cause. She had now been in labor for two days, and Dr. B. was sent for, and told that the patient had experienced some hours before an excruciating pain in the epigastrium, accompanied with a peculiar tearing sensation; followed by entire cessation of pain, and expulsive uterine efforts; pulse 130, dyspnœa and prostration; os uteri fully dilated, vertex presenting, and high up. She soon became comatose, with great tendency to collapse. Head of foetus seemed to be rapidly receding, and in a very short time the entire contents of the uterus escaped into the peritoneal cavity; child then felt distinctly through abdominal parietes, so high up as to interfere with the action of the diaphragm; vaginal examinations now recognized laceration through the fundus. The Doctor selected the operation of gastrotomy, and performed it promptly, without an anaesthetic. He divided the parietes from the umbilicus to near the pubes through the linea alba down to the peritoneum. This was cautiously opened, when a quart of sero-sanguinous fluid gushed out. No haemorrhage, but a large foetus which was removed with great despatch. No particular allusion to the placenta made. Wound united with interrupted sutures, and complete cicatization took place in twelve days, notwithstanding
symptoms of sharp peritonitis. For several weeks, a dark, grumous, purulent, offensive discharge flowed from the vagina, unaccompanied by constitutional disturbance.

In two months time she resumed her duties as cook.—[American Jour. of Med. Sciences.

Sciatica.—The severe pains of this and other forms of neuralgia are relieved by the endernic use of morphia. The plan of use advised is, to apply a small blister the size of a quarter to a half dollar. Vesication being produced, the skin is removed, and the surface sprinkled over with a half grain to a grain of morphine mixed with powdered white sugar. The application may be repeated two or three times a day for six or seven successive days, the blister being kept open by irritating dressings. The proper constitutional treatment being used, this remedy is said to have relieved a large majority of the cases of sciatica in which it has been tried. The blister is drawn as near to the seat of pain as possible.—[Memphis Med. Recorder.

EDITORIAL AND MISCELLANEOUS.

Medical College of Georgia.—The Dean’s Report, given below, develops a most encouraging condition in the affairs of the Medical College of Georgia. We have still continued to hold well our own—even in the multiplication of medical schools throughout the country. In a review of our whole history there is little presented to give rise to discontent or regret, and much to incite gratitude and heartfelt gratulation. Our Alumni every year increasing, both in number and influence, are among our best reliance for the continuation of that gratifying success which we have enjoyed for more than a quarter of a century.

While we look with serene satisfaction upon our own happy condition, we here sincerely protest that we are free from any feeling of jealous regret at the success of other Institutions. There is, we confess, a proper feeling of competition among us, but none of rivalry or detraction: we wish all success, and will ourselves endeavor to command our portion of it.

The Faculty report to the Trustees of the Medical College of Georgia that there were in attendance on the Course of Lectures which has just terminated, One Hundred and Sixty Students—of whom one hundred and five were from Georgia, twenty from South Carolina, twenty-seven from Alabama, three from Mississippi, three from Texas, one from Tennessee, and one from Florida. The Faculty are pleased to state that the general deportment of the Class was unexceptionable, and that the examinations gave satisfactory evidence of their strict attention to their duties. The
Faculty take great pleasure in asking the Trustees to confer the Degree of Doctor of Medicine upon the following named gentlemen—viz:

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John Venable, M.D., of Jackson Co., Georgia, was admitted adeundem gradum.

All of which is respectfully submitted.

I. P. GARVIN, M. D., Dean pro. tem.

Medical College of Georgia, March 3rd, 1857.

Meeting of the Medical Society of the State of Georgia.—We introduce the following, in order to remind the several Committees and appointees of the various duties assigned each, and which are to constitute the work of, and to give interest to, the approaching meeting on the second Wednesday of this month (April) in this place—Augusta. We cannot add anything more to what we have already said; but we repeat, that we would urge, most earnestly, our friends at a distance to come, and their brethren here will give them a hearty welcome:

“The Committee on Business, consisting of Drs. Dugas, Green, Kollock, Flewellen and Way, reported the following subjects and essayists, for the next annual meeting:

1st. Dr. P. M. Kollock—On the Treatment of Vesico-vaginal Fistula.
2nd. Dr. J. G. Westmoreland—What is the difference between the “Country fever” of the sea-board, and the Remittent fevers of the middle counties of Georgia?
3rd. Dr. H. F. Campbell—Are there any means by which the extension of Yellow fever in the interior may be prevented?
5th. Dr. L. D. Ford—On the Connexion of Pneumonia with Remittent fever.
6th. Dr. C. B. Nottingham—On the Diseases of the Spinal Marrow.
7th. Dr. F. C. Ellison—On the Relation of Epidemic Dysentery to Malarial fevers.
8th. Dr. W. M. Chartres—On the Relation of Acute Meningitis to Malarial fevers.
9th. Dr. E. F. Way—On the Pathological difference between Acute, Articular and Chronic Rheumatism.
10th. Dr. Ira E. Dupree—On the Treatment of Prolapsus Uteri.
11th. Dr. Ebon Hillyer—Under what circumstances is Trepanning justifiable?
13th. Dr. R. D. Arnold—The Pathology and Treatment of Erysipelas.

The selection of Orator for the next annual meeting being next in order, Dr. G. F. Cooper was unanimously elected, and Dr. R. C. Mackall his alternate.

The City of Augusta was selected as the next place of meeting. The Committee of Arrangements are Drs. Campbell, Harris, Doughty, Walton, and Phinizy.

At a late hour, on motion, the Society adjourned, to meet again at 10 o'clock A.M., on the second Wednesday in April, 1857, in the city of Augusta.

F. C. ELLISON, Sec'y.

THE AMERICAN MEDICAL ASSOCIATION.—We find in the Nashville Journal of Medicine and Surgery the following which we present to our readers, and hope they will embrace the opportunity now offered them of attending this Medical Congress of their nation, at the time when the place of meeting is so accessible.

"The tenth meeting of the Association will be held at Nashville, on Tuesday, May the 5th, 1857.

"All bodies entitled to representation in the Association, would very much further and facilitate its affairs by sending lists of their representatives at an early period to the undersigned."

ARTICLE SECOND OF THE CONSTITUTION.

"The members of this Institution shall collectively represent and have cognizance of the medical profession in every part of the United States, and shall hold their appointment to membership either as delegates from local institutions, as members by invitation, or as permanent members.

"The Delegates shall receive the appointment from permanently organized medical societies, medical colleges, hospitals, lunatic asylums, and other permanently organized medical institutions in good standing in the United States. Each delegate shall hold his appointment for one year, and until another is appointed to succeed him, and shall participate in all the business and affairs of the Association.

"Each local society shall have the privilege of sending to the Association
one delegate for every ten regular resident members, and one for every additional fraction of more than half this number.

"The faculty of every regularly constituted medical college, or chartered school of medicine, shall have the privilege of sending two delegates. The professional staff of every chartered or municipal hospital containing a hundred inmates or more, shall have the privilege of sending two delegates; and every other permanently organized medical institution of good standing shall have the privilege of sending one delegate.

"The Members by Invitation shall consist of practitioners of reputable standing, from sections of the United States not otherwise represented at the meeting. They shall receive their appointment by invitation of the meeting, after an introduction from any of the members present, or from any of the absent permanent members. They shall hold their connection with the Association until the close of the annual session at which they are received, and shall be entitled to participate in all its affairs as in the case of delegates.

"The Permanent Members shall consist of all those who have served in the capacity of delegates, and of such other members as may receive the appointment by unanimous votes.

"Permanent members shall at all times be entitled to attend the meetings, and participate in the affairs of the Association, but without the right of voting; and when not in attendance, they shall be authorized to grant letters of introduction to reputable practitioners of medicine residing in their vicinity, who may wish to participate in the business of the meetings, as provided for members by invitation.

"Every member elect prior to the permanent organization of the annual meeting, or before voting on any question after the meeting has been organized, must sign these regulations, inscribing his name and address in full, specifying in what capacity he attends, and if a delegate, the title of the institution from which he has received his appointment."

Resolutions passed at the eighth meeting of the Association, held at Philadelphia:

"Resolved, That no State or local society shall hereafter be entitled to representation in this Association that has not adopted its code of Ethics.

"Resolved, That no State or local society that has intentionally violated or disregarded any article or clause in the code of Ethics shall any longer be entitled to representation in this body.

"Resolved, That no organization or institution entitled to representation in this Association, shall be considered in good standing which has not adopted its code of Ethics."

Resolution passed at the ninth meeting, held at Detroit:

"Resolved, That any new medical institution not heretofore represented in this body, be required to transmit to the Secretary, with the credentials of its delegates, evidence of its existence, capacity and good standing."

Medical presses throughout the Union are respectfully requested to copy the above resolutions at their earliest convenience.

ROBT. C. FOSTER,
Secretary Amer. Med. Ass., Nashville, Tenn.
The following Letter, which we here present to our own readers, was prepared for, and has been communicated to The London Lancet:

A CLAIM OF PRIORITY IN THE DISCOVERY OF, AND ALSO THE NAMING OF THE EXCITO-SECRETORY SYSTEM OF NERVES. BY HENRY FRASER CAMPBELL, M. D., of Augusta, Georgia, U. S. A., Member of the American Medical Association, Professor of Comparative Anatomy, &c., in the Medical College of Georgia, and Senior Editor of the Southern Medical and Surgical Journal.


To MARSHALL HALL, M. D., of London, F. R. S., &c.

My Dear Sir—In the number of the London Lancet republished in this country, for March, 1857, (present month,) I have just read a paper from your distinguished pen; and in this paper you announce a system of Excito-Secretory nerves, in the following connection and in the following terms:

"In a memoir read at the Royal Society in February 1837, I announced the existence of an Excito-motory system of nerves.

"I believe I may now announce a system or sub-system of Excito-secretory Nerves, not less extensive."

As the above announcement is here made in close relation with a discovery long admitted to be your own—viz., that of the Excito-motory system of nerves, and inasmuch as in your subsequent remarks, you attribute the proposition to no one else, I am left to infer that it is deemed by you an original deduction from the admitted facts of Anatomical and Physiological Science, as developed by observations and experiments during the last and the present century. Some of these last—viz., the Experiments of Mons. Claude Bernard, of Paris—you adduce with the apparent intention of fortifying the views you here express.

Finding in none of your communications upon this interesting topic, any mention made of my name or of my records, I am, with regret, impelled, from considerations of courtesy to you and of justice to myself, to call your attention to the registration of my own labors in the same important field. I will, however, first direct you particularly, though briefly, to several portions of your own communication, in order that they may be placed in convenient juxtaposition with my own records, without giving the trouble of each time referring to the pages of the Lancet:

"But the most remarkable proof of the doctrine which I am endeavoring to unfold is furnished by the brilliant discovery and skilful experiments of M. Cl. Bernard"—
And you here refer to his well known experiments on the Pneumogastric nerve in its relation to the secretions of the Liver, published in his Lectures on Experimental Physiology, during the winter session of 1854 and 1855. *

In the earlier part of your communication (March, 1857) you thus announce the addition of this, as you suppose, new sub-system, to what you term the "Diastaltic Nervous System," the term "henceforth" apparently being used to date the initial moment of an era:

"Henceforth the Diastaltic Nervous System, must be divided into two sub-systems:

I. The Excito-motory.
II. The Excito-secretory.

"The former is extended to the entire muscular system; the latter is diffused over the general system as the blood is diffused over the system."

Again, in reference to the Pathological Relations of the Excito-secretory system, you remark:

"The Pathology of the Excito-secretory sub-system remains to be investigated and traced. A partial keen current of air falling on any portion of the skin may induce inflammation in any susceptible internal organ. An extensive burn or scald is apt to produce pneumonia."

And as my last quotation for the present:

"But here I close this brief communication. My present object is only to draw the merest sketch of this vast subject which demands a most extensive and cautious series of experiments and observations. The efforts of many laborers, through many years, will be required fully to develop the two sub-systems of the Diastaltic nervous system.

"I propose shortly to treat this important subject at greater length and with more details."

Now, my dear sir, by a reference to the following series of records, running through a period of nearly seven years, you will at once perceive that the Excito-secretory function of the nervous system has been the subject of earnest and diligent inquiry, and also of plain record, with me, for a length of time far anterior to that, at which either yourself or Mons. Bernard had published anything on the subject.

You will herein also perceive, that this system of nerves has been plainly recognized and set forth as considered in its relations to Pathology, through which, indeed, its Physiology has been mainly deduced by me. And, lastly, that this system of nerves, before plainly stated and amply discussed, was, as early as May 5th, 1853, in the presence of the American Medical Association, the highest tribunal in the Medical Sciences within my reach.

publicly named by me the Excito-secretory: and that too in juxta position with and contradistinction to, your own discovery, viz., the Excito-motory function.

This name or verbal combination, then for the very first time printed in the English language, or, indeed, in any other language, had not, so far as I can learn, after continued and interested inquiry on my part, been printed a second time, until taken from your own recent manuscript, it appears at the heading of your paper in the March number of the London Lancet, (American edition,) and thus becomes the occasion of the present communication.

Below, I now present you with certain passages from an article on "The Influence of Dentition in producing Disease," read before the Medical Society of Augusta, Georgia, in May, 1850, and afterwards published in this city, in the Southern Medical and Surgical Journal, a periodical circulating extensively and exchanging with all the medical journals in this country and with many of those of Europe. Here you will now find these several records presented to you seriatim and in that order, together with the dates and accompanying circumstances, in which they were long ago successively presented to the Profession.

May 2nd, 1850. "Dr. Henry F. Campbell read an Essay on the Influence of Dentition in producing Disease."—[From Minutes of a meeting of the Medical Society of Augusta, Georgia."

I will not quote from or remark upon the Essay now, but fully hereafter as published below.


Here you will find that I have in the beginning, sketched prominently the two orders of phenomena which occur during the period of Dentition, viz., the convulsive and the secretory, explaining the first easily enough, by a reference to the principles of Excito-motory action laid down by yourself; while the other set of phenomena I presented in such a manner as that from them, the Excito-secretory function of the nervous system became an obvious and an unavoidable deduction—by this means mutually establishing a physiological principle before scarcely ever broached or hinted at; and in the second place, leaving no chance to escape the necessary admission that this set of phenomena, before perfectly inexplicable to the Profession, could only be rationally interpreted by the admission of that very
Physiological principle. In doing this, "the two sub-systems," as you now term them, were, throughout, kept in close relation, but in decided contrast, the one being used, occasionally it is true, to illustrate the other, but never for a moment becoming confounded with the other—thus: "Now let us inquire how far these phenomena are dependent upon Dentition; and analogy with the Excifo-motory system will much assist us in our argument. We have seen that local irritation can through this system, produce convulsions by the reflex function of the nerves, the sensitive branches of the fifth pair becoming excitor to the motory spinal nerves; and so, may we justly infer, do these same branches, under certain circumstances, become excitor to the secretory filaments of the sympathetic, distributed so abundantly to the intestinal canal by a transmission of this irritation through the various ganglia with which it is connected."

You will also here see that the discussion is carried still farther into the pathological relations of the, then, new function, and that I have instanced nearly all those localities which you have recently adduced, and that I have considered those changes in the Blood while eliminating the secretions under nervous influence, which you, in your paper, designate by the word "methematomous," as in the following: "Thus the irritation at first produces simply an exaltation of the innervation of the secretory surfaces, and secretion is more active than normal, producing simple diarrhœa. A continuance of the irritation, alters the character of the secretion and we have the various morbid discharges observable during this period. This increase and change in the secretion are effected by the agency of the altered function of the nerve upon the arteries from which these secretions are eliminated."—(See Southern Medical and Surgical Journal, p. 331.)

Without further remark at present, I will lay before you that portion of this Essay which embodies my first record upon the Excito-secretory function of the nervous system.

"The period of Dentition has ever been regarded one of peculiar interest as well to the pathologist as to the practitioner. That certain diseases are more apt to occur during this season, few pretend to deny; but the amount of the symptoms, due to the irritation of teething, has been variously estimated, some attributing to this cause nearly all the ills to which infancy liable, while others ridicule the idea, that a process in itself so purely physico-logical and natural should be regarded ever a cause of disease.

"The object of our essay is to investigate impartially this important subject with the view of determining, as nearly as possible, to what extent the organism is affected by the evolution of the teeth. In doing so, it appears to us most rational, as a primary step in the investigation, to review briefly the phenomena of both normal and anormal dentition, with the view of finding the foundation of the pathogenic theory, if such exists, in the physiology of this process.

"The phenomena observed during easy or normal dentition may be briefly summed up as follows:—The salivary secretion is increased, the gums at
swollen, the mouth hot, and the child evinces a disposition to press every substance within its reach upon the gums, in order to relieve the irritation it here suffers. Later, the gums become more swollen and softer, the irritation more distressing, and, under certain circumstances, the mouth dry and slightly inflamed. The child becomes fretful; its sleep is disturbed and feverish, its bowels become loose, which latter symptom we frequently observe accompanied by nausea and vomiting. There is also described by some authors an irritation of the Schneiderian membrane, with increased secretion, marked by the child's rubbing its nose.

"Cases of abnormal dentition are brought more frequently under the cognizance of physicians, and their phenomena are hence familiar to every one. The above symptoms become exaggerated—some, which in normal dentition were of trivial importance, becoming so severe as to threaten the life of the patient. Thus the gently relaxed condition of the bowels, which in easy dentition was even beneficial, is now changed to diarrhea with disturbing termina and alarming emaciation. The salivary glands, which in easy dentition manifested their implication only by increased secretion, now become inflamed and swollen till finally their secretion is altogether arrested, leaving the mouth and tongue dry, parched and painful; and the nervous retfulness of the normal process is often replaced by actual fever, sometimes attended by the most terrific convulsions.

"We have here sketched hastily some of the more prominent phenomena of both easy and severe dentition, as we each daily observe in practice, and find reported by authors, and we do not adduce them at present as the direct results or consequences of the process, but only as its pretty constant concomitants. In referring to those symptoms hereafter in the course of our essay, we will necessarily enlarge upon and develop more fully some of their characteristics. Let us now, with a little attention, enter into an analysis of these concomitants of dentition, and endeavor to ascertain whether or not their origin may be found in the process itself. To this end, we will consider briefly the anatomy and physiology of the parts concerned in this important and often perilous process of evolution."

"From the above considerations we are induced to conclude that the convulsions are often produced by the irritation of dentition, and can be directly referred to this as the sole cause.

"We arrive now at a point in this somewhat obscure and much disputed question which perhaps affords more ground for doubt than any of the foregoing, viz., a consideration of the pathogenic influence of dentition in the cholera infantum or diarrhea so uniformly co-existent with this process. Unlike the convulsions, the analogy between which and certain known and established phenomena of the excito-motory system, which it is only necessary to refer to, and their operation is plain and intelligible, this new set of symptoms, if we refer them to the process of dentition, requires us to look yet deeper into the mysteries of our nervous organization, and to venture still one step further on the terra incerta of sympathetic interpretation.

"In order to apply our arguments, let us hastily review the foregoing investigation, that they may bear more fully upon this part of our question; and, firstly, we have seen that inflammation, pain, and irritation are produced locally by the process of dentition, evinced by restlessness, biting, &c. Secondly, we have seen that this local irritation can be transmitted by
excito-motory influence to other and distant parts of the body, manifested by convulsions. We have also endeavored to corroborate this latter opinion by a reference to the order of succession in the nerves in which this irritation occurs, and also by a comparison of these phenomena with other well understood and established analogous phenomena. Heretofore we have had to deal entirely with functions of the cerebro-spinal system of nerves; but to account for this second and more obscure part of our problem, we must look in vain to any direct anatomical connection between the fifth pair and the rest of this system of nerves. We are forced to seek out other connections, indeed somewhat more intricate and indirect, but fortunately no less legitimate and definable. We have now to consider a set of organs which, unlike the voluntary muscles, have no connection, or rather, we would say, emphatically, they have a connection, though indirectly, with the cerebro-spinal system. We mean the abdominal viscera, which we know are almost altogether supplied from the great sympathetic system of nerves. Now, in the prosecution of our inquiry it becomes necessary, to the elucidation of the question to trace out the same connection between the fifth pair and the sympathetic or secretory, as we did between the fifth pair and the cerebro-spinal or motory nerves, and then, should we succeed, we will briefly inquire into the bearing which this connection and its possible results may have upon our question.

"The connections between the fifth pair, the rest of the cerebro-spinal system of nerves and the great sympathetic, are so abundant and universal that it is only necessary to enumerate a few of them to illustrate the fact. Firstly, we have a connection in the ophthalmic or first division, by its nasal branch communicating with the ciliary ganglion; then in the superior maxillary, or second division, are branches of communication with Meckel’s ganglion; again, in the sub-maxillary ganglion, with the inferior maxillary or third division. So much for the fifth itself. Then we know that every one of the spinal nerves throughout the entire chord are connected to each sympathetic ganglion of the system, thus establishing communications the most abundant and intimate between these two systems of nerves. We know also that these ganglia distribute numerous branches to all the splanchnic viscera by plexuses which accompany the arterial trunks into the minute structure of these organs.

"Thus connected and distributed, this nerve presides over the important functions of nutrition and secretion, which office so characterizes it as to give it the name of the secretory system. In the physiology of the nervous system, there is no fact better established by anatomy and pathology, as well as by experiments on the lower animals, than this, that the sympathetic nerve, whatever else may be its functions, always forms a necessary element in the nutrient and secretory apparatus of all the splanchnic visceræ; and further, that upon its sanity depends the due administration of these two great functions. It is the nerve for the bloodvessels; "and," remark Todd and Bowman, "as secretion is mainly dependent on the normal nutrition of glands, it is reasonable to suppose that that function would be to a certain extent controlled by these nerves." And as early as the year 1732, Pourfour du Petit found that the division of the trunk of the sympathetic, opposite the fourth or fifth cervical vertebra in dogs, was followed very rapidly by great disturbance of the circulation of the eye-ball producing inflammation, flattening of the cornea, and finally destruction of this organ."
"The experiments of Dupuy upon the horse, wherein he severed this nerve at the superior cervical ganglion, also corroborate this statement; general emaciation here ensued, with an anasarcous condition of the limbs and an eruption over the whole cutaneous surface.

"In some experiments made by Dr. J. Reid, and reported by Todd and Bowman, in reference to the sympathetic branches supplying the eye, it was found that the effect of a section of this nerve was to produce an immediate injection of the conjunctiva. In one case, he observes, the redness of the conjunctiva took place in a few minutes after the section. It has been already stated, continue these great authors, that a section of the branches of the fifth nerve which supply the eye, is followed by ulceration and other signs of impaired nutrition in the eye-ball. But these changes do not take place for some time after the section of the nerve—generally many days elapse—and they are attributable to the presence of irritating particles which, owing to the insensible state of the conjunctiva, are suffered to remain in contact with the surface of the eye, giving rise to inflammation and ulceration of its textures. The effects of section of the sympathetic are immediate, and are probably due to a change produced in the blood-vessels, in consequence of the withdrawal of the accustomed nervous influence.

"We have now glanced sufficiently, we think, at the anatomy and physiology of the sympathetic system of nerves, to make the application of such points as are pertinent in the solution of our pathological problem. In its anatomy, we have seen its connections with all three of the divisions of the fifth nerve by ganglia, the connexion of these various ganglia with each other, as well as with the cerebro-spinal axis; and lastly, the distribution of branches from these ganglia, which are conducted by the arteries into every part of every one of the splanchnic viscera. In its physiology, we find it in entire charge of the important functions of nutrition and secretion, and that wherever these processes are effected, it is by the agency of this nerve alone upon the blood-vessels. And further, we have seen that pathology and experiments on lower animals establish its indispensableness to the due performance of these functions, and that whenever the supply of its innervation has been cut off from a particular part of the organism, that part immediately manifests symptoms of impaired nutrition and altered secretion.

"Now we are all aware that nearly the whole of the intestinal canal, or rather that portion between the stomach and lower part of the colon, receives no direct innervation from the cerebro-spinal axis, but is entirely dependent upon the sympathetic nerve for its supply of nervous influence of whatever kind it may enjoy, whether motory, sensory, or secretory, and consequently an impairment of the function of this nerve must necessarily correspondently alter its condition so far as regards all those functions with which this nerve endows it. The alteration in these functions would, of course, depend, in a great degree, upon the amount of impairment in the source of irritation; thus, as we have seen, if the supply is entirely cut off, the functions of the arteries seem in a great measure to cease, passive congestion occurs, and the parts inflame and ulcerate. Now we can also very naturally conceive of a condition of these nerves somewhat analogous to the above, yet intermediate between the entire interruption caused by section, and perfect health—a condition of embarrassed or of exalted innervation. Now this intermediate condition is exactly the state which, from the developments of the foregoing investigation, we feel that we are authorized
to affirm, is that which occurs in severe dentition, and that upon it is dependent the whole train of intestinal morbid phenomena observable during this process.

"That this, so far, is legitimately inferable, we do not think any one will deny. Now let us enquire how far these phenomena are dependent upon dentition; and analogy with the excito-motory system will much assist us in our argument. We have seen that local irritations can, through this system, produce convulsions by the reflex function of the nerves, the sensitive branches of the fifth pair becoming excitor to the motory spinal nerves; and so, may we justly infer, do these same branches, under certain circumstances, become excitor to the secretory filaments of the sympathetic, distributed so abundantly to the intestinal canal, by transmission of this irritation through the various ganglia with which it is connected. Thus the irritation at first produces simply an exaltation of the innervation of these secretory surfaces, and consequently secretion is more active than normal, producing simple diarrhoea. A continuance of the irritation, alters the character of the secretion, and we have the various morbid discharges observable during this period. This increase and change in the secretion are effected by the agency of the altered function of the nerve upon the arteries from which these secretions are eliminated. Now, when the innervation of these arteries is still further embarrassed by the long continuance of the reflected irritation, the state of things nearly approaches that observed in Dupuy’s, Reid’s and Pourfour du Petit’s experiments of actual destruction of the nerve, and we have ulceration of the intestinal mucous membrane; all these phenomena being the result of various degrees of injury sustained by the sympathetic nerve.

"It may here be asked, why should the branches supplying the intestinal mucous membrane become more implicated than any other portion of the sympathetic system?—and why do not similar irritations of the fifth nerve produce like results in the adult? To the first of these questions we answer, that most probably the other portions are implicated, but the manifestations of such implication are greater and graver here than elsewhere, because these are the sole sources of innervation to the viscus. The other organs are in all probability implicated, but receiving a certain amount of innervation from other sources, most of their functions not being entirely secretory, are still, though imperfectly, carried on. But in the intestinal canal the case is far different; the requisitions made upon it are of a nature that it has need for no other innervation than that of the sympathetic system. Its functions are secretion and nutrition for the whole animal organism, and when these are impaired, its primary, indeed its only intents are altered or completely nullified. The second question is answered by the greater development of this system in the growing than in the adult individual, for the purpose of supplying the more active nutrition and secretion at that time necessary. We know that disease is more apt to occur in many parts of the body during this period; this is the general admission. Thus, according to many authors, among whom are West, Churchill, &c., pneumonia and bronchitis are more apt to attack children during dentition, than at any previous or subsequent period. Cutaneous eruptions, and many other aberrations of secretion occurring during this period, but serve to corroborate our theory of the origin of the morbid intestinal secretion. The increased vermicular action and tormina attending this affection, find a ready explanation in the fact, now well established, that the sympathetic
receives both motor and sensitive filaments from the anterior and posterior roots of the spinal nerves, endowing the organs of their distribution, to a certain degree, with corresponding susceptibilities.

"In conclusion, let us define the position which, at the end of our investigation, we feel warranted in assuming. They are the following: that in the anatomy and physiology, as well as in the dependent analogies of the process of dentition, we find ample ground for the opinion that the diseases pertaining to this period, may be dependent, and in many cases are entirely so, upon the local irritation attending the process being transmitted through either the cerebro-spinal system of nerves, producing convulsive diseases in the motory apparatus, or through the sympathetic, causing derangements in the secretory organs, particularly the alimentary canal, by the sway which it exercises over the arterial system, from which these secretions are eliminated. And the practical deductions to be drawn from these conclusions are,—that we should not be remiss in taking every measure to arrest or lessen this local irritation, either by free and repeated incisions of the gums, or by the judicious administration of appropriate remedies, among which we have found opiates to prove most safe and efficient.

"It would indeed be an improving, and not an unpleasing exercise, to trace out more fully the connexions between the local irritation and the various diseases occurring during the period of dentition, to take more extended views of the abundant analogies and comparisons afforded by this truly prolific subject; but time and the special object of our essay, do not warrant the indulgence in speculations so general and discursive.

"Our object has been to trace the connexion between this process and diseases in general, only in so far as it has a bearing upon the establishment of one principal question in reference to the diarrhoea of this period. The subject has been only glanced at, and deserves a fuller and more extended treatise; wherein all the concomitant diseases of dentition, as dropisy, erupions, and the many infantile neuroses, should be fully and carefully discussed. Such views, we would earnestly invite from some abler and more philosophic member of the profession."

The circumstances of my second published record are the following:—At the fifth annual meeting of the American Medical Association, (1852) held in Richmond, Virginia, not being present myself, I was appointed a special committee, to prepare an essay on the subject of Typhoid Fever, which essay was read before that body in New York, in May, 1853. In this paper, I took occasion to consider carefully, the ganglionic system, in the support of the position therein assumed, that all Typhoidal Fevers were manifestations of disease through the secretory system of nerves. While thus engaged, my attention was called to certain experiments performed by Mons. Claude Bernard, of Paris, and made public through the Gazette Médicale, and translated in the New Orleans Medical Register, together with his deductions therefrom.

On examination, finding that they contained, what at that time, appeared to me, the germ of a theory similar to mine, recorded in June, 1850, though he refers to them as "a set of phenomena identical with those
occurring in the cerebro-spinal system of nerves, denominated Excito-motory by Dr. Marshall Hall," while I had deduced this Excito-secretory system (in 1850,) saying "analogy with, the Excito-motory system will much assist us in our argument;" and further, inasmuch as this distinguish-ed gentleman's report presented itself to my mind at that time, somewhat in the form of an announcement, I deemed it advisable to appeal to our National Medical Congress, in the following brief memoir, praying permis-sion to record before them, my claim to priority, and also my protest against the palm of originality attaching to Mons. Claude Bernard.

[Abstract from the Transactions of the American Medical Association: Meeting held in the City of New York, May 3rd, 1853.]

Dr. Campbell, of Georgia, submitted a paper, on a question of priority in reference to the discovery of the reflex relation subsisting between the cerebro-spinal and sympathetic system of nerves.—See Minutes of Sixth Annual Meeting, vol. vi., page 49.

"On the Sympathetic Nerve in Reflex Phenomena. By Henry F. Campbell, of Georgia.

"In a recent number of the Gazette Medicale appear some remarks* by M. Cle. Bernard, on the Reflex Actions of the Nervous System. In these, he refers one order of such reflex phenomena to the sympathetic system of nerves, and illustrates, by experiments upon the frog, as well as by reference to many of the acts of nutrition and secretion, that such a relation exists between the cerebro-spinal and ganglionic system of nerves, as well as between the excitor and motory portions of the cerebro-spinal system. Or, in his own words, "two kinds of nerves are requisite for the production of these reflex phenomena of organic life: the first, transmits the impression to the nervous centres; the second, to the viscera. With one order of these nervous filaments is always connected a ganglion of the great sympathetic. Example: the lingual nerve transmits the impression of the taste to the nervous centres; a special nerve then conveys a corresponding ex-citation to the submaxillary gland; on one of these nerves is situated a ganglion of the sympathetic, the submaxillary ganglion," &c. He gives several illustrations of this fact, and farther, appears to be of the opinion that this set of phenomena are identical with those occurring in the cerebro-spinal system of nerves denominated excito-motory, by Dr. Marshall Hall; but with this latter part of his paper we have nothing to do. It is only with that portion in which he appears to claim as his own, the sugges-tion of the theory that there does exist such a reflex relation between the sympathetic and the cerebro-spinal systems, and his presentation of it as an observation entirely new.

"Now, we are not aware of the exact length of time that these views have been held by physiologists; they may be old, or, on the other hand, they may be of recent suggestion; but certainly, we cannot award to M. Bernard the merit of being the first to express such views in relation to the function of the sympathetic system of nerves; and while we are exceeding-

*Translated by the New Orleans Medical Register.
Letter to Dr. Marshall Hall, of London.

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ly reluctant to refer to our own humble labors in connection with the brilliant discoveries of this most philosophic and able observer, a sense of duty to ourselves, as a member of this National Association, prompts us not to allow this assertion to pass unchallenged.

"A reference to a paper presented by us to the Medical Society of Augusta, Georgia, and published in the Southern Medical and Surgical Journal, on the Influence of Dentition in producing Disease, will show that this subject was fully discussed by us as early as June, 1850, and that the whole argument upon which our theory of the mode in which dentition does produce certain morbid results (diarrhoea, for instance) is based upon the supposed existence of such a reflex relation between the cerebro-spinal and ganglionic systems of nerves, as will be seen by the following:

After referring the occurrence of convulsions, during dentition, to the reflex relations existing between certain nerves of the cerebro-spinal system, viz., the fifth pair as excitor, and the muscular branches of the spinal system as motory, we then endeavor to account for the occurrence of diarrhoea by establishing the existence of a similar relation between the cerebro-spinal and branches of the ganglionic system supplying the intestinal canal; which suggestions will be found embodied in the following extract from our essay in the June number of the Southern Medical and Surgical Journal, volume for 1850, p. 329: 'We have now glanced sufficiently, we think, at the anatomy and physiology of the sympathetic system of nerves, to make the application of such points as are pertinent, in the solution of our pathological problem. In its anatomy, we have seen its connections with all three of the divisions of the fifth nerve by ganglia, the connection of these various ganglia with each other, as well as with the cerebro-spinal axis, and lastly, the distribution of branches from these ganglia, which are conducted by the arteries into every part of every one of the splanchnic viscera. In its physiology, we find it in entire charge of the important functions of nutrition and secretion, and that wherever these processes are effected, it is by the agency of this nerve alone upon the bloodvessels. And farther, we have seen that pathology, and experiments upon the lower animals, establish its indispensableness to the due performance of these functions, and that whenever the supply of its innervation has been cut off from any particular part of the organism, that part immediately manifests symptoms of impaired nutrition and altered secretion.

"Now, we are all aware that nearly the whole of the intestinal canal, or rather that portion between the stomach and lower part of the colon, receives no direct innervation from the cerebro-spinal axis, but is entirely dependent upon the sympathetic nerve for its supply of nervous influence, of whatever kind it may enjoy, whether motory, sensory, or secretory, and consequently an impairment in the function of this nerve must, necessarily, correspondently, alter its condition, so far as regards all those functions with which this nerve endows it. The alteration in these functions would, of course, depend in a great degree upon the amount of impairment in the source of irritation; thus, as we have seen, if the supply be entirely cut off, the functions of the arteries seem in a great measure to cease, passive congestions occur, and the parts inflame and ulcerate. Now, we can also very naturally conceive of a condition of these nerves somewhat analogous to the above, yet intermediate between the entire interruption caused by section and perfect health; a condition of embarrassed, or perhaps of exalted innervation. Now, this intermediate condition is exactly the state which,
from the developments of the foregoing investigation, we feel that we are
authorized to affirm is that which occurs as the result of severe dentition,
and that upon it is dependent the whole train of intestinal morbid pheno-
mena observable during this process.

"That this so far is legitimately inferable, we do not think any one will
deny. Now let us inquire how far these phenomena are dependent upon
dentition; and analogy with the excito-motory system will much assist us in
our argument. We have seen that local irritations can, through this sys-
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sympathetic, distributed so abundantly to the intestinal canal, by a trans-
mision of this irritation through the various ganglia with which it is con-
ected. Thus, the irritation at first produces simply an exaltation of the
innervation of these secretory surfaces, and consequently secretion is more
active than normal, producing simple diarrhoea. A continuance of the ir-
ritation alters the character of the secretion, and we have the various
morbid discharges observable during this period. This increase and change
in the secretion are effected by the agency of the altered function of the
nerve upon the arteries from which these secretions are eliminated. Now,
when the innervation of these arteries is still farther embarrassed by the
long continuance of the reflected irritation, the state of things nearly ap-
proaches what was observed in Dupuy's, Reid's, and Pourfour du Petit's
experiments, of actual destruction of the nerve, and we have ulceration of
the intestinal mucous membrane; all these phenomena being the result of
various degrees of injury sustained by the sympathetic nerve. It may here
be asked, Why should the branches supplying the intestinal mucous mem-
brane become more implicated than any other portion of the sympathetic
system? And why do not similar irritations of the fifth nerve produce like
results in the adult? To the first of these questions we answer, that most
probably the other portions are implicated; but the manifestations of such
implication are greater and graver here than elsewhere, because these
sympathetic branches are the sole sources of innervation to the viscus.
Other organs are in all probability affected; but, receiving a certain amount
of innervation from other sources, most of their functions not being entirely
secretory, are still, though imperfectly, carried on. But in the intestinal
canal the case is far different; the requisitions made upon it are of such a
nature that it has need for no other innervation than that of the sympathe-
tic system. Its functions are secretion and nutrition for the whole animal
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the greater development of this system in the growing, than in the adult
individual, for the purpose of supplying the more active nutrition and secre-
tion, at that time, necessary. We know that disease is more apt to occur
in many parts of the body during this period than at other times; this is
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are West, Churchill, &c., pneumonia and bronchitis are more apt to attack
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this period, serve to corroborate our theory of the origin of the morbif in-
testinal secretion. The increased vermicular action and tormina attending
this affection find a ready explanation in the fact, now well established, that the sympathetic receives both motor and sensitive filaments from the anterior and posterior roots of the spinal nerves, endowing the organs of their distribution, to a certain degree, with corresponding susceptibilities.

"In conclusion, let us define the position which, at the end of our investigation, we feel warranted in assuming. It is the following: That in the anatomy and physiology, as well as in the dependent analogies of the process of dentition, we find ample ground for the opinion that the diseases pertaining to this period may be dependent, and in many instances, are entirely so, upon the local irritation attending the process, being transmitted through the cerebro-spinal system of nerves, producing convulsive diseases in the motory apparatus, or through the sympathetic, causing derangements of the secretory organs, particularly of the alimentary canal, by the sway which it exercises over the arterial system from which these secretions are eliminated;"

"In the above brief quotation, it will be observed that the doctrine of the reflex function between the cerebro-spinal and sympathetic systems is plainly enunciated, and not only is the physiological fact noted, but we there also have summarised the transmission of permanent irritation, or of paralysis from the cerebro-spinal to the sympathetic system, giving rise to various aberrations in nutrition and secretion. This opinion we have held for several years, teaching to our classes that there existed between the cerebro-spinal and the ganglionic system of nerves, a relation similar to that between the sensitive and motor branches of the cerebro-spinal, and which Marshall Hall terms excito-motory; while we have termed that between the cerebro-spinal and sympathetic systems excito-secretory.

"As we have before indicated in this report, we do not feel authorized to lay full claim to the above theory without farther investigation of the subject; but with all due courtesy to that highly distinguished gentleman, we can say that we feel assured that these views are not original with M. Bernard, unless he entertained them previous to June, 1850. There may have been other similar observations; but until the publication of M. Bernard's, we had not noticed them elsewhere than in our paper on Dentition."

You will perceive that in the above memoir, I have introduced enough from the first record to constitute a pretty complete résumé of my original announcement and process of induction. But being apprehensive that the doctrine of a new function so clearly and publicly defined, would suggest its appropriate name to some one, before I was prepared to take up the subject again, I, on this occasion, condensed into a short paragraph, as you will see, near the end of the paper, a comprehensive re-statement of my doctrine, and placing it in juxta-position with your own distinguished name, and also, in contra-distinction to your own great, analogous discovery of the Excito-motory system, after emphasizing the word "similar," to indicate that I did not consider them "identical," I applied to it, the expressive designation (now used by yourself) of Excito-secretory—a word, never before that moment, (as I believe and have above stated,) written by any other person in any language, except by me, in my private notes.

As an evidence of the importance attached to this brief communication
by the publishing committee of the association, I call your attention to the fact that it is rendered conspicuous by not less than four references in the short index at the end of this volume of the Transactions. On the appearance of the volume, (vol. vi. 1853) several of the prominent scientific periodicals made special reference to my claim of priority preferred against Mons. Cle. Bernard, during their review of the Transactions. I send you two of these, the most prominent, perhaps, now at hand:


"The next article is a short paper by Dr. Henry F. Campbell, of Georgia, in which that gentleman lays claim to priority in the enunciation of the doctrine that there exists a reflex relationship between the sympathetic and the cerebro-spinal systems of nerves, which has been recently claimed by Dr. Bernard, of Paris, as an observation entirely new and original with him. Dr. Campbell has shown that, at least, priority of publication is with him."


"On the Sympathetic Nerve in Reflex Phenomena, by Henry F. Campbell, M.D., of Ga.—The design of this short article is to establish the precedence of the writer's enunciation of the doctrine of a reflex relation existing between the cerebro-spinal and ganglionic system of nerves, recently put forth by M. Bernard. The views of Dr. Campbell are contained in a paper on the Influence of Dentition in Producing Disease, published in the Southern Medical and Surgical Journal, in 1850. The author certainly establishes his claim to priority of publication, as far as regards Bernard's article referred to in the Gazette Médicale; but, if we are not mistaken, similar views have been advanced at a still earlier date. As he does not, however, pretend to priority over all others, but only so far as his information extends, we will not be to the trouble of examining the subject farther."

You will here perceive that the above claim of Priority over Mons. Claude Bernard, in 1854, is distinctly referred to, and recognized, by two of the leading medical periodicals of this country, both of which have exchanges in Europe, and the first especially circulating and being read, in your country, more, probably, than any other American medical journal.

On the printing of the sixth volume of the Transactions of the American Medical Association, for 1853, I engaged with the publishers to strike off extra copies, for distribution, of the "Report on Typhoid Fever," in which memoir, the principle of the Reflex Phenomena between the cerebro-spinal and ganglionic or secretory system of nerves is recognized, though not made a prominent feature of the essay. The pamphlet made up from these extra sheets was sent to yourself, as well as to your distinguished cotemporaries,
Drs. W. B. Carpenter, R. B. Todd, Mr. W. Bowman, and Dr. W. Jenner; and more recently, to Dr. T. B. Peacock, of St. Thomas's Hospital.

Near the close of last year, I was solicited to become senior editor of the Southern Medical and Surgical Journal, and with this subject ever uppermost in my thoughts you will observe, that my first editorial work consisted in certain strictures upon a lecture on "The Effects of Dentition, in Nursing Children," delivered at Hotel Dieu, by Mons. Trousseau, of Paris, wherein I enter into a re-statement of my views published in June, 1850, again bringing the two great facts of the nervous system into emphatic contra-distinction and analogy, the Excito-motory being indicated by the "convulsive Phenomena," while the Excito-secretory is instanced, by the "diarrhoea" succeeding the local irritation in the sensitive branches of the fifth pair. From this I quote the following:

"Here, it will be observed that we have unmistakable evidences of local irritation of the gums, which we know are supplied by branches of that most exquisitely sensitive of all sensitive nerves, the fifth pair; if we admit the principle of reflex action, we must recognize here a competent cause, considering the impressive character of the infant's nervous system, for the convulsive phenomena. On the other hand, we may trace a connection between the local irritation and the diarrhoea succeeding it, in an analogous manner, taking into view the intimate connections between the fifth pair and the nerves of the ganglionic nervous system, from which the intestinal mucous surfaces receive their secretory endowments.

"We have been thus careful (I here continue,) in pointing out the manner in which we think this local irritation may produce the convulsive symptoms and, also, even the increased secretion from the mucous surface of the bowels and the diarrhoea, in order to give it what we consider its proper amount of importance, and to direct attention to this, as the chief source of those difficulties, calling for early and continued care."*

This is my latest printed record, published in this country, as you will perceive, three months previously to your first; but this important and extensive subject has never ceased to possess and stir my thoughts—suggested to my mind in the first instance, by an accidental and trivial circumstance, occurring years ago, in the earliest days of my pupillage, it became inwoven with the tissue of my thoughts, first, as an unpromising and tantalizing problem, it is true, but soon, as a broken seal—a revealed fact; and finally, as the familiar, self-evident truth of reflex nervous action.

And now, dear sir, I have completed the chain of evidence which I find in my published records upon this, to me, momentous subject. While it has been acknowledged on all hands, that there is an unity in the truths of nature, it is a pleasing reflection that there is also an universality in the principles of science—nature's humble interpreter—which makes them the property of no one clime, or particular race of men, but parts of that vast

and common treasury, for the benefit of all mankind. To this rapidly accumulating store, your own genius and unremitting energy have contributed more, much more, than often falls to the lot of one member, of this great commonwealth, to gather. Your name must ever be associated with the history of doctrines in the physiology of the nervous system, acknowledged and made the basis of induction in every portion of the scientific world.—Observing you, admiring you, and studying you closely, can you censure me, if I have wished, in some degree, to emulate you, and place my humble name one day, near your own, on the scroll of science. That day is now, I hope, about to arrive; you have intimated that this *Excito-secretory* function of the nervous system, which, as I think, I have herein shown has been developed and named by me in 1850 and 1853, is a principle not less extensive than the *excito-motory* function developed and named by you in 1837.

You have said, most truly, that it is "a vast subject requiring many laborers and many years, fully to develop that and the other sub-system." I here ask permission to express the wish, that as long and as usefully as you have already lived, you may still be spared, to add much to the *fuller* development of the *Excito-secretory* system, much more than I could ever hope alone to accomplish.

Mingled with other feelings, all of which are at this moment those of sincere kindness, is the regret, that my repeated publications on this subject have never reached your eye. I feel that I am not chargeable with having omitted to give publicity to my records, as the annals of the American Medical Association will plainly reveal. As you intend publishing shortly more in detail upon these subjects, I here earnestly and respectfully ask the honor of having my records meet due acknowledgment at your distinguished hands.

And now, respected sir, I will close this already too prolonged communi-
cation: as courtesy to you, and justice to myself, were professedly the instigating causes of its inditement, I do most sincerely hope, that in the too earnest establishment of the latter, I have not at any moment even appeared to have forgotten the former.

I am, Sir, with feelings of great respect,
Your obedient servant,
HENRY F. CAMPBELL.

*Note.—We have not hesitated to occupy so much of our space with the above letter, as we feel assured that our readers will take sufficient interest in our American Claim for Priority, to excuse such appropriation. The subject is of too deep an interest to us, to allow the merit of the discovery to pass from our grasp, and we lay this claim before our confreres in the confident hope, that it will be generously sustained by them now, as it was in 1853, before the American Medical Association.*