SOUTHERN

MEDICAL AND SURGICAL JOURNAL.

EDITED BY

I. P. GARVIN, M. D.,
PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS AND MEDICAL
JURISPRUDENCE, IN THE MEDICAL COLLEGE OF GEORGIA.

Medical College of Georgia.

"Je prends le bien où je le trouve."

VOL. VI.—1850.—NEW SERIES.

Augusta, Ga.
JAMES McCAFFERTY,
PRINTER AND PUBLISHER.

1850.
PART FIRST.

Original Communications.

ARTICLE XX.

Counter-Irritants. By T. C. Quintard, M.D., of Roswell, Ga.

Although our subject may seem to be "hackney'd and worn out to the last faint thread," it is nevertheless one of too great importance to be passed heedlessly over by the medical practitioner. Speculation in philosophy, particularly in medical philosophy, is carried to such an extent that it amounts to a positive evil, in our times: it frequently takes the place of scientific facts which bear directly upon natural phenomena, and leads the mind from the contemplation of mere agents, to the grander subject of systems and laws. It is pleasanter to give loose reins to the imagination, to study the poetry of science, to deal in the abstract conditions of matter, of the principles of natural bodies, or of the motion, place, and time of natural bodies, than to curb the fancy down to the stern reality of fact and experience, or the consideration of those things which lie before us in daily life. We do not hope to present any thing new, probably nothing that has not been known since the days of Hippocrates, and yet we hope our subject will find favor from its intrinsic importance. Aristotle has said, "they who demonstrate plain things, light a candle to see the sun." This is very true; but there are some men who would never know the sun rose at all unless they were told it, and there are some men of exuberant intellects who like to have common subjects brought before them without the bother of thinking.
Counter-irritants may be defined agents, whether natural, mechanical or medicinal, by which we endeavor to remove or diminish the morbid condition of a particular structure by producing an abnormal state in some part more or less remote from the seat of disease. Counter-irritants have two distinct modes of operation, the one derivative, the other stimulant to the general system or to some susceptible organ in particular; and a knowledge of this distinction must guide us in their application. The principal object to be gained by the use of counter-irritants, is the withdrawal of morbid action from an inaccessible and more or less vital organ, to a part immediately within our power of control. In their application, both skill and judgment are needed; for in the hands of the inexperienced they may work mischief. About the middle of the last century, when epispastics were far more popular than at present, counter-irritation was the pet practice in the treatment of gout. Hillary gives us a case of "gout at the stomach, with some pain in the head, for which a large vesicatory was applied to the head, which soon brought the gouty humor thither, and caused it to swell in an extraordinary manner, and killed the patient in thirty hours; whereas," he continues, "if it had been applied to the feet or ankles, and other proper methods used at the same time, it would have drawn the gout thither, and have saved the life of the patient."* The experience of every man who has seen much of disease, might be introduced to prove the necessity of discrimination in the use of counter-irritants, especially in those diseases affecting the respiratory organs. Mr. Porter protests against the use of blisters in acute laryngitis, especially in the earlier stages.† A case is also related where, in acute pneumonia, the application of a blister was followed by an aggravation of the symptoms, and death was the consequence. On dissection, a portion of the surface of the lung, exactly corresponding to the size and shape of the blister, was found in a more advanced stage of inflammation than the remaining pulmonary tissue. So, also, tartar-emetic may become so violent in its action as to increase rather than remove the difficulty for

* Hil. Med. Knowl., p. 353. See also Boerhaave, Aphorisms, Febris and Bagliv de Usu et Abasu vesicant.
† Surg. Obs. on Dis. of the Larynx and Trachea.
which it is applied, and a case will be given, when we come to
speak of croton oil, in which twelve drops of that article appli-
ced over the chest for a bronchial affection, produced an eruption
over the surface of the whole body. Counter-irritants have
been more or less popular with the profession from a very
early period in the history of medicine, and were doubtless first
“suggested to the attentive observer by the occurrence of sponta-
naneous translations of disease from one part to another, and by
the obvious and frequent relief afforded by them: as, for exam-
ple, in the subsidence of pulmonary and gastric irritation on the
appearance of a cutaneous eruption.” It is this simple process
of enquiring into the causes of natural or morbid appearances,
which has assisted materially in placing medicine among the
certain sciences; and it is by accurate observation, after all
our reading, with true inductive reasoning, from certain estab-
lished facts, that we are enabled to perfect the *ars divina.*
Such observation and reasoning will conduct us right and
prove truly satisfactory to the judicious physician. With these
few desultory remarks, we proceed to the consideration of
Cantharides.

Cantharides, cantharis vesicatoria—Geoffroy; *melœ vesica-
toria*—Lin.; *lytta vesicatoria*—Fab.; belonging to the family
of the trachelides. They are common in Spain, Italy and
France, where they are found in great numbers on the ash,
lilac, viburnum, &c. Their body is from six to eight lines long;
the feelers are black, retaceous, composed of twelve articula-
tions; the elytra, long, flexible, of a shining golden green, and
the tarses of a deep brown. Their odour is strong, penetrating,
peculiar and unpleasant; their taste extremely acrid; their
powder is of a brownish gray, intermixed with shining particles
of a metallic green color.* According to Robiquet, they con-
tain, with several other ingredients, a peculiar substance, called
cantharadin. They were first used internally, as a diuretic, by
Hippocrates,† while to Areæus Cappadox, who lived probably
about the time of Domitian, towards the latter end of the first
century, is due to the credit of first applying them externally as
vesicatories.

† Hippoc. de Intern. affectionibus.
By the application of cantharides to the surface of the body, the extreme vessels take on an inflammatory action, the intensity of which depends on the strength of the plaster and the length of its application. It follows, therefore, that the benefit derived is by different modes of operation. As a rubefacient it is advantageously applied in low fevers to increase the vigor of the circulation and to impart tone to the nervous system; as evacuants, by getting up a determination to the surface, and by withdrawing blood from the engorged capillaries to supply the discharge of serum or pus; as derivatives, by producing a diversion of the circulation from the neighboring organs; as anti-spasmodics, relieving pain through the medium of sympathy. “A blistered surface may be considered in the light of a new excretory organ, the fomentation of which requires the establishment of a new current of blood.”* In whatever way blisters may operate—whether as evacuants, rubefacients, derivatives, or direct stimulants, whether as “cordial and exhilarating” remedies or depletories, as in erysipelas, experience has proved their utility in a great variety of cases, in affections differing as widely in their anatomical character, as in their location.

The effect of a blister on the cuticle is worthy of notice. It at once destroys its connection with the cutis, and the perspiratory apparatus is broken up. If a blister be applied to a sweating surface, so soon as it produces sufficient inflammation to bring on effusion of serum, the cuticle separates from the cutis, and becomes impervious. Whether, therefore, this be a distinct papillary structure, as Gaultier contends, or possessed of an infinite number of minute pores—or, as M. Chevalier thought, permeable by means of a velaminous structure, its vitality is at once destroyed by being separated from the parent cutis, and is never again reunited to that structure. The more powerful rubefacients will produce vesication; but of them and their effects we shall speak hereafter. If a plaster of cantharides here be applied for two or three hours only, its effect is merely rubefacient; but if allowed to remain on the surface of the body from five to ten hours, as the circumstances of individual cases will indicate, a quantity of yellowish serum will be

found beneath the cuticle, which, being poured out more pro-

fusely after the removal of the plaster, fills the separated cuticle. Unless local depletion is used, cantharides has a stimulating effect, until vesication is completed, or rather until the engorged capillaries are about to throw out serum, when their evacuant power is developed, and frequently to such a degree as to decrease the frequency of the pulse, and having thus an indirect sedative action, induce sleep.

Frequently the active property, the cantharadin, is absorbed into the system, causing a considerable degree of general irritation, producing priapism, strangury, bloody urine, &c. This is more peculiarly liable to occur where the system is uncommonly irritable, where the blister is large, or where it is applied to a newly abraded surface, as to the head, when recently shaved.—(Murray.) It was once contended that the cantharides contained an “alkaline semi-volatile salt,” “which passing into the blood, attenuated, dissolved, and hastened and increased its putrefaction,” and this conclusion was confirmed by “the putrid alkaline acrimony which it produced in the urine.”* Modern research has given us a clearer and more satisfactory explanation of the modus operandi of this agent, and the manner in which strangury arises.† An analysis of cantharides was attempted, by Thonvenal, in 1778, and by Dr. Beaupoil, in 1803, but no result of value was obtained until 1810, when Robiquet discovered in them a crystalline substance, which appears to be the vesicating principle. It is owing to the absorption of this active principle, which is one of the most troublesome attendants upon their operation, that many practitioners hesitate in prescribing them where they are indicated. To prevent the occurrence of strangury, as well as unnecessary irritation from the adhesion of particles of fly to the surface, it is well to adopt the expedient recommended by M. Bretonneau, that of interposing a piece of thin gauze, or paper, well soaked in oil, between the blister and the skin. The oil, according to the experiments of M. Robiquet, being a solvent of the vesicatory

* Hiliary Med Knowl., p. 356.
† The student should consult Marshall Hall's Memoirs on the Nervous System. (Lond., 1837.)
principle,* transfers its effects, without any diminution to the skin.—(Paris.) When strangury does occur, it is better to have recourse to small injections of oil and laudanum, rather than to allow the patient to drink freely of mucillaginous compounds as is often recommended; for there are instances in which the quantity of fluid taken has entirely destroyed the influence of the blister. Liquids must be absorbed in the circulating fluids, and thus may counterbalance the evacuant power of the vesicatory and render it a simple counter-irritant. Dr. Williams says, "we are convinced, by experience, of the advantages of abstinence from any bulk of liquids, and would, therefore, look for other means to avoid the irritating effects of absorption from a blister."†

As all local diseases are more or less connected with the general health, we should beware, lest, in applying blisters for slight local diseases, we produce too great general disturbance. Abernethy, in speaking of this subject, says, "You need not apply a blister a foot square in order to derive benefit from it. Oh! no. But blister a small part of the surface of a large swelling at a time. Quiz it as they like, it is a very useful procedure." Again, in speaking of counter-irritants generally, he says, "Blisters may be considered one of the mildest of them; yet a blister, oh! a blister is a horrible thing in an irritable system, and disturbs the general health more than you would suppose."‡

The powerful impression made by blisters on the system is sufficient, in many instances, to destroy morbid action: hence their use in the treatment of remittent and intermittent fevers. In those cases of intermittent fever, where quinine will "break the chill" for a while, by giving tone to the vis nervosa, without a corresponding effect on the muscular fibre, a blister applied to the spine will generally break up the morbid action completely, when so employed as to be in full operation at the

* This fact shows how erroneous was the opinion formerly entertained—viz., that oil was an antidote in cases of poisoning by canth. It assists its action. Emetics should be employed, and afterwards draughts containing camphor or opium, with mucillaginous injections into the bladder.
† Cyc. Prac. Med.
‡ Vide Marshall Hall, on the true spinal marrow and excito-motory system of nerves.
period for the recurrence of the paroxysm. By carefully guarding against too great arterial excitement, blisters may be used in nearly every disease attended with irritation or inflammation of internal organs. Substituting their own action in the part to which they are applied for one of a morbid nature, they are useful in tinea capitis, herpes, and a variety of cutaneous eruptions. As local stimulants, they are of use in cases of threatened gangrene, partial paralysis, &c. Some five years since, the writer was attacked with paralysis of the portio-dura on the right side. The most delicate, and the most powerful remedies were applied, without success, by Prof. Pattison, of New York. The use of an electro-magnet was persevered in for a length of time; but all agents, both internal and external, failed, except cantharides. Blisters were applied repeatedly, as stimulants, and so soon as the effect of one wore off, the application was renewed, each application producing a marked benefit in giving tone to the muscles of the face. The serous discharge they produce renders them useful in cases of local inflammation, where they can be applied in the vicinity of the disease, as in erysipelas, &c. On some constitutions cantharides produces a poisonous impression, when externally applied, attended with dryness of the fauces, subsultus tendinum, and even convulsions: the instances are, however, rare, and should not deter a physician from prescribing the remedy as often as his judgment dictates. It is impossible to determine what is the condition of the system, or peculiarity of constitution in which this is liable to occur.

Few authors recommend a more general adoption of blisters than Broussais, and although his treatment was based upon his favorite theory of disease, the student will find very much valuable information in his writings, with reference to the subject of blisters. There is one point, too often lost sight of in the management of pleurisy, viz., after the application of a blister to a case of pleuritic phlogosis, the pain being removed, and a partial cessation of the fever, and other general symptoms, the uneasiness and slight dyspnea are regarded as the effect of a disease removed, rather than symptoms of a disease continuing. On this point, M. Broussais, after noticing the universality and appropriateness of the application of blisters in
this disease, remarks: "We usually observe, in fact, that the pain disappears in consequence of their action; but I have several times noticed that this disappearance did not offer the physician a guarantee sufficient to remove all his fears as to the sequelæ of the phlegmasia. I have seen several pleuritic patients die, previously to the term assigned to acute diseases, in whom the blister had removed the pain from the first day, and dissection proved that the inflammation of the pleura had not been dissipated." In hospital practice, where, from multiplicity of engagements, the physician is unable to give the requisite attention to all his cases, this is more apt to occur than in private. It often happens that a pleuritic patient will, in common parlance, "get well." The physician, losing sight of his patient, has no opportunity of judging of the after effects of the disease. Says the distinguished author just quoted, "I lay great stress on this point, being intimately persuaded that a host of practitioners have habitually under their care, consumptions arising from pleurisies, the formation of which they have seen and misunderstood.

Brown, in his system, condemns the use of blisters, without reserve, in all sthenic diseases. The humoralists use them to evacuate "the humors;" the vitalists propose to establish by them an innocent external phlogosis in place of an internal one—so that as system succeeds system, this remedy is adopted by each, for various reasons and explanations, differing widely in theory and fact, given to justify their use.

With this imperfect sketch of our subject we are obliged to close for the present. In our next we shall take up Tartar-emetic and Croton oil, as counter-irritants.

ARTICLE XXI.

On the Science of Medicine and the causes which have retarded its progress. By Joseph LeCont, M. D., Macon, Ga.

It is the remark of one of the most profound writers and thinkers of the present day, that the prevalance of quacks and quackery in any age marks the decay of old institutions and the loss of public confidence in existing formulæ and modes of
thought; and that affairs can in no wise progress or improve, until some radical change is effected and a new basis of faith established.

Let us apply this truth to the existing state of medicine. Never in the whole history of our science did quackery abound to the same extent as it now does. The variety and speciousness of its forms are so great as to elude the vigilance and deceive the judgment of the most penetrating. Now, if we seek the cause of this growing evil, is it not evident that it takes its rise in the want of entire public confidence in the so-called orthodox system of medicine, and the notorious fact that the frequency of recoveries from disease is nearly the same under every system of treatment? Is it not because, while general intelligence, civilization and science in every other department, is advancing with a rapid and constantly increasing rate of progression; medicine is slowly halting after, at an almost telescopic distance. The public are not to blame. The origin as well as the cure of this disease rests with ourselves. The evil will continue to increase, acts of legislation and resolutions of medical societies to the contrary not withstanding, unless we shake off the lethargy which has seized upon the profession, and with it all orthodoxy or prejudice in favor of existing systems, all petty jealousies and selfishness, and approach the subject with an open, candid mind, full of the love of truth, fired with zeal and confidence, but tempered with the awe which should characterize the true devotee at the shrine of nature.

If, then, we have rightly stated the origin of the evil of which so much complaint is heard (as we think every candid mind must admit we have), it behoves us to waste no more time in vainly attempting to put down quackery, by memorials to the Legislature or any other forcible means. As the science now exists, the evil is necessarily and inseparably connected with the practice of medicine under every system, and the only possible way of eradicating it, is to direct all our energies to the accomplishment of two objects, viz., the advancement of the science of medicine and a proper system of medical education.

Of these two grand objects of medical organization, we pro-
pose on the present occasion, to speak only of the former, particularly as the latter is now engaging the attention of medical societies throughout the country. And here, lest we should be charged with presumption, we would premise by remarking, that it is not our intention to attempt a complete solution of the problem of medical advancement—to point out the best plan of medical organization—to show the means to be used, and the manner in which they must be used—in other words, to construct the whole complicated machinery by which the principles of Inductive Philosophy may be best applied to medicine; but simply by glancing slightly into the philosophy of our science and pointing out the causes which have retarded its progress, to show that statistics are the most direct and powerful means of fulfilling the object which, it is hoped, we all have in view—that it is indeed the only means of applying induction to a large portion of our science.

Among the causes which have retarded the progress of the science, we might mention its necessary connection with, and consequent dependence upon, the profession of medicine. The result of this connection is, that petty selfishness is often opposed to the best interests of truth. Hence, when we look for union and concerted action, we find disunion, wrangling and jealousy, until the very word "physician" is proverbially associated with illiberality and prejudice. But, we will not dwell upon these humiliating facts, for the existence of medical associations in every part of the country, and the increasing interest which is felt in them, are evidences, not to be mistaken, of the dawn of a better state of things.

Another, and perhaps more important, cause, is the great prevalence, both in, and out of, the profession, of the belief that there is a natural antagonism between profound scientific knowledge and great practical skill—that there is a practical knowledge and a practical skill found thereupon, which is vastly superior to, and has no connection with, theoretical knowledge—that, in short, the study of the science, unfit a man for the practice, of medicine. Now, although there is probably a germ of truth in this notion, yet it is evident that those who entertain it, take but a superficial view of the subject and by hasty and unphilosophical generalization strike a blow at the very life of medicine as a science.
It is readily admitted that there is a knowledge which cannot be learned from books—which science has not yet attempted to bring under her dominion—a knowledge which is essentially unscientific in its character—which is more or less vague and indefinite, and which therefore can only be expressed vaguely and indefinitely; but which is nevertheless of the utmost importance in the practice of medicine. It is to be learned by close observation and constant attendance at the bedside of the sick. It requires the exquisite sense of touch, the keen ear, and, above all, that delicate constitution of the perceptive powers which quickly and accurately responds to the senses, the strong intuitive mind which easily look through the external features or physiognomy of a disease and sees its true nature and tendency, and the decision, promptness and energy necessary to overcome the foe whose nature and place of concealment we have discovered. It is also admitted that there are many profoundly versed in the science of medicine, as it now exists, and who, for the want of knowledge of which we have spoken or perhaps of the proper constitution of mind and body, are nevertheless unsuccessful in practice, and others who are comparatively successful and yet trust so evidently to the delicacy of their senses, the intuitive quickness of their perceptive powers and the promptness and accuracy of their judgments, as to affect a contempt of the science of medicine. But it is evidently a "non sequitur" to conclude that the superiority of the latter is due to his want of scientific or theoretical knowledge.

All practice, however strictly practical it may be, is founded upon general notions or theories of some kind. Even in the most common acts of practical life, we are invariably (when we act rationally) guided by such general notions. Indeed this faculty of theorizing and forming general rules of conduct seems to be one of the most important of those which separate us from the brute creation. The only difference then between the so-called practical and the scientific physician, is that the rules by which the former is guided are based upon crude ill-constructed theories drawn from hasty observation and limited experience, and wanting in scientific distinctness and accuracy, and therefore can only be applied with more or less vagueness
and uncertainty; while the theories of the latter are founded upon whatever is most worthy of confidence in the observations of the whole civilized world. They are not arrived at hastily, but by careful induction, and are therefore capable of infinitely more certain application. Other things being equal, therefore, the scientific practitioner is always the most successful. For since all are governed by theories of some kind, the more extensive, fixed and definite, they are, the more certainly will they guide us correctly. When the more fixed and firmly established principles of our science fail to serve us as a guide, (and this will frequently be the case,) then those vague and uncertain principles which we have provisionally established in our own minds, as the results of our own individual observation, but have not yet been brought under the dominion of science—which frequently we cannot express distinctly in words, and sometimes exist, scarcely distinguishable, like shadows in the mind; even these flickering and uncertain lights must be our guides through the chaos of doubt and darkness which too often surrounds the most intelligent. Alas! how small a province is cheered by the light of science, and how illimitable the kingdom of darkness and ignorance by which it is surrounded. This kingdom it is the glorious destiny of science to conquer and reclaim.

The causes which we have mentioned above are not necessarily connected with medicine. They are rather connected with the present state of the science. We may therefore reasonably indulge the hope that time will remove them. But there are other causes of the slow progress of medicine, connected with the nature of the subject itself—obstacles which therefore it is impossible for us to remove, but which, by patient and persevering industry, we may surmount. The necessity of understanding and fully appreciating these causes, in all our attempts to advance the science of medicine, renders it necessary to dwell a little more fully.

And here, in order to avoid confusion, I find it necessary to define in what sense I use the phrase, "the Science of Medicine." This I do, not to change the views of any one on this subject, but simply that I may not be misunderstood in what follows. This definition is the more necessary, as this phrase
has been very loosely used and the limits of our science seldom carefully marked. I shall speak of medicine in its widest sense, in the only sense in which it can lay any claim to the rank of a science, and define it to be the science of Life or Biology, as it has been very properly called. It includes physiology and pathology, but excludes hygiene and therapeutics; these last being but systems of practical rules, deducible from the laws of life, for the preservation or restoration of health. Its province is quite distinct from, though intimately connected with, organic chemistry and the science of organization or natural history, in its highest sense. Chemistry deals with organic matter, the science of organization with organized bodies, biology with living beings. The chemist, it is true, often deals with organized bodies, but their organization is of no importance to him. Between the provinces of the biologist and the naturalist, however, it is more difficult, nay, even impossible, to draw the line of distinction; yet they are by no means identical. The present state of Paleontology proves that the naturalist is not entirely dependent upon the phenomena of life for the successful cultivation of his science. Other departments, as generation, embryology, development, &c., where life is a necessary element, are claimed by both sciences. These subjects, however, have been principally pursued, and the most general and important laws established by naturalists. I shall therefore speak of these laws as a part of our indebtedness to the science of organization. Biology deals entirely with phenomena of life, particularly as manifested in the highest order of animals. It is evident, therefore, that both organic chemistry and the science of organization are subordinate to biology, which, therefore, is the highest and most complex of all sciences. In this very elevation consists the difficulty of which we propose first to speak.

If we take a rapid glance at the history of the inductive sciences, we find, that though at first all rest upon simple observation and experiment, yet at a certain stage, the progress of the more complex may be impeded for want of sufficient development of the more elementary. Thus, for instance, we find the science of Astronomy advancing with great rapidity under the Alexandrian school, and again under the powerful
influence of Copernicus, Tycho Brahe, and Galileo, until this inductive epoch was finally crowned by the three great phenomenal laws of Repler. Thus far, all was the result of simple observation, aided by mathematical calculation. But now, observation had done all it could do: it had established the highest laws of phenomenal astronomy. Here, therefore, the science would have remained forever fixed, no higher inductive step been taken, and physical astronomy had no existence, if the development of mechanical philosophy, about this time, had not given Newton the means of establishing the grand law of universal gravitation, and thus communicating an impulse to astronomy which has not only brought it forward to its present enviable position, but will yet carry it onward for many successive ages, without the assistance of any higher generalization. As we rise in the scale of sciences, we need not be surprised to find these connexions and dependencies becoming more complex, until the greatest degree of complexity is attained in the science of life.

Biology is intimately connected with, and necessarily, in a measure, dependent upon, all the principal departments of science, viz., the mechanical sciences, including the physical sciences strictly so-called; the chemical, including also electricity, magnetism, &c.; and the organical sciences, including the anatomy, physiology, and classification of organized beings, or natural history in its noblest sense. Its connection with the mechanical sciences, though comparatively slight, is not unimportant: without their aid we could not fully understand the phenomena of vision and hearing; the physiology of locomotion, respiration, circulation, &c. But it would seem that the physical sciences have already done all that they can for us, or at least the rapid advance of these sciences for many years past has not materially affected ours. It is to developments in the chemical sciences that the attention of the medical world has been directed with perhaps the greatest expectation of assistance. We cannot too highly estimate the effect which the progress of these sciences are destined to produce upon our own. Every function of vegetable life is more or less subject to the laws of chemical affinity. Respiration, calorification, digestion, nutrition, secretion and excretion, are daily brought
more and more under the dominion of these laws. Meanwhile, there are not wanting those who hold that many of the functions of animal life, as muscular contraction, sensation, &c., are equally referrible to the laws of electricity. Thus the time-honored empire of vital force, attacked on both sides, has been gradually contracting its domain, until, to many, it seems doubtful whether it will not vanish altogether—whether vital force, chemical affinity and electricity, are not indeed modifications of one and the same force. Hypotheses of this kind may be useful in the investigation of truth, but must not be mistaken for truth itself: they stimulate enquiry and point the direction to be pursued, but cannot safely be used as a foundation upon which to build. Hypotheses are provisional: they may be confirmed or disproved. Truth, inductively established, is eternal. The true, inductive philosopher, neither affirms nor denies what is involved in the smallest degree of doubt; but fearlessly investigates every subject, calmly awaits the gradual development of facts, and earnestly embraces the truth brought to light. To him, old prejudices may be sacred, but truth infinitely more sacred.

Aside, however, from all hypotheses, nothing can be more certain and important than the intimate connection which exists between the sciences of biology and chemistry. This connection has given a new dignity to the latter science, new vigor and energy to its prosecution, and a corresponding impulse to its rate of progression. The reaction of this impulse upon the former will doubtless be attended with the happiest effects, and henceforth these two sciences will advance with equal pace, each throwing light on the other, gradually approaching and partially merging into one.

The connection of biology with, and consequent dependence upon, the science of organization, is perhaps less generally felt and acknowledged, but even more important. The object and tendency of chemistry, in its present state, is to explain in detail and reduce to the laws of chemical affinity, many subordinate and non-essential functions of life, and to prove that these functions are regulated by the same laws which we recognize everywhere around us in inorganic nature. Natural history, rising one step higher, lays hold of the essential functions of
life, which are beyond the grasp of chemistry, and establishes their laws. Chemistry reduces many phænomena of life to their physical or causal laws. Natural history knows no cause but the great first cause, and is content to reduce to phænomenal laws the operations of that cause, as revealed in organization. The cultivator of this science devotes his life to establishing that perfect unity which binds the whole animal and vegetable kingdoms into one organic whole. He feels that this must be done before we can discover the causal law which will add this link also to the chain which shall surround the universe.

Those who have studied natural history, under the Linnæan system of classification only, will perhaps be surprized at the elevated position which I would assign to that science. But since the days of Linnaeus, natural history has undergone a wonderful change—so great that the end and object of the science is different and infinitely more elevated. The true end of the Linnean system is to recognise and distinguish objects of nature. The collection of these into genera, orders, classes, &c., was intended to facilitate the labor of description, as well as for the convenience of the learner, who would know the names and find the places, in this artificial system, of the different objects of nature, and thus often miserably delude himself with the conviction that he is intimately acquainted with the profoundest secrets of nature. Classification was therefore founded upon a few external and very marked features, works of natural history little more than dictionaries in which objects bearing a resemblance in certain arbitrary particulars, like words having the same initial letter, were placed in juxtaposition; and naturalists were mostly laborious collectors of immense museums of dried specimens—accumulators of what Professor Schluden, perhaps too severely, characterizes as no better than so much "hay." On the other hand, the end of natural history, as now pursued, is to understand the real and natural relations of organized bodies, to discover, as it were, the plan of the creator himself, and thus to recognise the perfect unity and beautiful harmony which reigns throughout all organized nature; and classification is the simple expression of these relations so far as we are able to discover them.
It is evident, however, that the artificial system was a necessary stage in the progress of the natural sciences. It was necessary for many ages, to study, recognise and know familiarly, individuals, before we could unite them according to their natural affinities. Linnaeus himself was perfectly aware that his system was temporary, and must be superseded by a more natural one. If it had not been so superseded, the true end of natural history would never have been attained, and biology never felt the powerful influence of this department of science. This influence is only now beginning to be fully recognised, and already the most important revelations have been made, and at least one grand, universal law of life established, viz., the law of cell-development. The effect of this law is already felt in every department of physiology, and points, the most obscure, and hitherto believed to be beyond the reach of human intellect, have been rendered perfectly clear and intelligible. It teaches us that the phenomena of development and growth are the same in every tissue, and in all organized beings, from the highest vertebrate to the lowest cryptogam: its essential nature being in fact the spontaneous division and subdivision of primary nucleated cells, and differing only in the fact that in the higher animals these self-multiplying cells are carried by a specific circulation to the tissues, and assume different forms, according to definite laws corresponding to the tissue by which they are appropriated. It teaches that generation by fission and gemmation, is but an extension of the law of development; that, by fission being perfectly analogous to the spontaneous division of cells, and that by gemmation to the reproduction of limbs in the lower, and of tissues in the higher animals; and that even the mysterious, process of sexual generation differs but little from that of development: that it consists essentially in the separation by a sort of spontaneous fission of one cell (instead of many, as in the fissiparous and gemmiparous variety) from the organism of each parent, which then unite to form the germ; that therefore the separation by spontaneous fission of one or more cells from the parent organism, according to the simple law of "cell-development," is the invariable, and therefore the essential element of all generation. How universal, simply expressed and beautiful, are these laws! In the words of one of the most eloquent
writers and profound physiologists of the present day—"If ever we are to escape from the obscurities and uncertainties of our art, it must be through the study of those highest laws of our science, which are expressed in the simplest terms in the lives of the lowest orders of creation."*

There are many other problems of the highest importance, for the solution of which we are now looking to the development of the science of organization. If the study of organized beings, both vegetable and animal, has thrown so much light on those functions which are common to both, may we not hope that the study of animal organisms, with reference particularly to those still more mysterious functions which are peculiar to animals, will be productive of equally important results. Already there has been something done on this subject. The attentive study of the anatomy of the lower, and particularly the invertebrate animals, in connection with the phenomena of muscular motion in these animals, have already greatly modified the "reflex theory" of Marshall Hall. As we proceed down the scale of animal existence, we find that first one and then another portion of the nervous centres disappear. First the cerebrum, and probably cerebellum, dwindle and vanish with the vertebrate type; then the ganglia, at the base of the brain, dwindle in the same way, and vanish with the articulate and mollusccous type; in like manner, what seems to be the homologue of the spinal chord disappears, until finally we have nothing but simple nervous chords. Here, then, we have the conditions varied by nature in almost precisely the same manner as we attempt to vary them in vivisection-experiments, and we have moreover the important advantage of observing the phenomena in healthy, unmutilated subjects. Thus, nature prepares the experiments, if we will only take the trouble to observe. Surely nothing can be more important to the physician than the study of this science. It has been called the noblest of all sciences; and certainly, until biology shall assume the form of a distinct science, it deserves that rank; for in the whole range of sciences, there is none which opens so rich, varied, and extensive a field to the enquirer after truth—so ennobles, elevates, and

* Mr. Paget's Introductory Lecture at the Royal College of Physicians and Surgeons.
purifies the mind—so plainly unfolds the beautiful harmony and unity which pervades the universe—so deeply impresses us with the wisdom and goodness of the Creator—so leads from the finite to the infinite, shewing thereby that, to the rightly constituted mind, science is the purest and most exalted religion, as the science of organization. And here, I cannot forbear participating in the enthusiasm, and adopting the language of one who thus combined science and religion; who, after passing in review all the inductive sciences, thus concludes the history of that of which we are now speaking: "We have been lingering long amid the harmonies of law and sympathy, constancy and developement; and these notes, though their music was sweet and deep, must too often have sounded to the ear of our moral nature, as vague and unmeaning melodies, floating in the air around us, but conveying no definite thought, moulded into no intelligible announcement. But one passage which we have again and again caught by snatches, though sometimes interrupted and lost, at last swells in our ears, full, clear and decided; and the religious 'hymn in honor of the Creator,' to which Galen so gladly lent his voice, and in which the best physiologists of succeeding times have ever joined, is filled into a richer and deeper harmony, by the greatest philosophers of these latter days, and will roll on hereafter the 'perpetual song' of the temple of science."

But, however important the sciences we have mentioned are, to the progress of our own, there are many phenomena of life, particularly as manifested in its most complicated form in man, which they do not in their present state, in the least degree, explain, and the laws of which we may never know, unless we arrive at them in some other way. The laws established by other sciences, when all the conditions under which they act are fully understood, may be deductively applied to explain the phenomena of life; but when these conditions are not understood, we cannot arrive at their proper explanation by deduction. We must take up biology as a distinct science. We must discard all attempts to explain the phenomena of life, by loosely extending the laws which govern other phenomena of nature, and which have been established by other departments of sci-

ence; and commence with simple observation of facts, and thus establish laws by strict induction. The science of organization teaches us the highest and most universal laws of life. But the phenomena of life in the higher animals, and particularly in man, in health, and especially in disease, are so complicated, that we cannot refer them to these general laws. In the same manner, although doubtless the laws of chemical affinity govern, more or less, all the phenomena of life, both healthy and diseased, yet the conditions, under which these general laws act, are so little understood, that we cannot refer the phenomena to them. As an illustration of the fact, that we may be acquainted with the forces, and even the more general laws, which govern certain natural phenomena, and yet be so ignorant of the conditions under which they act, that these phenomena shall appear the result of mere chance, we will mention the science of meteorology. All the phenomena of this science, such as, winds, rains, formation of clouds, atmospheric moisture, weight and electrical condition, are subject to the already known laws of chemistry, electricity and mechanics. Winds, for instance, are subject to the simple law of equilibrium of fluids; and yet what can be apparently more fortuitous than their occurrence? Just so with the irreducible phenomena of life, of which we are now speaking. Though they are, doubtless, subject to already known chemical and organical laws, we cannot reduce them to those laws—they seem to happen fortuitously: the subordinate laws which govern them, and by which alone we can reduce them to the general laws, we do not understand, and never will, unless we arrive at them by the strictest induction.

Inductive philosophy, as we all know, is founded upon simple observation of the operations of the forces of nature. If the subject admits of it, we vary, in every conceivable manner, the conditions under which the forces act, and again observe the effects. This, we call experiment. After a sufficient number of careful observations, under various conditions, we perceive the law by which the phenomena are governed. If the law so discovered may be expressed algebraically, in terms of number and quantity, then this most powerful agent of the human mind is brought to bear on the subject, and the law is
applied with the utmost rapidity and certainty in the explanation of phenomena, which were before irreducible. Calculation develops new laws, and the subject advances with the utmost rapidity.

Perhaps the best illustration of the principle of induction, and example of its triumph, is contained in the history and present position of the science of astronomy. The inductive steps are plain and distinct; the progress uninterruptedly onward, from the simplest observation of isolated facts, to the highest state of perfection to which science has yet attained; from the collection of shapeless and apparently useless materials, to the present state of that stupendous edifice, which we cannot view without wonder and astonishment.

If we turn now to the history of medicine, we find the contrast humiliating in the extreme. Commencing, like astronomy, at a period of which we have no authentic account—cultivated in every age by a larger number of intelligent men than any other department of knowledge—superior to all others in the intrinsic interest of its subjects, and their intimate practical connection with the happiness of the human race, medicine has just commenced to take rank among the inductively progressive sciences.

Let us inquire into the cause of this amazing difference, and point out the obstacles which have opposed the successful application of induction to our science.

Of these, the first and most important which we will mention, is the fact, that some of the most powerful agents of inductive progress, which we have noticed above, are either altogether or to a great extent inadmissible in our science. The conditions of life are so nicely balanced, that in attempting to modify, we destroy—the cords of life, so highly strung, and so delicate, that in attempting to make music with our rude fingers, they snap. In other words, we cannot, except to a very limited extent, make use of experiment. Even vivisections, which seemed to promise more than any other, have failed to answer the expectation of those most sanguine of their success. Indeed, so remarkably has this been the case, that many have condemned such experiments as useless cruelty, hardening the best feelings of the experimenter without effecting any useful
results. But it is evident that this is an error on the other extreme; for it is certain that vivisections of the lower animals, and particularly of the cold-blooded vertebrata, have already revealed important truths concerning the functions of the nervous system especially, and are capable of rendering still more important service, now that we have been taught so many useful lessons concerning the fallacies to which we are liable, in experiments of this kind—fallacies which, by caution, we may avoid, but whose sources we cannot remove. The difficulties in the way of drawing correct conclusions from physiological experiments, must therefore always remain very great. In pathology, these difficulties are still greater, as will at once appear to any one who will reflect a moment on this subject. Again, when we attempt to apply mathematics, we find that the phenomena of life, though subject to the laws of number, are altogether irreducible to those of quantity. We may, by statistics, ascertain the number of each kind of phenomenon which may occur in any given time, their relative frequency, and therefore, to some extent, their value, compared with one another, but the quantitative value of each fact, we have no means of measuring. Hence it is that the subordinate phenomenal laws of life, established by what is called the numerical method, must be only approximatives, (the degree of approximation being in the direct ratio of the amount of accumulated facts,) and the empirical rules of practice based upon them, must still want the mathematical accuracy of expression and certainty of application, which belongs to the practical rules of the physical sciences.

Another serious obstacle to the inductive progress of biology, is the extreme multiplicity and complexity of the phenomena, the laws of which it is its object to discover. In the microcosm of the animal body, all the forces of nature are, apparently, at war, and contending for mastery. The mechanical, chemical and electrical, against a peculiar force,* which we call vital. This contention is, doubtless, only apparent, and the result of our ignorance, which cannot as yet see the beautiful and per-

---

* I call this a distinct force, for the same reason that gravitation or chemical affinity is called so, viz., because its essential phenomena cannot yet be referred to any other force.
fect harmony which pervades nature. But in no other way can we, in the present state of our knowledge, account for the unexpected and, often, apparently inconsistent results, which attend the operations of vital force. It is a convenient form of expression, which well represents the character of vital phenomena, and renders their occurrence conceivable. Where, then, there are so many forces contending, and disturbing the normal action of each other—where we neither fully understand these disturbing forces, nor appreciate the conditions under which they act, the multiplicity and complexity of the resultant phenomena must necessarily appear almost infinite. Of all problems presented to the human mind, for solution, there are none so complicated and difficult as those of biology.

It is easily inferred, from what we have said, that the most important means of remedying the difficulties of which we have spoken, and thus advancing the science of medicine, are the extension of the chemical and organical sciences, and the establishing of an organized system of observations; which observations must be recorded in the form of regular statistics, physiological and pathological. We might say much on the importance, to the medical man, of the pursuit of the chemical and organical science; but we will not, at this time, dwell on this point—not because it is an unimportant one, but because the progress of these sciences is altogether independent of our exertions. They have already enlisted in their cause, zeal, industry and intellect, of the highest order. In the hands of such men as Agassiz and Prof. Owen, Ralfs and Prof. Schleidru, Leibig and Boussingault, they must and will progress, in spite of the ignorance and prejudice of the conceited empyric, who, in self-sufficient reliance on what he calls his practical skill, sneers at and rejects, because he cannot comprehend, the wonderful truths which they continually reveal.

But there is a class of biological phenomena, and these the most important of all to the physician, upon which, as we have already remarked, these sciences throw no light, and whose laws we must arrive at by a different road. Here is true field of activity for the medical profession; and here we must look for aid, only from statistics—from systematically recorded observation. The difficulties of the subject are so great, that the
ordinary mode of observation, though continued through many
centuries, has resulted in very little inductive progress. The
object of statistics is to render these observations more full,
definite and accurate; and the conclusions drawn from, and
practice founded upon them, correspondingly definite and cer-
tain. It is a common opinion, both in and out of the profession,
that many of the phenomena of which we are speaking, are
either subject to no law, or else that the laws by which they
are governed are not discoverable. This is the universal ex-
pression of ignorance, with reference to every subject, but one
which ill becomes the members of a liberal profession in
the nineteenth century. To the ignorant, all nature is chaos
and confusion. To the man of science, the most perfect har-
mony and unity pervades the universe,—to him, nature is a
“book of revelations,” in which the character of God is writ-
ten in symbolical language; and one of the chief duties of man
in his probationary state, is the interpretation of these symbols.

But we will not resort to argument to prove this point. It is
easy to bring forward undeniable facts to shew that the most
important laws physiological and pathological, have in this
manner been determined. The laws which govern marriages,
births, deaths, &c., have in this way been submitted to investi-
gation, and to some extent established. The influence upon
these, of age, sex, season of year, locality, occupation, &c.,
are to a great extent established. The influence of the above-
named agents together with atmospheric heat, moisture and
electrical condition, upon general health and prevalence of dis-
ease—the influence of all these agents upon the prevalence of
each particular disease—the frequency and, consequently, value,
prognostic and diagnostic, of each symptom of each disease;
and even the value of therapeutic remedies, may thus be sub-
mitted to statistical investigation, and positively determined.
All these points have already been made the subject of statisti-
cal investigation, and the most important results elicited; and
but for the limited nature of the statistics, it is impossible to
estimate the impulse which must have been communicated to
the science of medicine. The tables of France, Belgium and
Geneva, have been most useful in determining physiological
laws, such as those of marriages, births, deaths, the mean and
probable life, the value of life at every age, longevity, &c. Pathological statistics have been much more limited. The difficulties in the way of keeping these in private practice are very great, but should not be considered insurmountable. They have heretofore been kept, principally, by army surgeons and physicians of hospitals. Dr. Walshe's statistical investigations of cancer and pulmonary phthisis, are probably the best examples we have of this mode of interrogating nature, and as such, should be carefully studied by every cultivator of our science. He subjects to separate investigation every individual symptom, and determines its nature; and if his observations were more extensive, and made under a greater variety of condition, these points might be considered as absolutely determined.

It has been objected to statistics, that the rules of practice derived therefrom, are, of all others, the most grossly empyrical—that the mind is diverted from the causes of diseases and symptoms, to the frequency of their occurrence, and consequently practice becomes a mere calculation of chances. But it is evident that all observation is subject to this abuse. Yet even here the superiority of statistics over the ordinary mode of observation is very decided, inasmuch as the empyrical rules derived therefrom are much more definite in expression, and certain in their application. Statistics differ in no respect from other modes of observation, except in being more extensive and accurate, and also in being systematically recorded. The prime object of all observation is to determine laws—first the subordinate, and then the more general; and thus to establish a certain basis of practice. If this high object is lost sight of in the search after empyrical, and, therefore, more uncertain rules of practice, the fault lies not in the method of observation, but in the observer who would thus reduce our art to its lowest condition.

We would remark, in conclusion, that we should not be surprised, nor discouraged by the meagre results, in establishing the more general laws of life, which have so far attended the keeping of statistics, compared with the rapid strides with which many other sciences are advancing. All inductive sciences commence from small beginnings. The most subordinate phenomenal laws are first established, then the more
general, and, finally, the causal laws. And with every new law an impulse is communicated and the progress accelerated. Many of these phenomenal laws of life have already been established by means of statistics, and already the effect is seen in the rapidly increasing zeal and interest excited. Let us see to it, that we are not left behind in this glorious race. But let us also be careful that, in our attempts to advance the science, we be not governed by purely selfish motives and feelings. Let us connect with it all that is high, noble and generous in our nature. Science, inductively pursued, is eminently religious in its tendency. It is a river which commences from small and insignificant fountains: these presently unite to form mighty streams, on whose broad bosoms float the industry and happiness of nations, and which, still farther explored, are found to unite and lose themselves in the ocean of one infinite truth, which is God.

---

**ARTICLE XXII.**

*An Exposition of M. Bernard's Discovery of the Renal Circulation.* By Juriah Harriss, M. D., of Georgia—now in Paris.

The novelty and importance of the discoveries and experiments of M. Bernard have again induced me to report a few of the beautiful results he has obtained, and some of the facts he has established. He has been for several years placing stone after stone upon the great edifice of medicine, of which he is destined to become one of the pillars of support.

The knowledge of the excessive rapidity with which certain substances, when taken internally, pass out of the economy with the urine, and the ascertained fact that many of them when administered could not be found in the blood, but were identified in the urine, have heretofore been unexplained or have led some into the regions of absurd hypothesis. The mystery was attempted to be explained by supposing that a hidden communication existed between the stomach and kidneys, by which these substances could pass directly from the one to the other. This, it is needless to say, is unphysiological and untrue.
M. Bernard has attempted to solve the mystery, and has done so by direct experimentation.

The portal circulation is entirely independent of the pulsations of the heart, and differs from all other venous circulations in the fact that there is an intervening organ between the vein and the heart. The blood, instead of passing directly from the portal vein to the heart, is forced to traverse an organ seated upon its course to the centre of circulation. The portal, and indeed the circulation in all the abdominal viscera, is under the direct influence of the pressure of the abdominal walls. This pressure is essential and indispensable to the circulation of the blood through the abdominal organs, and particularly so to its passage through the portal system. If a small opening be made in the abdomen of an animal, a portion of intestine be withdrawn, a hydrometer be placed in one of the veins and the intestine returned into the abdomen, an oscillation will be observed in the tube at each inspiration. The blood is elevated in the tube because at each inspiration the abdominal cavity is diminished by the descent of the diaphragm and the contractions of the muscles. A notable pressure is thus applied to the contents of the cavity, which is in some degree measured by the elevation in the tube. The pressure is increased or diminished in proportion to the depth of the inspiration. If, after the introduction of the instrument the walls be largely opened, the oscillations will cease, because the pressure is obstructed. In this case the elevation will not only cease, but there will be a counter-current or regurgitation from the inferior vena cava and liver into the vena porta and mesenteric veins. If prussiate of potash be placed in the inferior cava, by means of a tube, and the abdomen opened, it will regurgitate with the current of blood into the vena porta. This regurgitation occurs in paracentesis abdominis for ascites; the pressure is removed, and hence the syncope. The portal circulation is then entirely dependent upon the abdominal pressure, which last is dependent upon respiration.

During digestion, the quantity of blood in the vena porta and liver is much increased, by the considerable absorption (of albuminous and saccharine principles) which takes place by means of the mesenteric veins. While this act is being accomplished,
the blood accumulates in the liver, and distends it, in consequence of the increased supply to the portal system. At this time, either the capillaries must take on an immense increase of activity to relieve this organ, or the quantity of circulating fluid in the vena portae must be diminished, before reaching it. There is, in fact, a system of vessels that perform this function. Bernard made this beautiful anatomical discovery in the horse, where it is in reality very manifest. He has there demonstrated that there is a direct communication of blood-vessels between the vena portae and the inferior vena cava, distinct from the communication that exists between the portal and hepatic veins in the liver. During digestion, when the portal system is engorged with blood, a portion passes through these collateral branches into the vena cava, thereby greatly facilitating the flow from the portal vein. These branches are but small, and ramify upon the vena cava, as do the vasca vasorum upon the intestines, and open abruptly into it, by several of them uniting and forming a kind of sinus.

There are in some animals muscular fibres in the walls of the vena cava: they are particularly well marked in the horse. These fibres commence at the diaphragm, and extend down as far as the renal veins—some of them are circular, and others longitudinal. In full digestion, then, the portal system is filled, the liver is increased in volume, and the inferior vena cava and right auricle of the heart, are largely distended by the great increase in the quantity of blood absorbed from the food, by the mesenteric veins. The distension of the vena cava is easily seen in the rabbit. A kind of stagnation occurs in these organs, because the amount of blood is too great to circulate with facility through them. It is at this time that the collateral branches become of great utility, and disgorge the portal system, at the same time that the fibres of the cava contract and force the blood down to the renal veins, and through them into the kidneys. When these fibres contract, the blood cannot pass up to the heart, because there is already a surplus and stagnation in the right auricle, and must consequently descend. But it may be asked, why does not the blood continue down the iliac and crural veins? It is because, as Bernard has demonstrated, there exists at the opening of the renal veins a
Harriss, on the Renal Circulation.

valve, which will permit the blood to pass up the vena cava; but when the current is downwards, as in digestion, it closes this vein, and the blood is compelled to pass through the renal veins to the kidneys. At the moment of the downward current, the inferior cava and renal veins can be distinctly seen to pulsate under the influence of the contractions of the muscular fibres. The blood then goes directly to the kidneys for the secretion of urine. Thus, there are many substances absorbed and passed into the portal vein, and from thence to the kidneys, without going around the general circulation. The obscurity in which the profession has been involved is thus beautifully dispelled. The rapidity with which certain matters were thrown out of the economy with the urine, and the fact that they could not be identified in the blood, is now easily understood and satisfactorily explained. If prussiate of potash be given to a dog, upon an empty stomach, it will be absorbed and carried through the liver, to the heart, and thence to the kidneys. It will be found in the renal arteries, but not in the renal veins. If, on the contrary, it be administered to him during digestion, the stagnation in the vena porta and vena cava, will necessitate the aid of the collateral anastomoses, and the contractions of the vena cava will force it down with the current of blood to the kidneys, where it will be secreted with the ordinary constituents of urine. In this case the prussiate will be found in the renal veins, and but little, if any, in the renal arteries. If an animal drink a large quantity of liquids, a portion will pass directly to the kidneys, without going around the general circulation. This vein, then, resembles the portal in its distribution.

But there is another important question to be answered. How is it that, when there is a stagnation of blood in the superior part of the inferior vena cava, and a descending current in the lower portion, that the blood can circulate from the inferior extremities? By what route does it reach the heart? Pathology has already, in a measure at least, elucidated this point. It has been observed, and reported, that in cases of obliteration of the superior or inferior vena cava, by a tumour or other cause, that the vena azygos was much distended, and performed the function of the obliterated vein. Though this circulation
occurred under a pathological cause, in all cases heretofore reported, the discovery of the renal circulation demonstrates that it takes place physiologically. The stagnation of blood in the inferior cava is but a physiological obstruction to the circulation through it to the heart, and, as in the case of the pathological cause, the vena azygos undertakes the work, and conducts the blood to the central organ of circulation. Prior to this time, this was thought to be but an incidental use, arising from an abnormal cause; now, however, it is demonstrated to be a natural and physiological function, that this vein daily performs. The office of this vein is then to carry on the circulation between the inferior extremities and the heart, during digestion.

During full digestion, there is no circulation in the kidneys. The blood is carried on by both veins and arteries, and consequently has no means of exit. It is at this moment that the urine changes its character according to the nature of the food taken. If the food be azotized, the urine will be acid, and if non-azotized, it will be alkaline. In an animal fasting (a rabbit) the blood reaches the kidneys alone by the arteries, and the urine will be clear and acid. But if ordinary food (non-azotized) be given him, the blood will reach the kidneys, both by the veins and arteries, and the urine will be turbid and alkaline. The phosphate of soda, that exists in abundance in the urine of a rabbit, after digestion, does not exist in the blood, but is formed in the pelvis of the kidneys, in consequence of the combination of the two kinds of urine that meet at this point. The acids of the one, unite with the alkaline principles of the other.

If medicine be administered during digestion, a great portion of it at least will pass down the renal veins to the kidneys, and be thrown off with the urine; and thus it is that a dose of poison, which, during abstinence, would probably prove fatal, may be thrown out of the economy, during digestion, without producing serious accidents. Belladonna, or its active principle, atropine, will not readily kill an animal during digestion, but will do so speedily when fasting. Hence we can conceive the reason why a rabbit is not killed by these strong narcotics, when the same dose will be fatal to a dog. It is because a rabbit is really always digesting; his stomach may almost be said
never to be empty, even when made to fast for several days. If this animal be kept from eating a long time, he will be killed as readily as the dog. A dose of poison, to kill an animal, must be much larger during digestion, than during abstinence.

In reptiles, there is a peculiar arrangement of the vena portæ. There exists in them two venæ portæ: the one that is found in other animals and distributed to the liver, and the other that passes to the kidneys, and may be styled the renal vena portæ. This arrangement in man is simulated by the renal circulation.

---

ARTICLE XXIII.

Reduction of a Dislocation at the Knee-Joint, of nine weeks persistance. By A. P. Longstreet, M.D., of Augusta, Ga.

On the 20th of May, 1850, Mr. K., aged 27 years, consulted me, in the absence of Prof. P. F. Eve, respecting an accident he had recently sustained, leaving him quite lame. His case was this: On the 13th of March, in getting out of his buggy, he received a kick from the horse on the inner and upper part of the left tibia. The leg was semi-flexed at the time, and consequently the soft parts about the knee-joint were relaxed. He obtained medical aid within twenty-four hours after the blow; but owing to the great tumefaction, the attending physician did not recognize the nature and extent of the injury. Refrigerant lotions were applied, and continued with splints up to the time of his visit to Augusta.

I found the knee enlarged, the leg semi-flexed upon the thigh, and the external condyle of the femur resting upon the inner articular surface of the tibia, the external portion of the articular surface of this bone at the same time projecting outwards. The ligamentum patellæ passed diagonally downwards and outwards, and if the lateral ligaments escaped being ruptured, we think it was evident, from the great displacement, the crucial ligaments must necessarily have yielded to the force applied when the patient was injured.

With the assistance of professional friends, Jarvis' Adjuster was secured to the perineum and leg, and while the patient was under the effects of chloroform, by steady and gradual exten-
sion the dislocation was fortunately successfully reduced. A long splint to the back of the member, with bandages, and dis- cutient lotions continued for two weeks, and then passive motion in the joint, enabled the patient to leave on a steamboat, with flattering prospects of a good and useful joint.

PART II:

Reviews and Extracts.

Dr. Harlow's Case of Recovery from the passage of an Iron Bar through the Head. By Henry J. Bigelow, M. D., Professor of Surgery in Harvard University.—(American Journal of Medical Sciences.)

The following case, perhaps unparalleled in the annals of surgery, and of which some interesting details have already been published, occurred in the practice of Dr. J. M. Harlow, of Cavendish, Vermont. Having received a verbal account of the accident, a few days after its occurrence, from a medical gentleman who had examined the patient, I thus became incidentally interested; and having since had an opportunity, through the politeness of Dr. Harlow, of observing the patient, who remained in Boston a number of weeks under my charge, I have been able to satisfy myself as well of the occurrence and extent of the injury as of the manner of its infliction. I am also indebted to the same gentleman for procuring at my request the testimony of a number of persons who were cognizant of the accident or its sequel.

Those who are skeptical in admitting the co-existence of a lesion so grave, with an inconsiderable disturbance of function, will be interested in further details connected with the case; while it is due to science that a more complete record should be made of the history of so remarkable an injury.

The accident occurred upon the line of the Rutland and Burlington Railroad, on the 13th of September, 1848. The subject of it, Phineas P. Gage, is of middle stature, twenty-five years of age, shrewd and intelligent. According to his own statement, he was charging with powder a hole drilled in a rock, for the purpose of blasting. It appears that it is customary in filling the hole to cover the powder with sand. In this case, the charge having been adjusted, Mr. Gage directed his assistant to pour in the sand; and at the interval of a few seconds, his head being averted, and supposing the sand to have
been properly placed, he dropped the head of the iron as usual upon the charge, to consolidate or, "tamp it in." The assistant had failed to obey the order, and the iron striking fire upon the rock, the uncovered powder was ignited and the explosion took place. Mr. Gage was at this time standing above the hole, leaning forward with his face slightly averted; and the bar of iron was projected directly upwards in a line of its axis, passing completely through his head and high into the air. The wound thus received, and which is more fully described in the sequel, was oblique, traversing the cranium in a straight line from the angle of the lower jaw on one side to the centre of the frontal bone above, near sagittal suture, where the missile emerged; and the iron thus forcibly thrown into the air was picked up at a distance of some rods from the patient, smeared with brains and blood.

From this extraordinary lesion, the patient has quite recovered in his faculties of body and mind, with the loss only of the sight of the injured eye.

The iron which thus traversed the skull weighs thirteen and a quarter pounds. It is three feet seven inches in length, and one and a quarter inches in diameter. The end which entered first is pointed; the taper being seven inches long, and the diameter of the point one quarter of an inch; circumstances to which the patient perhaps owes his life. The iron is unlike any other, and was made by a neighboring blacksmith to please the fancy of the owner.

Dr. Harlow, in the graphic account above alluded to, states that "immediately after the explosion the patient was thrown upon his back, and gave a few convulsive motions of the extremities, but spoke in a few minutes. His men (with whom he was a great favourite) took him in their arms and carried him to the road, only a few rods distant, and sat him into an ox cart, in which he rode, sitting erect, full three quarters of a mile, to the Hotel of Mr. Joseph Adams, in this village. He got out of the cart himself, and with a little assistance walked up a long flight of stairs, into the hall, where he was dressed."

Mr. Joseph Adams, here spoken of, has furnished the following interesting statement:—

This is to certify that P. P. Gage had boarded in my house for several weeks previous to his being injured upon the railroad, and that I saw him and conversed with him soon after the accident, and am of opinion that he was perfectly conscious of what was passing around him. He rode to the house, three quarters of a mile, sitting in a cart, and walked from the cart into the piazza, and thence up stairs, with but little assistance. I noticed the state of the left eye, and know, from experiment,
that he could see with it for several days, though not distinctly. In regard to the elevated appearance of the wound, and the introduction of the finger into it, I can fully confirm the certificate of my nephew, Washington Adams, and others, and would add that I repeatedly saw him eject matter from the mouth similar in appearance to that discharged from the head. The morning subsequent to the accident I went in quest of the bar, and found it at a smith's shop, near the pit in which he was engaged.

The men in his pit asserted that "they found the iron, covered with blood and brains," several rods behind where Mr. Gage stood, and that they washed it in the brook, and returned it with the other tools; which representation was fully corroborated by the greasy feel and look of the iron, and the fragments of brain which I saw upon the rock where it fell.

(Signed) JOSEPH ADAMS,


The Rev. Joseph Freeman, whose letter follows, informed himself of the circumstances soon after the accident.

Cavendish, Dec. 5, 1849.

Dear Sir—I was at home on the day Mr. Gage was hurt; and seeing an Irishman ride rapidly up to your door, I stepped over to ascertain the cause, and then went immediately to meet those who I was informed were bringing him to our village.

I found him in a cart, sitting up without aid, with his back against the fore-board. When we reached his quarters, he rose to his feet without aid, and walked quick, though with an unsteady step, to the hind end of the cart, when two of his men came forward and aided him out, and walked with him, supporting him to the house.

I then asked his men how he came to be hurt? The reply was, "The blast went off when he was tamping it, and the tamping-iron passed through his head." I said, "That is impossible."

Soon after this, I went to the place where the accident happened. I found upon the rocks, where I supposed he had fallen, a small quantity of brains. There being no person at this place, I passed on to a blacksmith's shop a few rods beyond, in and about which a number of Irishmen were collected. As I came up to them, they pointed me to the iron, which has since attracted so much attention, standing outside the shop-door. They said they found it covered with brains and dirt, and had washed it in the brook. The appearance of the iron corresponded with this story. It had a greasy appearance, and was so to the touch.
After hearing their statement, as there was no assignable motive for misrepresentation, and finding the appearance of the iron to agree with it, I was compelled to believe, though the result of your examination of the wound was not then known to me.

I think of nothing further relating to this affair which cannot be more minutely stated by others.

Very respectfully, yours,

(Signed) JOSEPH FREEMAN.

Dr. J. M. Harlow.

Dr. Williams first saw the patient, and makes the following statement in relation to the circumstances:

NORTHFIELD, VERMONT, DEC. 4, 1849.

Dr. Bigelow: Dear Sir—Dr. Harlow having requested me to transmit to you a description of the appearance of Mr. Gage at the time I first saw him after the accident, which happened to him in September, 1848, I now hasten to do so with pleasure.

Dr. Harlow being absent at the time of the accident, I was sent for, and was the first physician who saw Mr. G., some twenty-five or thirty minutes after he received the injury; he at that time was sitting in a chair upon the piazza of Mr. Adams' hotel, in Cavendish. When I drove up, he said, "Doctor, here is business enough for you." I first noticed the wound upon the head before I alighted from my carriage, the pulsations of the brain being very distinct; there was also an appearance which, before I examined the head, I could not account for: the top of the head appeared somewhat like an inverted funnel; this was owing, I discovered, to the bone being fractured about the opening for a distance of about two inches in every direction. I ought to have mentioned above that the opening through the skull and integuments was not far from one and a half inch in diameter; the edges of this opening were everted, and the whole wound appeared as if some wedged-shaped body had passed from below upward. Mr. Gage, during the time I was examining this wound was relating the manner in which he was injured to the bystanders; he talked so rationally and was so willing to answer questions, that I directed my inquiries to him in preference to the men who were with him at the time of the accident, and who were standing about at this time. Mr. G. then related to me some of the circumstances, as he has since done; and I can safely say that neither at that time nor on any subsequent occasion, save once, did I consider him to be other than perfectly rational. The one time to which I allude was about a fortnight after the accident, and then he persisted in calling me John Kirwin; yet he answered all my questions correctly.
I did not believe Mr. Gage's statement at that time, but thought he was deceived; I asked him where the bar entered, and he pointed to the wound on his cheek, which I had not before discovered; this was a slit running from the angle of the jaw forward about one and a half inch; it was very much stretched laterally, and was discolored by powder and iron rust, or at least appeared so. Mr. Gage persisted in saying that the bar went through his head: an Irishman standing by said, "Sure it was so, sir, for the bar is lying in the road below, all blood and brains." The man also said he would have brought it up with him, but he thought there would be an inquest, and it would not do.

About this time, Mr. G. got up and vomited a large quantity of blood, together with some of his food: the effort of vomiting pressed out about half a teacupful of the brain, which fell upon the floor, together with the blood, which was forced out at the same time. The left eye appeared more dull and glassy than the right. Mr. G. said he could merely distinguish light with it.

Soon after Dr. Harlow arrived, Mr. Gage walked up stairs, with little or no assistance, and laid down upon a bed, when Dr. H. made a thorough examination of the wounds, passing the whole length of his forefinger into the superior opening without difficulty; and my impression is that he did the same with the inferior one, but of that I am not absolutely certain: after this we proceeded to dress the wounds in the manner described by Dr. H. in the Journal. During the time occupied in dressing, Mr. G. vomited two or three times fully as freely as before. All of this time Mr. G. was perfectly conscious, answering all questions, and calling his friends by name as they came into the room.

I did not see the bar that night, but saw it the next day after it was washed.

Hoping you will excuse this hasty sketch, I remain yours, &c.

(Signed) EDWARD H. WILLIAMS, M. D.

Dr. Harlow's account of his first visit to the patient, and of the subsequent symptoms, is here appended.

"Being absent, I did not arrive at the scene of the accident until near 6 o'clock, P. M. You will excuse me for remarking here that the picture presented was, to one unaccustomed to military surgery, truly terrific; but the patient bore his sufferings with the most heroic firmness. He recognized me at once and said he hoped he was not much hurt. He seemed to be perfectly conscious, but was getting exhausted from the hemorrhage, which was very profuse both externally and internally,
the blood finding its way into the stomach, which rejected it as often as every fifteen or twenty minutes. Pulse 60, and regular. His person and the bed on which he was laid were literally one gore of blood. Assisted by my friend, Dr. Williams, of Proctorsville, who was first called to the patient, we proceeded to dress the wounds. From their appearance, the fragments of bone being uplifted and the brain protruding, it was evident that the fracture was occasioned by some force acting from below upward. The scalp was shaven, the coagula removed, together with three small triangular pieces of the cranium, and in searching to ascertain if there were other foreign bodies there, I passed in the index finger its whole length, without the least resistance, in the direction of the wound in the cheek, which received the other finger in like manner. A portion of the anterior superior angle of each parietal bone, and a semi-circular piece of the frontal bone, were fractured, leaving a circular opening of about three and a half inches in diameter. This examination, and the appearance of the iron which was found some rods distant, smeared with brain, together with the testimony of the workmen, and of the patient himself, who was still sufficiently conscious to say that 'the iron struck his head and passed through,' was considered at the time sufficiently conclusive to show not only the nature of the accident, but the manner in which it occurred.

"I have been asked why I did not pass a probe through the entire extent of the wound at the time. I think no surgeon of discretion would have upheld me in the trial of such a foolhardy experiment, in the risk of disturbing lacerated vessels, from which the hemorrhage was near being staunched, and thereby rupturing the attenuated thread, by which the sufferer still held to life. You will excuse me for being thus particular, inasmuch as I am aware that the nature of the injury has been seriously questioned by many medical men for whom I entertain a very high respect.

"The spicula of bone having been taken away, a portion of the brain, which hung by a pedicle, was removed, the larger pieces of bone replaced, the lacerated scalp was brought together as near as possible, and retained by adhesive straps, excepting at the posterior angle, and over this a simple dressing—compress, nightcap and roller. The wound in the face was left patulous, covered only by a simple dressing. The hands and forearms were both deeply burned nearly to the elbows, which were dressed, and the patient was left with the head elevated, and the attendants requested to keep him in that position.

"10 P.M., same evening. The dressings are saturated with blood, but the hemorrhage appears to be abating. Has vomit-
ed twice only since being dressed. Sensorial powers remain as yet unimpaired. Says he does not wish to see his friends, as he shall be at work in a day or two. Tells where they live, their names, &c. Pulse 65; constant agitation of the lower extremities. 

"14th, 7 A.M. Has slept some; appears to be in pain; speaks with difficulty; tumefaction of face considerable, and increasing; pulse 70; knows his friends, and is rational. Asks who is forehead in his pit. Hemorrhage internally continues slightly. Has not vomited since 12 P.M.

"15th, 9 A.M. Has slept well half the night. Sees objects indistinctly with the left eye, when the lids are separated. Hemorrhage has ceased. Pulse 75. 8 P.M. Restless and delirious; talks much, but disconnected and incoherent. Pulse 84, and full. Prescribed vin. colchicum, 1/3s every six hours, until it purges him. Removed the nightcap.

"16th, 8 A.M. Patient appears more quiet. Pulse 70. Dressed the wounds, which in the head have a fetid sero-purulent discharge, with particles of brain intermingled. No discharge from bowels. Ordered sulph. magnesia, 3j, repeated every four hours until it operates. Iced water to the head and eye. A fungus appears at the external canthus of the left eye. Says 'the left side of his head is banked up.'

"17th, 8 A.M. Pulse 84. Purged freely. Rational, and knows his friends. Discharge from the brain profuse, very fetid and sanious. Wounds in face healing.

"18th, 9 A.M. Slept well all night, and lies upon his right side. Pulse 72; tongue red and dry; breath fetid. Removed the dressings, and passed a probe to the base of the cranium, without giving pain. Ordered a cathartic, which operated freely. Cold to the head. Patient says he shall recover. He is delirious, with lucid intervals.

"19th, 8 P.M. Has been very restless during the day; skin hot-and dry; tongue red; excessive thirst; delirious, talking incoherently with himself, and directing his men.

"20th and 21st. Has remained much the same.

"22d, 8 A.M. Patient has had a very restless night. Throws his hands and feet about, and tries to get out of bed. Head hot. Says 'he shall not live long so.' Ordered a cathartic of calomel and rhubarb, to be followed by castor oil, if it does not operate in six hours. 4 P.M. Purged freely twice and inclines to sleep.

"23d. Rested well most of the night, and appears stronger and more rational. Pulse 80. Shaved the scalp a second time, and brought the edges of the wound in position, the previous edges having sloughed away. Discharge less in quantity and less fetid. Loss of vision of left eye.
"From this time until the 3d of October, he lay in a semi-
comatose state, seldom speaking unless spoken to, and then
answering only in monosyllables. During this period, fungi
started from the brain, and increased rapidly from the orbit.
To these was applied nitrate of silver cryst., and cold to the
head generally. The dressings were renewed three times in
every twenty-four hours; and in addition to this, laxatives,
combined with an occasional dose of calomel, constituted the
treatment. The pulse varied from 70 to 96—generally very
soft. During this time an abscess formed under the frontalis
muscle, which was opened on the 27th, and has been very
difficult to heal. Discharged nearly ½ viij at the time it was
punctured.

"Oct. 5th and 6th. Patient improving. Discharge from the
wound and sinus, laudable pus. Calls for his pants, and wishes
to get out of bed, though he is unable to raise his head from the
pillow.

"7th. Has succeeded in raising himself up, and took one
step to his chair, and sat about five minutes.

"11th. Pulse 72. Intellectual faculties brightening. When
I asked him how long since he was injured, he replied, 'four
weeks this afternoon, at half-past four o'clock.' Relates the
manner in which it occurred, and how he came to the house.
He keeps the day of the week and time of day in his mind.
Says he knows more than half of those who inquire after him.
Does not estimate size or money accurately, though he has
memory as perfect as ever. He would not take one thousand
dollars for a few pebbles which he took from an ancient river
bed where he was at work. The fungus is giving way under
the use of the cryst. nitrate of silver. During all of this time
there has been a discharge of pus into the fauces, a part of
which passed into the stomach, the remainder being ejected
from the mouth.

"20th. Improving. Gets out and into bed with but little
assistance. Sits up thirty minutes twice in twenty-four hours.
Is very childish; wishes to go home to Lebanon, N. H. The
wound in the scalp is healing rapidly.

"Nov. 8th. Improving in every particular, and sits up most
of the time during the day. Appetite good, though he is still
kept upon a low diet. Pulse 65. Sleeps well, and says he has
no pain in the head. Food digests easily, bowels regular, and
nutrition is going on well. The sinus under the frontalis mus-
cle has nearly healed. He walks up and down stairs, and about
the house, into the piazza, and I am informed this evening that
he has been in the street to-day.—I leave him for a week, with
strict injunctions to avoid excitement and exposure.
Passage of an Iron Bar through the Head. [August, 15th. I learn, on inquiry, that Gage has been in the street every day except Sunday, during my absence. His desire to be out and to go home to Lebanon has been uncontrollable by his friends, and he has been making arrangements to that effect. Yesterday he walked half a mile, and purchased some small articles at the store. The atmosphere was cold and damp, the ground wet, and he went without an overcoat, and with thin boots. He got wet feet and a chill. I find him in bed, depressed and very irritable. Hot and dry skin; thirst, tongue coated; pulse 110: lancinating pain in left side of head and face; rigors, and bowels constipated. Ordered cold to the head and face, and a black dose to be repeated in six hours, if it does not operate. He has had spiculae of bone pass into the fauces, which he expelled from the mouth within a few days.

16th, A. M. No better. Cathartic has operated freely. Pulse 120; skin hot and dry; thirst and pain remain the same. Has been very restless during the night. Venesection f 3 xvj. Ordered calomel, gr. x, and ipecac., gr. ij, followed in four hours by castor oil.

8 P. M., same day. Purged freely; pulse less frequent; pain in head moderated; skin moist. B. Antim. et potassa tart., gr. iij; syr. simplex, f 3 vj. Dose, a desert-spoonful every four hours.

17th. Improving. Expresses himself as 'feeling better in every respect;' has no pain in the head.

18th. Is walking about the house again; says he feels no pain in the head, and appears to be in a way of recovering, if he can be controlled.'

Remarks.—The leading feature of this case is its improbability. A physician who holds in his hand a crowbar, three feet and a half long, and more than thirteen pounds in weight, will not readily believe that it has been driven with a crash through the brain of a man who is still able to walk off, talking with composure and equanimity of the hole in his head. This is the sort of accident that happens in the pantomime at the theatre, but not elsewhere. Yet there is every reason for supposing it in this case literally true. Being at first wholly sceptical, I have been personally convinced; and this has been the experience of many medical gentlemen who, having first heard of the circumstances, have had a subsequent opportunity to examine the evidence.

This evidence is comprised in the testimony of individuals, and in the anatomical and physiological character of the lesion itself.

The above accounts from different individuals, concur in as-
signing to the accident a common cause. They are selected as the most complete among about a dozen of similar documents forwarded to me by Dr. Harlow, who was kind enough to procure them at my request; and which bear the signature of many respectable persons in and about the town of Cavendish, and all corroborative of the circumstances as here detailed. The accident occurred in open day, in a quarry in which a considerable number of men were at work, many of whom were witnesses of it, and all of whom were attracted by it. Suffice it to say, that in a thickly populated country neighborhood, to which all facts were matter of daily discussion at the time of their occurrence, there is no difference of belief, nor has there been at any time doubt that the iron was actually driven through the brain. A considerable number of medical gentlemen also visited the case at various times to satisfy their incredulity.

Assuming the point that the wound was the result of a missile projected from below upwards, it may be asked whether the wound might not have been made by a stone, while the bar was at the same moment thrown into the air. It may be replied in answer, that the rock was not split, nor, as far as could be learned, disintegrated. Besides, an angular bit of stone would have been likely to have produced as much laceration as the bar of iron; and it is in fact possible that the tapering point of the latter divided and repelled the soft parts, especially the brain, in a way that enabled the smooth surface of the iron to glide through with less injury. And assuming the only possible hypothesis, that the round bar followed exactly the direction of its axis, the missile may be considered as a sphere of one and a quarter inches diameter, preceded by a conical and polished wedge.

The patient visited Boston in January, 1850, and remained some time under my observation, during which he was presented at a meeting of the Boston Society for Medical Improvement, and also to the medical class at the hospital. His head, now perfectly healed, exhibits the following appearances.

A linear cicatrix of an inch in length occupies the left ramus of the jaw near its angle. A little thickening of the soft tissues is discovered about the corresponding malar bone. The eyelid of this side is shut, and the patient unable to open it. The eye considerably more prominent than the other, offers a singular confirmation of the points illustrated by the prepared skull described below. It will be there seen that the parts of the orbit necessarily cut away are those occupied by the levator palpebræ superioris, the levator oculi, and the abducens muscles. In addition to a ptosis of the lid, the eye is found to be incapable of executing either the outward or upward mo-
tion; while the other muscles animated by the motor communis are unimpaired. Upon the head, and covered by hair, is a large unequal depression and elevation. A portrait of the cast of the shaved head is given in the plate; and it will be there seen that a piece of cranium of about the size of the palm of the hand, its posterior border lying near the coronal suture, its anterior edge low upon the forehead, was raised upon the latter as a hinge to allow the egress of the bar; and that it still remains raised and prominent. Behind it is an irregular and deep sulcus several inches in length, beneath which the pulsations of the brain can be perceived.

In order to ascertain how far it might be possible for this bar of an inch and a quarter diameter to traverse the skull in the track assigned to it, I procured a common skull, in which the zygomatic arches are barely visible from above; and having entered a drill near the left angle of the lower jaw, passed it obliquely upwards to the median line of the cranium just in front of the junction of the sagittal and coronal sutures. This aperture was then enlarged until it allowed the passage of the bar in question, and the loss of substance strikingly corresponds with the lesion said to have been received by the patient. From the coronoid process of the lower jaw is removed a fragment measuring about three-quarters of an inch in length. This fragment in the patient's case might have been fractured and subsequently reunited.

The hole now enters obliquely beneath the zygomatic arch, encroaching equally upon all its walls. In fact, it entirely occupies this cavity; the posterior wall of the antrum being partially excavated at the front of the hole, the whole orbitar portion of the sphenoid bone being removed behind, as also the anterior part of the squamous portion of the temporal bone, and the internal surface of the zygoma and malar bone laterally. In the orbit the sphenoid bone, part of the superior maxillary below, and a large part of the frontal above, are cut away, and with these fragments much of the spheno-maxillary fissure; leaving, however, the optic foramen intact about a quarter of an inch to the inside of the track of the bar.

The base of the skull upon the inside of the cranium presents a cylindrical hole of an inch and a quarter diameter, and such as may be described by a pair of compasses, one leg of which is placed upon the lesser wing of the sphenoid bone at an eighth of an inch from its extremity, cutting the frontal, temporal and sphenoid bones; the other, half an inch outside the internal optic foramen.

The calvaria is traversed by a hole, two-thirds of which is upon the left, and one-third upon the right of the median line,
its posterior border being quite near the coronal suture. The iron freely traverses the oblique hole thus described.

It is obvious that a considerable portion of the brain must have been carried away; that while a portion of its lateral substance may have remained intact, the whole central part of the left anterior lobe, and the front of the sphenoidal or middle lobe must have been lacerated and destroyed. This loss of substance would also lay open the anterior extremity of the left lateral ventricle; and the iron, in emerging from above, must have largely impinged upon the right cerebral lobe, lacerating the falx and the longitudinal sinus. Yet the optic nerve remained unbroken in the narrow interval between the iron and the inner wall of the orbit. The eye, forcibly thrust forward at the moment of the passage, might have again receded into its socket, from which it was again somewhat protruded during the subsequent inflammation.

It is fair to suppose that the polished conical extremity of the iron which first entered the cavity of the cranium prepared the passage for the thick cylindrical bar which followed; and that the point, in reaching and largely breaking open the vault of the cranium, afforded an ample egress for the cerebral substance, thus preventing compression of the remainder.

Yet it is difficult to admit that the aperture could have been thus violently forced through without a certain comminution of the base of the cranium driven inwards upon the cerebral cavity.

Little need be said of the physiological possibility of this history. It is well known that a considerable portion of the brain has been in some cases abstracted without impairing its functions. Atrophy of an entire cerebral hemisphere has also been recorded.

But the remarkable features of the present case lie not only in the loss of cerebral substance, but also in the singular chance which exempted the brain from either concussion or compression; which guided the enormous missile exactly in the direction of its axis, and which averted the dangers of subsequent inflammation. An entire lung is often disabled by disease; but I believe there is no parallel to the case in the Hunterian collection of a lung and thorax violently transfixed by the shaft of a carriage.

Taking all the circumstances into consideration, it may be doubted whether the present is not the most remarkable history of injury to the brain which has been recorded.*

* The iron bar has been deposited in the museum of the Massachusetts Medical College, where it may be seen, together with a cast of the patient's head.
Account of an operation for the removal of an Ovarian Tumor.

By Alden March, M.D., President, and Professor of Surgery in the Albany Medical College.—(Trans. New York State Medical Society.)

On Friday, the 7th of December, 1849, the wife of Mr. W. J. P., of Granby, Mass., aged 49 years, was brought to me in company with her husband and her family physician, Dr. Alexander Le Baron Munroe, of the same place, for consultation and advice in what was supposed to be an Ovarian Tumor.

Mrs. P. was the mother of five children, the youngest of whom was about seven years of age, in person rather spare, of a good constitution, intelligent, firm, and morally courageous.

The tumor was of three years' growth or more, having been accidentally discovered when it was about the size of a turkey’s egg, in crowding between a bed-post and the wall of the room. For a year or two after, it gave her no alarm, or scarcely any anxiety; since it was neither painful nor tender, nor was its moderate increase in size calculated to excite serious apprehensions for the future; so that its existence was not made known to her physician until within eight or nine months of the day of the operation. During the last three or four months the tumor had increased so rapidly that she appeared like a woman far advanced in pregnancy. At last she was so much incommoded as to be entirely prevented from sleeping in the horizontal position.

After inquiring into the history of the case, and making a careful examination of the tumor, the general health and condition of the patient, as to the existence or non-existence of any other disease, Dr. Munroe and myself agreed that it was a favorable case for the operation of extirpation. However, before proceeding in a matter of such vast importance to the patient and her friends, to say nothing of my own professional reputation, and that of the practice of the surgical art, I deemed it prudent to solicit a general consultation on Saturday, at which were present Dr. Munroe, Prof. E. Emmons, Prof. J. McNoughton, Prof. J. H. Armsby and Prof. Thos. Hun, my colleagues in the Albany Medical College, who came to the unanimous conclusion, after each had made a critical examination, that if an operation for an attempt at removal was ever warrantable in cases of this kind, this was a peculiarly favorable one.

The tumor was in the main smooth, though apparently lobulated, or having in one or two places a strictured or depressed line; and most of the bulk of it seemed to be made up of fluid, although there were one or two points apparently as large as
the fist, which felt like a soft solid. In the abdominal wall there did not appear to be any tenderness or soreness to the sense of touch, nor had the patient ever experienced any pain in the swelling or abdomen, excepting an uneasiness for a few weeks, which was the result of pressure and over-distension of the abdominal walls.

The bowels were thoroughly evacuated on Sunday, by a calomel purgative, and on Monday, December 10th, 1849, at one o’clock, the operation was performed in the presence, and by the aid and assistance of the gentlemen who have already been named as council in the case, as well as several medical students.

An incision was commenced about four inches above the umbilicus and carried in the line of the linea alba to near the pubis. The abdominal wall at the upper part was extremely thin, and by two or three strokes of the knife the tumor was readily brought into view. The wound was so extensive, being about 12 inches; and the tumor so much exposed, that it was readily discovered by the eye and hands to lie almost loose in the abdomen. To facilitate its extraction, a puncture was made in the front and lower part of it, by which nearly, or all of the water from the cyst was evacuated. The collapsed sac was followed down to its attachment to the right angle of the uterus, by which it was discovered that the ovarium had been dilated into a monolocular, or single sac, attached to the uterus only by the broad ligament and Fallopian tube, which, when twisted upon itself, or gathered together, was not larger than the little finger; around which, in mass, a three-threaded ligature was very tightly applied, not merely by the strength of a strong man, but by one of my own hands superadded. This was applied very near to the substance of the uterus; and next, all the substance included in the ligature, was severed about half an inch from the point of its application. In using the sponge to cleanse out a trifle of blood that had fallen into the abdomen, the ligature was detached, when a brisk, or rather an alarming hemorrhage ensued. The uterus was seized upon, drawn up, and the part containing the severed vessel, which was of the size of a crow’s quill, or larger, was secured between the thumb and finger of my assistant, Dr. Armsby, until I could pass an armed needle with double ligature, the four ends of which I tied each way. The first did not prove effective in completely arresting the flow of blood. Another needle was passed in the same manner, and secured as before, which answered the purpose. The patient must have lost nearly a pint of arterial blood, most of which fell into the cavity of the abdomen, and after having been properly removed, the wound in the
abdominal wall was closed by eight interrupted sutures, and
the ligatures brought out at the lower part of the wound. The
abdomen was supported with long adhesive straps, a large
sheet folded for a compress, and over the whole a towel or
swathe applied after the manner of its use in obstetrical prac-
tice.

The shock of the operation, and the loss of blood being so
severe for the patient, it was difficult to keep life in her for sev-
eral hours. However, at the end of six hours, reaction began
to take place. Although she was in the horizontal position
during the operation, yet she became faint; which rendered it
necessary for an assistant to make pressure with his hands on
the bowels, to aid in keeping up the circulation. She also ex-
perienced a degree of nausea, which I was then rather disposed
to attribute to the use of chloroform. Some four or five days
after, there was a disposition to retch, but not sufficient to
amount to much vomiting. This I attributed to the sympa-
thetic irritation existing between the uterus and stomach. I
believe this was all quieted by a little infusion of columbo.

In the management of the case, I constantly and regularly
used morphine, for some ten or twelve days, and did not attempt
to disturb the bowels with physic for eight or nine days. In
the mean time, the bladder became distended with urine, and
the bowels with air. The former was relieved by the use of the
catheter, and the latter, by passing up the rectum, a large gum-
elastic tube. By the adoption of these measures, the patient
obtained great relief, and continued to improve from day to
day in a very satisfactory manner.

I think the sutures were removed on the eighth day, when
union by the first intention was complete, at every point, except
at the lower angle of the wound occupied by the ligatures, with
which the divided arteries were severed. There was no red-
ness, nor scarcely any tenderness, in any part of the abdomen,
except at the lower part or in the region of the uterus. The
ligatures had all come away, and the patient had so far recov-
ered her health and strength, as to be able to make a journey of
over a hundred miles in one day, on the thirty-fourth day after
the operation.

The sac, when distended with its fluid, weighed 18 pounds.

In conclusion, I would say that I am apprehensive that a
successful case or two, may encourage us to operate too often;
when the favorable prospect, to say the least, might be but little
encouraging. A monolocular hydatid, or fluid tumor, is re-
garded as the most favorable for removal.

There should be no adhesions between the cyst and the wall
of the abdomen, omentum, or intestines. The foot stalk or
pedicle of the tumor should be small. I should prefer not to have the patient tapped at all, except as an exploring operation just as extirpation was about to take place. I would recommend to the surgeon to place his finger beneath the broad ligament or pedicle of the tumor, and divide with the knife upon it such part as would include the blood-vessels, and as they bleed secure them by a small ligature. After these are properly secured, I would then divide the Fallopian tube and the remainder of the folds of the peritoneum, which make up the broad ligament, as far from the angle of the uterus as practicable, and instead of fetching the ligatures out through the abdominal wall, I would suggest to have them threaded into a long sail-maker's needle, and conveyed by the aid of one finger in the vagina, carried high up, either in front or back of the uterus; and with the fingers of the other hand dipping down in the brim and cavity of the pelvis, through the pelvic partition; transfixing it into the vagina, and out at the os externum.

By this procedure a less direct communication would be left with the peritoneal cavity; and if any serum or blood should remain in the lower part of the peritoneal cavity, it would in the course of a few days readily find an exit by the side of the ligatures, "per vaginam." In my case I do not think there was the least peritoneal inflammation, except that which was caused by and situated immediately around the ligatures, where they had their exit from the abdominal wall. Why I would apply the ligature to the insulated blood-vessels, and as far as possible from the uterus, would be to avoid irritation and inflammation of that organ, and the fold of the peritoneal membrane, which forms the broad ligament. By this means the Fallopian tube needs not be in the least irritated by coming in contact with a foreign substance.

Cases Illustrating the Pathology of Cancer. By J. A. Swett, M. D.—(New York Journal of Medicine.)

Case 1. Carcinoma of the Stomach.—An Irishman, aged 50 years, entered the New-York Hospital, Feb 9th. He had been complaining five weeks, and principally of pain in the epigastric region. He was pale, emaciated, but free from fever. He had vomited occasionally; his appetite and digestion were tolerable; bowels constipated. On examination, a tumor was felt in the left epigastric region, convex edge, sharp, hard, and well defined, and granular; this edge could neither be traced under the false ribs, nor beyond the median line; the centre of the epigastrium was full and tense, with a good deal of tenderness.
The patient died about three weeks after admission. He hardly vomited at all, and digested simple food tolerable well. The pain in the epigastrium continued, and was at times lancinating.

On post-mortem examination, the right ¼ of the stomach was found degenerated into cancer, involving the whole substance; internally along the lesser curvature, a blackish slough was seen, extending to the muscular coat; pylorus not contracted.

Cancerous tubercles in the liver, lungs, spleen, lymphatic glands of abdomen, and under the peritoneum.

**Case 2. Carcinoma of Stomach.**—A German sailor, aged 53, admitted to the New York Hospital, Oct. 13, 1849. Was attacked, three and a half months ago, with pain in epigastrium, and vomiting soon after eating, which was followed by relief. For some time past, has retained nothing on his stomach longer than twenty or thirty minutes. Lancinating pain, extending from the right portion of the epigastrium, and radiating over the whole abdomen; pain occasionally in right shoulder. Is much emaciated; countenance pale, sallow, pinched; no fever; abdomen contracted, except in epigastrium, where it is full and tense; no distinct tumor. Bowels very constipated; vomits every thing he swallows, and besides this, a large quantity of dark brown acid, bad smelling, grimous, pasty matter. He died on the 28th. The pyloric extremity of the stomach adhered firmly to the liver. The coats of the stomach, for a considerable extent above the pylorus, had undergone the cancerous degeneration. The orifice was contracted, so as hardly to admit the end of the little finger. The liver contained numerous cancerous masses; other organs healthy.

**Case 3. Cancerous Testicle.**—This case and specimen was presented to the New York Hospital Museum, by Dr. Trask, of White Plains. A German, 30 years, laborer, received a blow on the testicle with a crow-bar. This was followed by a swelling, which in two weeks had attained the size of a young child's head. Surface irregular, lobulated, varicose veins running over it; sense of fluctuation in portions, and in one spot a feeling of gurgling; the surface hot and painful; skin in portions red; spermatic cord not affected. The tumor was first examined on 10th Aug., 1849.

About the last of Aug., symptoms of pneumonia, affecting the lower portion of the left lung, ensued, followed by hemorrhage. The patient sank more rapidly after this occurrence, and died on the 5th of October.

The tumor weighed 6 lbs. 6 oz. It was the encephaloid degeneration. The mesenteric glands were affected. The
whole left lung, except a small portion at the summit, had undergone the cancerous degeneration: encephaloid, and numerous deposits were found in the right lung.

Case 4. Carcinoma of the Tongue.—A German, aged 22, clerk, entered the New York Hospital, Oct. 14, 1849. Four months before this, a small indurated ulcer appeared on the left side of the tongue, about half way between the apex and base; it was not attended by much pain, but continued to enlarge. Other small indurated tumours appeared on the tongue, and the organ increased in size. It is now ulcerated entirely around the left margin, and to a considerable extent anteriorly, and to the right. Deglutition and articulation are considerably interfered with. The ulceration continued to extend, and the ulcerated surface assumed the appearance of wet crumbs of bread; submaxillary and lymphatic glands of neck enlarged. Repeated hemorrhages ensued, coming from a source beyond the range of vision. The patient died suddenly, about seven and a half months after the disease was first noticed.

The anterior 1/3 of the tongue was destroyed by the cancerous degeneration, and the disease had burrowed downwards and backwards to a considerable extent. The parts diseased resembled in appearance a boiled cauliflower. The entrance to the larynx was much contracted, and this may have been connected as a cause, with the sudden death.

Cases of Poisoning by Coloured Confectionary, with Remarks.

By H. Letheby, M. B., Lecturer on Chemistry in the London Hospital.—(Medical Examiner, from London Medical Times.)

Hannah Martin, aged 4½ years. Jane Embden, aged 10 years, and Amelia Leir, also aged 10 years, were admitted into the London Hospital on Sunday, April 28th ult., suffering from violent sickness and great prostration of strength.

It appeared that they had bought some sugared ornaments and colored confectionary from a Jew in Petticoat-lane; and that soon after they had partaken of these sweetmeats, they became very sick; complained of a burning sensation in the mouth, fauces, and oesophagus, of great pain in the stomach and abdomen, and were seized with violent retching, which was attended, after a few hours, with profuse purging. When they were admitted into the hospital they were seriously ill, for the features looked pale and shrunk, the extremities were deathly cold, the pulse was, in each case, small and feeble, and the surface of the body, especially of the last named child, was covered with a clammy perspiration. Emetics of sulphate of zinc were

N. S.—Vol. VI. No. VIII. 32
instantly administered, and the vomited matters were saved for analysis. Antidotes of milk, white of egg, and demulcents, were also given in great abundance; and, after the sickness had subsided, they were permitted to sleep, from which state they awoke considerably revived.

The vomited matters were evaporated to dryness, and the solid residue, not amounting to two drachms in weight, yielded abundant evidence of the presence of arsenic, copper, lead, iron, and zinc,—all of which metals, excepting the last named, had, doubtless, been derived from the confectionary of which the children had partaken.

On making inquiry into the matter, we were informed that between thirty and forty children had been attacked in a similar way, and that they had all purchased sweetmeats from the Jew in question; but it does not appear that he was acquainted with the poisonous nature of his merchandise, for he had purchased it (so he stated) as the refuse stock of a large and very respectable firm in the city.

It is not generally known that the ornamental kinds of confectionary are frequently tinted with poisonous pigments; that the greens for example, are commonly produced by means of arsenite of copper, (Scheele’s green,) verdigris, or a mixture of chrome and prussian blue; the yellow, by chromate of lead; the red, by vermillion, (bisulphuret of mercury,) or oxide of iron; and the whites, by carbonate of lead, oxide, or carbonate of zinc, chalk, or sulphate of baryta; and that frequently, the fine frosting which covers the commoner kinds of twelfth-cakes, and the hard white sugar of comfits, contain from 10 to 30 per cent. of plaster of Paris or of whiting.

I have been induced to record the preceding cases, not so much for the purpose of exhibiting the nature of the symptoms observed, as with the the view of showing the necessity for some legislative interference in a matter of what may truly be termed wholesale poisoning; for, without such evidence before the mind, it would not be credited by the great bulk of the community, that many of the prettiest and daintiest looking confections of the dessert-table are like the choice luxury of the Queen-mother, but too often the source of danger to those who partake of them.

Within the last three years no less than seventy cases of poisoning have been traced to this source; and how many, may we ask, have escaped discovery? In the month of September, 1847, Mr. Hetley, who is the visiting surgeon of St. Marylebone Infirmary, reported in the Pharmaceutical Journal, that he was requested, on the 14th of that month, to go as quickly as he could to the relief of some persons who had been
taken suddenly and dangerously ill. He found three adults and eight children severely affected with vomiting and retching; the angles of their mouth and linen being colored green by the ejections. On seeking into the cause of this, he was told that one of the children had bought two pennyworth of some colored confectionary ornament, of which they had all partaken. Some of the offending article, (a thin cake of sugar and Paris plaster, covered with a layer of bright green) was, however, found, and it at once made the case clear.

In commenting on the above, Dr. Guy states, that "an accident on a larger scale, but happily unattended by any fatal result, occurred in our own experience,—one of the patients having been brought to the King’s College Hospital on the day after the accident. An ornamental green basket, after having been used at an evening party, was given to one of the attendants, who distributed the fragments among the inmates of a large workshop. Severe vomiting and purging was the result. On inquiry at several confectionaries, we, ascertained that arsenite of copper is commonly used to give a green color to confectionary, and an analysis of a fragment of the basket confirmed this statement."—Ranking’s Abstract, Vol. VII., p. 347.

At the very time that the preceding article was going through the press, an inquiry was being instituted at Northampton before the county coroner, Mr. Hicks, respecting the death of Mr. William Cowfield, who, with twenty others, was poisoned at a public dinner given in that town, on the 7th of June, 1848, when it appeared that deceased had partaken of a blanc-mange, the top of which was colored with emerald green, (arsenite of copper.) and of which he died.

In the month of February, 1849, Dr. W. Fergus published the case of three children, who were poisoned by eating the green-sugared ornaments from a twelfth-cake. (Med. Gaz., p. 304.) And, in the month of June following, Professor Christison exhibited to the members of the Edinburg Medico-Chirurgical Society, a green powder which he had purchased at a confectioner’s in that city. It was a portion of the stock employed to color jellies, &c.; and, on examination, he found that it consisted of sugar mixed with verdigris and arsenite of copper. His attention was drawn to it by the severe illness of two maid-servants who had partaken of some jelly colored with it.—London Journal of Medicine, Vol. 1., p. 702.

Two years since, professor Louyet, of Brussels, wrote to inform and caution us concerning the fact, that bon-bons, colored with an unusual quantity of chromate of lead, were being manufactured largely in London, and exported thence to Belgium. The bon-bons in question consisted of a species of
aromatized sugar, colored yellow throughout its mass, exhibiting the scent and flavor of lemon, and encrusted with a species of transparent red-currant shell. Very recently some cheap almond and caraway and comfits have been sold at the grocers' and confectioner's in many parts of London, which are colored yellow by means of this pigment, for I have detected as much as half a grain of chromate of lead in three of these comfits.

This dangerous practice of coloring sweetmeats, &c., with poisonous substances is, unhappily, not peculiar to the English; for very recently some cases have been reported by MM. Houze and Jaubert, in which four persons were seriously attacked after having partaken of some bon-bons which were colored with arsenite of copper. One of the patients (a child aged six years) died from the effects of the poison, after an illness of two days; and a second child was brought so near to the grave that she did not recover for two years after the accident. So, again, it is recorded by Chevalier, that at a breakfast given on a festive occasion by an eminent Parisian lawyer, a boar's head was decorated in a very artistic matter with masses of fat, which were colored of a lively red and green tint. One of the guests, who was well acquainted with chemistry, suspecting that the pigment might be poisonous, retained a portion of the fat for further examination, and he found that it contained about two per cent. of arsenite of copper.—Jour. de Chirur. Med., Jan. 1847.

All these facts, and there are many others of alike character which relate to the trade of the pickle-merchant, are sufficient to show that however difficult it may be for the Home Secretary to give a correct definition of a poison, or even a complete list of poisonous substances, it is high-time that the Government should take some steps to protect the lives of the community from danger, by imposing a sufficient check upon the present unrestricted sale and use of these, and such as these, the commoner poisons.

BIBLIOGRAPHICAL NOTICES.


No work upon Medical Jurisprudence has been more favorably received by the medical and legal professions, than Taylor's. In England, several thousand copies have been sold in the few years
which have elapsed since the appearance of the work. This fact not only proves the high estimate placed upon the labors of Mr. Taylor, but evinces a growing interest in the important subjects of which he treats. We are gratified to find that in our own country, also, Medical Jurisprudence attracts a much greater degree of attention than it did a few years ago, and that it is now taught in most of our medical colleges.

This new edition of Taylor's Medical Jurisprudence has been enlarged by the addition of more than one hundred pages, and contains the newly observed facts which bear upon the subject. "Many legal cases have been added which have given rise to new questions requiring the aid of a medical jurist for their solution." The subject of poisons has been abridged, in consequence of the publication by Mr. Taylor of a separate work on that subject, but it still contains what is necessary for practical purposes. Large additions have been made to the sections on wounds, and infanticide. A number of notes and observations have been added by the American editor, Dr. Griffith, which give additional value to the work.

We cordially recommend this new edition of Mr. Taylor's work to our readers, as the very best work on Medical Jurisprudence in our language, and one fully "on a level with the advanced state of science."

2. A Theoretical and Practical Treatise on Midwifery; including the Diseases of Pregnancy and Parturition. By P. Cazeaux, Adjunct Professor in the Faculty of Medicine of Paris, etc., etc. (Adopted by the Royal Council of Instruction.) Translated from the second French edition, with occasional notes and a copious index by Robert P. Thomas, M. D., Member of the Philadelphia County Medical Society, &c. With one hundred and seventeen illustrations. Philadelphia: Lindsay & Blakiston. 1850. 1 vol. 8vo., pp. 765.

This is not a new system of Midwifery, but a translation and republication of the second edition of an excellent work which was first published in 1840, in Paris.

Almost as soon as the first edition issued from the press, we were fortunate enough to receive a copy—we approved very highly of it, made frequent reference to it in our lectures, and would have gladly adopted it as a text-book, had it been translated into our own language; indeed we contemplated, and might have ourselves undertaken the task of translating it, had not more pressing engagements prevented. Since 1840, many excellent treatises have appeared,
rendering a translation of Cazeaux's work less necessary; but it is by no means altogether superseded; for although there are some, taken as a whole fully as good, we would consider this treatise, in some respects, superior to all the rest.

The profession is indebted to the translator for the labor he has so ably performed.

The fact that, as early as 1841, one year after its first publication, M. P. Cazeaux's Treatise on Midwifery was adopted by the Royal Council of Public Instruction, is a sufficient guaranty of its excellence and of the high reputation it had even then acquired in France. The second edition is much more comprehensive and complete than the first. Without undertaking to set forth the merits or point out the defects of this work, we believe it has as many of the former and as few of the latter as any system of obstetrics extant. Perhaps the greatest imperfection is that observed in the American Journal of the Medical Sciences, the silence of both author and translator on the employment of anaesthetic agents in obstetric practice: for whether their use be proper or improper, safe or dangerous, to be commended or condemned, it is a subject altogether too important to pass by without comment. J. A. E.


The first edition, or, more correctly, Dr. Bennett's first work was re-printed in the United States in 1847. In the volume of this Journal for the same year, we noticed this publication at some length, and in the most favorable terms: subsequent experience has fully confirmed the high opinion, then expressed, of the views entertained by Dr. Bennett on the pathology and treatment of diseases of the uterus. We believe this little work has done as much, or more than any ever published, to modify and improve this department of practice. We have no hesitation in acknowledging our indebtedness to it; we believe that we, as well as our patients, though in different respects, have profited by it.

The author very correctly remarks in his preface: "Although nominally a second edition, the present is in reality a new work. It will be found to contain, not only a, faithful history of the various
pathological changes produced by inflammation in the uterus and its annexed organs in the different phases of female life, but also an accurate analysis of the influence exercised by inflammation in the production of the various morbid conditions of the uterine system, hitherto described and treated as functional."

This is a much more comprehensive work than the former, not only including a fuller treatise on the same, but comprising many important subjects not embraced in that.

The author is sometimes a little too exclusive; he doubtless attributes too much to inflammation, considering all cases of displacement of the uterus to depend on increased volume and gravity consequent on inflammation; he is perhaps correct in a large majority of cases, but we believe there are some altogether independent of it, and to be remedied on an entirely different principle and plan of treatment. We would not claim perfection for any human performance, but we do regard this a most excellent and valuable work, which cannot fail to do a large amount of good.

J. A. E.


This excellent collection of essays constitutes an octavo volume of 464 pages.


The second part consists of miscellaneous essays, to wit:—I. Dr. Fothergill on the Management proper at the Cessation of the Menses. II. Dr. Macbride’s Cases of Tumefaction of the Labium after Delivery. III. Dr. Clarke on Cauliflower Excrescence from the Os Uteri. IV. Dr. Clarke’s two Cases of Tumour of the Uterus. V. Dr. Denman’s Account of an Excrescence from the Womb.

Dr. Churchill is so favorably known to the profession in the United States, that his name alone would be a sufficient recommendation to any book he might edit. But the authors of these essays themselves
stand too high in credit to require the endorsement of Dr. Churchill to give them currency. Whoever desires to inform himself thoroughly on the subject of puerperal fever could not turn to a better source for information. The miscellaneous essays are very good treatises upon the subjects to which they refer. J. A. E.


It is not our purpose to review the work, the title of which is given above: but though this may not fall strictly and legitimately within the province of a Journal restricted to medicine and surgery, we can with propriety give it a passing notice. We are aware that, for the past few years, a controversy has been carried on in the city whence this publication emanates, on the subject of the unity of the human race, and an attempt made to present it as the question of the age in which we live. In this discussion, we regret to find our profession opposed to the Clergy—the M. D.'s have taken the negative side, while the D. D.'s advocate the affirmative.

Dr. Bachman has certainly written a most able argument, and done much to convince the most sceptical of the position that all mankind sprang from one race, an original pair. For ourself, we are not ashamed of the doctrine of the Bible, and feel under much obligation to the author for this deeply interesting book. We commend it to the careful perusal not only of the scientific, but to all classes of readers, especially disbelievers in the Mosaic account of the peopling of the world by the Adamic race.

P. F. E.

PART III.

Monthly Periscope.

_On the Existence of two new kinds of Anatomical Elements in the Medullary Canals of Bones._ By M. Ch. Roux.—(Brit. and For. Medico-Chirurgical Review, from Gazette Médicale de Paris.)—In all bones, whether short, flat, or long, the medullary tissue contains, besides the adipose cells, the vessels, and the finely granular amorphous matter, a peculiar kind of cells, which may be termed medullary cells; these are spherical, or slightly polyhedral, transparent, with defined borders, and generally include a spherical, regular, transparent, sharply-defined nucleus. Between the nucleus and the cell-wall, and especially around the former, there exists a variable quantity of molecular granules. These cells are more abundant in young sub-
jects than in adults, and towards the end of the period of gestation they occupy nearly the whole of the medullary cavity, to the exclusion of the adipose cells.

Another kind of cell is met with in long and short bones, but normally in less amount: the knowledge of these cells, however, is important, because it is in an unusual development of them that some diseases of bones originate. Certain tumours of bone, considered by pathologists as cancerous, are not truly so, but are made up of large plates or flattened lamellæ, sometimes polygonal, sometimes irregular circularly, having a diameter of at least from 1-20th to 1-12th of a millimetre (or from 2 to 3-100ths of an inch), finely granular in their texture, and containing from six to ten large oval nuclei, which are embedded in the thickness of the plates. The author states that he has met with these bodies as the principal components of several osseous tumours; and that such tumours owe their origin to an unusual local development of a normal element of bone. For these peculiar bodies are found in the medullary tissue of even healthy bone; being much less numerous, however, than either the true medullary or the adipose cells; but being, like the preceding, more abundant in the bones of young subjects than in those of adults.

Researches on the Physiology of Medulla Oblongata. By M. Brown-Sequard. (Gazette Médicale.)—The following are the results of the author’s experimental inquiries, made upon fifty-four species of animals, belonging to the five classes of Vertebrata:—

1. The life of Batrachia does not seem to be considerably shortened after the removal of the medulla oblongata alone, or with the rest of the encephalon, so long as the animals remain in air of a temperature below 46° (Fahr.) Many individuals have lived, in these conditions, more than three months. 2. The sanguiferous and lymphatic circulation, the cutaneous respiration, the digestion, the mucous, epidermic, and urinary secretions, the nutritive operations, the reflex power, and the properties of nerves and muscles, continue in Batrachia, deprived of the medulla oblongata, with as much rapidity and energy as in those which remain uninjured, and which are exposed to the same temperature. 3. All animals, even adult Mammalia, may survive the removal of the medulla oblongata during from ten to twenty minutes, when their temperature has been reduced below from 86° to 92°. For this result pulmonary insufflation is not requisite. 4. The most remarkable differences present themselves in the duration of life, in the different individuals of the same species, after the removal of the medulla oblongata, these being in exact accordance with the temperature. Thus the duration of life in the Batrachia may be reckoned by months, between the temperatures of 32° and 46°; by weeks, between 41° and 54°; by days, between 50° and 61°; by hours, between 66° and 77°; and by minutes, between 86° and 104°.

Remarkable Case of Retention of Urine after Delivery. By M. Malgaigne. (Med. Chir. Rev.)—M. Malgaigne was called to a
woman on the fourth day after her delivery, in consequence of the various attempts at relieving retention of urine by catheterism having failed. The abdomen was as much swollen as prior to delivery, and the woman was in a state of dreadful suffering. On inquiring, M. M. Malgaigne learned that both she and one of her daughters urinated in a different manner from other females—the jet passing upwards and in front; and he concluded that the urethra mounted higher up in front of the pubis than usual, and that this bone had prevented the passage of the catheter. By directing the instrument first from above downward, then turning it, and pushing it upwards and backwards, he easily reached the bladder. He was perfectly astonished at the enormous quantity of urine that came away—this far exceeding anything he had ever witnessed before. By weight, it amounted to 3300 grammes, and by measure to three litres; that is, between eight and nine apothecaries pounds, or between five and six imperial pints.

Scrofulous affections treated with preparations of the leaves of the Juglans regia, or English Walnut.—The April number of the Archives Générales contains an article on this subject by Dr. Negrier, of Angers. The article is devoted mainly to an analysis of a memoir on this subject by Dr. Borgiali, an Italian physician, which appeared in 1846. A number of cases of scrofulous disease are detailed, and the following conclusions drawn by Dr. Negrier:—1st, that scrofulous affections are, in general, radically cured by the preparations of the leaves of the walnut; 2d, that the action of this remedy on the economy is sufficiently constant to enable us to count on the cure of the greater number of the cases submitted to its influence; 3d, that its influence is slow, innocent and durable; 4th, that its first effects are general, and subsequently, local; 5th, that scrofulous affections of the skin, of the mucous surfaces, of the system of vessels and lymphatic ganglia, are cured as certainly and as promptly by the preparations of the leaves of the walnut, as by any other known method; 6th, that affections of osseous, cartilaginous, and ligamentous systems of a scrofulous origin, are sometimes radically cured by this means, lymphatic subjects always experiencing good effects, and nervous subjects finding but little benefit; 7th, that scrofulous ophthalmias are effectually and promptly cured by a treatment having for its basis, the leaves of the walnut.

The use of the remedy must be long continued, to the extent of several months, even in recent or slight cases, and for a still longer time in old and obstinate cases. Dr. Borgiali employs an infusion of the leaves, either green or dried in the shade—from two or three leaves, to eight or more, infused in a half a cup of water. He also employs a decoction of the fruit with the envelope of the fruit, recently boiled,
and an extract made of the leaves and hull of the fruit. Of the extract which is the most feeble preparation, and which he only employs in the winter, he gives from ten to sixty grains. The decoction and infusion is usually given once a day, on an empty stomach, though in some instances the doses has been carried to the extent of one or two pounds a day. It usually acts powerfully as a diuretic, and produces some purging, especially when first taken. Under its use the digestion improves, the appetite returns, and the patient, before gloomy, recovers his former vivacity.

_Solution of Gutta Percha in Chloroform in the Treatment of Eczema Rubrum._—The Journal des Connaissances Médico-Chirurgicales contains an interesting case of Eczema, successfully treated with a solution of gutta percha in chloroform, reported originally in the Gazette Médicale de Strasburg, by Dr. Robert. About a year ago a female, aged about 46 years, was suddenly attacked with urticaria, complicated with eczema and prurigo. The prurigo spread over the entire surface, but the eczema concentrated itself almost exclusively on one of the limbs, where it attained a high degree of inflammation. As soon as the vesicles emptied themselves, the limb would again swell, and a new infusion of ichorous fluid would plunge the patient into an indescribable state of excitement and agony. Dr. R. resolved to employ the gutta percha, to protect the diseased surface from the contact of the air, and to dissolve it in a fluid which might favorably modify the vitality of the skin. To effect these purposes he prepared a solution, made with five grammes of gutta percha in thirty grammes of chloroform. This fluid was then spread upon the diseased surface, and at first produced a very marked burning sensation. In a few minutes it became solid, and formed a perfect coat. On the next day, the vitality of the skin seemed to have been favorably modified; the patient suffered less itching, and the vesicles had nearly all disappeared. Every day the portions of the varnish which were detached from the surface by the exudations from the skin were removed, and the solution again applied. Under this treatment, in seventeen days the disease was reduced to more than three-fourths of its original dimensions, and Dr. K. supposed that in eight days more, it would entirely disappear. No internal means were employed except a tonic decoction.

The Journal des Connaissances suggests that Dr. R. should have awaited the completion of the cure before reporting the case, but supposes that his haste was induced by a fear that some one would take from him the honor of priority in the use of this new remedy for ecze-
ma. Dr. R., however, cannot claim the honor, of being the first to apply a varnish to diseased surfaces to protect and modify them, for his preparation is but another form of collodion, and this, Mr. Mitchell of Dublin has employed successfully in psoriasis, and others have since been equally successful with it in other diseases.

On the febrifuge and anti-periodic properties of Chloroform. (Archives Générales de Médecine.)—At the meeting of the Academy of Medicine of the 23d March, Dr. Delioux, Professor of the Normal School at Rochefort, presented a communication on the febrifuge and anti-periodic properties of chloroform, given internally, in cases of intermittent fever. He employed it at first in old and obstinate cases, in which cinchona, chalybeates and bitter tonics, had only succeeded in suspending the attacks for a time. In many instances the chloroform succeeded in checking the disease; in others it failed, or at least, only suspended it for a short time. From his observations, Dr. D. concludes that independently of its antispasmodic and sedative properties, chloroform possesses antiperiodic and febrifuge properties, inferior probably to quinine and arsenic, yet positive, and deserving a trial in intermittent affections. The mode of administration is similar to that of the cinchona, that is to say in divided doses, taken some hours before the time of access. In tertians, and obstinate quartans, Dr. D. gives the medicine every day, increasing the dose on the day of the access, and continues it for some days after the disease is arrested, in decreasing doses. On the seventh and fourteenth days he renews the use of the chloroform.

We are much disposed to doubt whether chloroform has any proper febrifuge property, though it will probably be found competent to arrest a paroxysm of intermittent, as indeed are all the diffusible stimulants, if their action is properly timed. The suggestion to renew the use of the remedy on the seventh and fourteenth days after the subsidence of the disease is a most valuable one, when applied to the use of the quinine and other periodics. We are fully persuaded that if this plan was generally adopted, we would seldom fail in effecting a permanent cure.

Strychnia in Intermittent Fever. (Medical Examiner.)—Dr. McKinley, of Tenn., states that he has employed the strychnia with the most marked and happy effects in a great many cases of intermittent fever in which quinine, combined with other acknowledged tonics, had been given without success. He gives one-sixteenth to one-eighth of a grain of strychnia every three hours, gradually augmenting the
dose in proportion to the lost susceptibility, until in some cases a grain may be given three or four times a-day, without the production of any toxical effect whatever. It may be given in a pill of bread-crum. Dr. McK. asserts that no other remedy has proved so potent in his hands.

We have been for some time aware of the value of the strychnia in the treatment of obstinate intermittents, but we would caution those who may not be in the habit of prescribing this powerful article, against the use of grain doses, as suggested by Dr. McK., even though such doses in his hands may have failed to do injury. The small doses will usually be found quite efficient, and certainly free from danger.

Chronic Inflammation of the Bladder cured by injections of a solution of Nitrate of Silver. (British American Medical and Physical Journal.)—Dr. R. L. Macdonnell reports a case of chronic cystitis treated by Dr. Belin, with injections of nitrate of silver into the bladder. The patient was an unmarried female aged twenty-seven, and had labored for eight years under pain in the pelvic region, suppression of the menses, frequent micturition, heat and smarting of the private parts. By treatment the menses was partially restored, and the ordinary remedies for cystitis gave some relief. Subsequently the patient became much worse; she had pain in the loins and hypogastrium, frequent desire to urinate, inability to remain long in the sitting position, with great restlessness, and tendency to chilliness and perspiration. The urine, under microscopic examination, exhibited pus globules, and crystals of triple phosphate. An injection of four grains of nitrate of silver dissolved in four ounces of water was thrown into the bladder, and retained for fifteen minutes. Eight days after, eight grains were injected, and retained ten minutes. Two days after, a solution containing twelve grains was thrown up. These applications, however, seemed to afford but little relief. The strength of the solution was then increased to four grains of the nitrate to the ounce of water, when the symptoms yielded promptly.

Abortive method of treating Coryza. (Bulletin Gén. de Thérapeutique.)—M. St. Martin suggests the application of the vapor of acetic acid as a valuable remedy in cases of coryza, in their incipient stage. A flask containing a small portion of the acid is held to the nostrils, and deep and slow inspirations made for about five minutes. The vapor penetrates the whole olfactory cavity, and impresses on the mucous membrane a modification slightly phlogistic, yet sufficient to dry
up the nasal flux. This mode of treatment has been repeatedly
employed with success by M. St. Martin, not only on himself, but in
numerous other cases.

Neutral Citrate of Soda. (Gaz. Méd. de Lyon. Journal des Con-
naissances Med. Chirurg.)—A few years since M. Rogé proposed the
citrate of magnesia as a new purgative, more agreeable to the taste
than other saline articles, and equally efficient. Its high price, how-
ever, has prevented its general use. Since then, M. Guichen, of
Lyons, has sought for another medicine of analogous properties, which
would not be liable to this objection, and now proposes the citrate of
soda, as an article possessing the same therapeutic properties as the
citrate of magnesia, having no disagreeable taste, and being far cheaper
than that salt.

The neutral citrate of soda chrystallizes in six sided pyramids; it
is white, without odour, slightly acid, and effloresces slightly in the
air. By the addition of a sufficient quantity of lemon syrup, it fur-
nishes a very agreeable purgative drink.

Citrate of Iron and Magnesia (London Journal of Medicine, from
Journal des Connaissances Méd. Chirurg.)—The citrate of iron and
magnesia appears, to M. Van der Corput, likely to come into general
use among ferruginous preparations, being easy of administration, and
not liable to produce constipation. It is prepared by dissolving two
parts, by weight, of recently precipitated hydrated oxide of iron in a
solution of three parts of citric acid; the liquor is then saturated
with carbonate of magnesia, and evaporated to dryness. The salt
is in the form of shining brown scales: the taste is sweetish, very
slightly inky, and not at all disagreeable. It is perfectly soluble in
water: it is not deliquescent, so that it may be given in the form of
powder. It may be prescribed in doses of 15, 30, or 60 centigrammes
(2½, 5, or 10 grains).

Syrup of Citrate of Iron and Magnesia is prepared by dissolving 8
grammes in 15 grammes of orange-flower water, with 180 grammes
of simple syrup. This is one of the most agreeable preparations of
iron.

Saccharine Confection of Citrate of Iron and Magnesia.
Take of citrate of iron and magnesia . . . . . 1 drachm
Powdered sugar . . . . . . . . . . . . . . . . . 7½ drachms
Powder of canella . . . . . . . . . . . . . . . . . 1 drachm
Mix, and divide into powders, each containing twelve grains.

Lozenges of Citrate of Iron and Magnesia.
Take of citrate of iron and magnesia . . . . . ½ drachm
Powdered sugar . . . . . . . . . . . . . . . . . 7¼ drachms
Saccharine confection of vanilla, . . . . . . . . ½ drachm
Mucilage of tragacanth, a sufficient quantity.
Mix, and divide into lozenges of twelve grains.
Medical Miscellany.

New Medical Journal.—We have received the first number of the New York Medical Gazette and Journal of Health, published weekly, under the editorship of D. M. Reese, M. D. The Journal will be specially devoted to "the vindication of rational medicine and conservative surgery, in contradistinction from the follies and fancies of the times; and to the guardianship of the public health from the mischiefs of popular ignorance and delusion." The well-known ability of the editor will doubtless make the journal a valuable work to the profession, and we know of no one more competent to combat "popular ignorance and delusion."

University of New York.—The recent election of Dr. Detmold to the chair of Theory and Practice in this Institution, appears to have so much dissatisfied Dr. Valentine Mott as to induce him to resign the chair of Surgery. Whereupon Dr. Detmold also resigned his Professorship. Both resignations have been accepted. There are now two vacancies to be filled.

Still Born and Premature Births in the City of New York.—The New York Medical Gazette contains the following extract from the report of the City Inspector for the year 1849, by which it will be seen that the infant mortality in that city is of a most startling character:—

"In three years we have a mortality from premature births of 400; and from still-born of 3,139; making a total of 3,539 (!) human beings that never breathed.

"Since 1805, when returns were first made to this office, the number of these accidents have steadily and rapidly augmented. With a population at that time of 76,770, the number of still-born and premature births were 47; in 1849, with a population estimated at 450,000, the number swells up to 1,320! Thus, while the population has increased nearly six times since 1805, the annual number of still-born and premature births has multiplied over twenty-seven times!!

"To show the rapidity of this increase, I have prepared the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio to Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1805</td>
<td>1 to 1612.12</td>
</tr>
<tr>
<td>1810</td>
<td>1 &quot; 1025.24</td>
</tr>
<tr>
<td>1815</td>
<td>1 &quot; 986.46</td>
</tr>
<tr>
<td>1820</td>
<td>1 &quot; 654.52</td>
</tr>
<tr>
<td>1825</td>
<td>1 &quot; 680.68</td>
</tr>
<tr>
<td>1830</td>
<td>1 &quot; 597.60</td>
</tr>
<tr>
<td>1835</td>
<td>1 &quot; 569.88</td>
</tr>
<tr>
<td>1840</td>
<td>1 &quot; 516.02</td>
</tr>
<tr>
<td>1845</td>
<td>1 &quot; 384.68</td>
</tr>
<tr>
<td>1849</td>
<td>(estimated) 1 &quot; 340.90</td>
</tr>
</tbody>
</table>
“This is a state of mortality from these accidents truly alarming, which, while no remedy—in this connection can be advised, demands our most serious consideration. What of crime and recklessness there is in this sum dare not be expressed, for we cannot refer such a hecatomb of human offspring to natural causes. “An honest and fearless expression of the causes or circumstances attending these events, on the part of the medical attendant, would bring into this department an amount of valuable knowledge that might be useful in checking this horrible and increasing waste of life.”

Medical Officers in New York.—The N. Y. Medical Gazette gives a list of the paid medical officers in that city holding appointments from the State, City, and from the governments of the several institutions. They are twenty in number, with an aggregate annual compensation of $51,600. The Health officer has a salary (supposed) of $15,000; Coroner $10,000; Physician to the Marine Hospital $6,000; Health Commissioner $3500. The other salaries ranges from $500 to $2000 per annum.


<table>
<thead>
<tr>
<th>Sun Rise</th>
<th>Ther.</th>
<th>Bar.</th>
<th>4, P. M.</th>
<th>Ther.</th>
<th>Bar.</th>
<th>Wind</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>60</td>
<td>20</td>
<td>70</td>
<td>70</td>
<td>20</td>
<td>N. E.</td>
<td>Fair afternoon—rain last night</td>
</tr>
<tr>
<td>56</td>
<td>56</td>
<td>78</td>
<td>75</td>
<td>75</td>
<td>82</td>
<td>E.</td>
<td>Fair. [and morn'g, 50-100.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>88</td>
<td>81</td>
<td>81</td>
<td>91</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>30</td>
<td>83</td>
<td>83</td>
<td>30</td>
<td>S.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>3</td>
<td>83</td>
<td>83</td>
<td>30</td>
<td>E.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>8</td>
<td>85</td>
<td>85</td>
<td>30</td>
<td>W.</td>
<td>Fair.</td>
</tr>
</tbody>
</table>

20 Fair days. Quantity of Rain 90-100. Wind East of N. and S. 6 days. West of do. do. 8 days.