PART I.—ORIGINAL COMMUNICATIONS.

ARTICLE V.

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This singular and wonderful compound, now extensively known throughout the civilized and a large portion of the savage world, and employed under some form or other, as a stimulating beverage by so many millions of the human race, cannot but present a subject of interesting consideration to the medical profession. Its prompt, powerful, and peculiar effects upon the animal economy, and the lamentable evils which its habitual use has for centuries entailed upon the physical, mental, and moral man—often ruinously involving the fame, fortunes, and happiness of thousands, and hurrying myriads of victims to an untimely grave, challenge a scientific examination into its History, Pharmaceutic origin and uses, Chemical constitution, Medical claims, and Modus operandi: together with the Physiological and Pathological Phenomina consequent upon its administration, and the Antidotal treatment required. For while, from its solvent, stimulant, styptic and antisceptic properties, it has strong claims to a respectable position upon the list of therapeutical agents, yet the frequent, fearful, and often fatal derangements—organic as well as functional, which it superinduces in the animal economy has sufficiently warranted its classification among narcotico-acrid poisons—the place assigned it by Dr. Orfila, in his valuable and extensive work on Toxicology, and since adopted by the distinguished Edinburgh Professor, Dr. Christison, in his more scientific and elaborate treatise upon the same subject.
Its History.—The time of the discovery of the alcoholic principle is not reported by the most ancient writers, nor can it be found even in the legends of tradition. The knowledge of its existence, however, can be traced to a very remote period in the history of our race. By the oldest and most veritable of histories we are informed that the patriarch Noah cultivated the vine, and was inebriated with its fermented juice immediately after the deluge, which is fixed by the best chronologers in the 1656th year from the creation, or B. C. 2348 years,—giving an antiquity to this beverage (i. e. wine) of 4194 years. From the same authentic source we learn that the Jews were for centuries acquainted with its use. The venerable Lot’s incestuous debauch, Nabals wine-maddened feast, Belshazzar’s bacchanalian revel, Ammon’s drunken murder, Benhadad’s bestial inebriation, and Uriah’s stupid sottishness on the night before he fell—all, all seem to have been preserved upon Revelation’s page to inspire the disgust of posterity against the loathsome and damning evils of intemperance, and to signalize the righteous retributions of Heaven against its iniquity, whether found in a patriarch, a king, or a dependent. From profane history we also glean some relevant facts. Homer reports the use of wine in one of his immortal poems, i. e. the Odyssey, written according to Velleius Paterculus about 960 years before the Christian era, and Herodotus, the oldest accredited historian, who completed his celebrated work 445 years before Christ, mentions the use of malt liquors in Egypt, five years anterior to that date (i. e. 450 B. C.).

The first distillation of Alcohol, has been attributed by some to an Arabian chemist who lived about nine centuries ago. About the 13th century, Dr. Raymond Lully, a learned native and divine of the island of Majorca, whose pharmaceutical knowledge seems to have been in advance of the age in which he lived, and who is known to have prepared the Oil of Rosemary, the Acetate of Lead, and several of the salts of Mercury, has also indicated his acquaintance with the Spirits of Wine, which he reports under the appellation of “Aqua Ardens.” Although the French chemist, Thenard, is disposed to attribute its discovery to Arnold de Villeneue, at Montpelier, “early in the 14th century.” So that this singular and powerful chemical compound has an authenticated existence of at least 500 years.

Its Pharmaceutical origin and uses.—Alcohol, although formed from organic matter, yet is never found in the natural and healthful condition of any product of the animal or vegetable king-
Alcohol.

It is only when the laws of life have ceased to act, and the elements of the organized tissues, no longer under their control, are excited by the presence of putrescible nitrogenous matter, to abandon their former relations, and unite in the formation of one or more new compounds, under the action of new affinities, that this strange and important fluid is obtained. The peculiar metamorphosis referred to, is effected in the vinous fermentation, and this must be preceded by the saccharine fermentation, or the presence of sugar and water, or, at least, of some amylaceous substance, as malt, potatoes, &c., readily convertible into sugar, from the starch which it contains.

It seems indispensible to the production of the result that some azotized body, as albumen, or gluten in a certain stage of decay, be present to commence the fermentative action. This is effected, not by a combination of the yeast or ferment with the elements of the liquid, but by what has been denominated by Berzelius a catalytic force, which seems to operate by disturbing the molecular equilibrium of the compound mass, and breaking up its existing affinities, and allowing no relapse to its former condition, but propagating through the whole the same corpuscular motion, which characterizes the catalytic agent:—that, in the mean time, maintaining its unimpaired and independent identity. This change goes on most rapidly at the temperature of 75° or 80° of Fahrenheit's thermometer. The products formed are purely carbonic acid gas and alcohol. But after the effervescence, occasioned by the liberation of the gas, has terminated and the liquid has become clear, the process must be arrested by the exclusion of air, or exposure to cold, or the acetous fermentation will supervene, by the presence of the Alcohol and Oxygen—1 atom of the former absorbing 4 atoms of the latter, and by affinitary change, turning out 1 atom of anhydrous acetic acid and 3 of water. At this stage, then, the mass should undergo distillation, which ought to be repeated several times till the resulting spirit has a specific gravity of .838—water being 1000. This is the strength of Rectified Spirit or the commercial Spirit of Wine, which still retains 13 or 14 per cent. of water. By distilling with half its weight of quick lime, to absorb the water, absolute alcohol may be obtained of .793 specific gravity, whose boiling point is about 173° Fahrenheit. This substance, however, save for purposes of chemical analyses, where it acts a most important part in determining the purity of other substances, as Iodine, the vegetable Alkalis, Castor Oil, &c., is never
employed of the strength order'd in the pharmacopoeias. When used, therefore, as an article of official pharmacy, for preparing tinctures, spirits, extracts, &c., Rectified Spirits (sp. gr. .838) or Proof Spirit (sp. gr. .920) is the form almost universally preferred.

The different descriptions of spirituous liquors sold in the commercial world, and which have for centuries constituted the fruitful source of crime and wretchedness over a large portion of the civilized population of the globe, are derived from a variety of substances, and exhibit but so many different forms of diluted Alcohol—from the more pungent and fiery fluids, as Brandy, (Cognac.) Rum, Scottish and Irish Whiskey, &c., containing from 53 to 54 per cent. of the pure spirit, down through the list of stronger wines, as Lissa, Madeira and Port, with from 24 to 25 per cent. to the milder class, as Gooseberry, Champagne, &c., with 11 or 12 per cent.—and farther still, till we reach the cheaper fermented liquors consumed by the peasantry of many countries, embracing Ale, Porter, Small Beer, &c., &c., and furnishing an alcoholic per centage of only from 10 to 1.2.

Indeed almost every fruit and saccharine juice may be made to yield this valuable spirit in some form. Arrack, the popular drink in Batavia, is obtained from Rice—Palm wine in Ceylon, from the Cocoa Nut, and the Kourniss, a common beverage of Tartary, from Milk, while in any country which grows them, the Sugar Maple, Beets, Parsnips, Potatoes, &c., yield it in abundance when tortured by the various processes which art has devised.

Its Chemical Constitution, &c.—Alcohol has been ranked by some chemists among the Oxyhydrocarbons—a class of bodies including the Ethers, many of the vegetable Acids, Creosote, Petroleum, &c.

According to this view, the elementary composition of Alcohol is expressed by the formula, C₂H₅O₂. But since the adoption of the hypothetical radical, Ethyl, existing in Ether and its compounds, the aggroupment of the elements is believed to be different, and Alcohol is regarded to be the Hydrated Oxide of Ethyl. Ethyl itself being a Hydrocarbon and represented by the formula C₂H₅—leaves 1 atom of Hydrogen and 2 of the Oxygen, as contained in the first formula to be appropriated thus—viz: 1, of the 2 atoms of Oxy-

* As the chemical constitution of bodies depends upon molecular attractions, it is supposed that 4 atoms of Carbon, 6 atoms of Hydrogen, and 2 atoms of Oxygen, unite under their affinitary habits to form 1 atom of Alcohol.
gen goes over to oxydize the comp. radical, Ethyl, while the other atom of Oxygen unites with the atom of Hydrogen to form \textit{water}—which combining with the now oxydized base, \textit{hydrates} it, and gives the following formula for the Hydrated Oxide of Ethyl, or, \textit{Alcohol}—viz: C$_4$H$_6$O $\equiv$ H O. Now, \textit{grape sugar}, into whose aggroupment of elements all other sugars must be turned, before they can generate the spirituous fluid in question, consists, according to the best authorities of C$_{12}$ H$_{12}$ O$_{12}$, and when the play of affinities commences under the fermentative action, these elements will be found to be converted into precisely 2 atoms of Alcohol, i. e., 2 (O$_4$ H$_6$ O $\equiv$ H O) and 4 atoms of Carbonic Acid, i. e., 4 (C O$_2$)—the one, a \textit{fluid},—the other, a \textit{gas}—embracing together the same simple constituents, but under new atomic arrangements, and each new compound, in form and character, totally distinct from the bland and nutritive \textit{solid} (sugar) to which both are indebted for their paternity. \textit{Alcohol} boils at the temperature of 173° Far., when the barometrical pressure is 29.5 inches, but has never yet been subjected to a degree of cold sufficient to congeal it. Prof. J. K. Mitchell, of Philadelphia, who by evaporating the compound of solidized Carbonic Acid and Sulphuric Ether in the vacuum of an air pump has procured the lowest thermometrical temperature hitherto attained, has succeeded in reducing the consistency of \textit{Alcohol} of sp. gr. .793 to that of oil or melted lard at 130° below zero, and at —146° it "flowed like melted wax,"—and should chemical research ever discover a mode of effecting a depression in temperature a few degrees farther, there is no question that this volatile, sparkling, mobile \textit{fluid}, would be transformed into a frigid, motionless, massive \textit{solid}, probably as malleable as quicksilver at —40°. When vaporized at the usual pressure of the barometer, it expands so as to occupy 659 times its former volume—its vapor weighing "half as heavy again as air," which is estimated at 31.0117 grs. to the 100 cubic inches. It is familiarly known to be highly combustible, and in burning emits intense heat, with little light and no smoke—the chemical action being prompt and perfect between the Oxygen of the air and the Hydrogen and Carbon of the Liquid, transforming them rapidly into \textit{water} and \textit{carbonic acid}, which constitute the entire products of the combustion—both being sent off as invisible vapor, but the former readily made visible by allowing it to condense upon a cold plate or polished ball of metal, held over the flame. It unites with water in \textit{all} proportions, and in the act of combination, evolves heat. Its
strong affinity for water, and its great solvent powers, exercised over many organic substances, render it a valuable agent in Pharmacy. Hence those salts which are insoluble in this menstruum, but have been dissolved in water, are precipitated immediately upon the introduction of Alcohol, which has a stronger affinity for the water than the latter has for the suspended salt. On the contrary, those substances which are readily soluble in Alcohol, as Gum Camphor, Oils, Resins, &c., are instantly liberated by the addition of water, and from a state of invisible diffusion, instantly appear in the form of an opake, heavy precipitate.

The anti-putrescent properties of Alcohol, which have long made it a valuable agent in the preservation of anatomical specimens, is probably owing, first, to the exclusion of the Oxygen of the air, whose presence always hastens the putrefactive fermentation; secondly, to its capability of dissolving the extractive matter, ozmazome, from animal muscle, and coagulating the albumen and fibrin; and, thirdly and mainly, to its great affinity for water, which is known rapidly to promote decomposition, and which it absorbs powerfully from the tissues exposed to its action—rendering more compound their texture, and reducing their volume.

Its Medicinal Claims.—As a therapeutic agent, Alcohol is generally used in some of its diluted forms, and in none, perhaps, more frequently or effectively, than in that of the "Spiritus Vini Gallici" of the London pharmacopoeia, (the "Eau de vie" of the French,) being an ardent spirit distilled from wine, and differing somewhat in strength, color, and flavor, owing to the quality of the wine, mode of manufacture, &c.

The brandys of Bordeaux, Cognac and Armagnac are, perhaps, most in repute, but all of them may be found to contain from 53 to 55 per cent. of Alcohol, diluted with water, and in combination with a volatile oil, now called Ænanthic Ether—(itself a hydro-carbon) which gives to wine that peculiar flavor and odor, that contradistinguishes it from all other fermented liquors. Acetic acid is also found, together with a small quantity of Acetic Ether, coloring matter and Tannin. Whether the latter article, is obtained from the wood of the surrounding cask, or from some astringent added to heighten the color, is not known. The "Spiritus Sacchari," or Rum, such as is distilled in Jamaica from Molasses, or the drainings and washings of sugar boilers, has about the same strength, and though generally considered as more sudorific, is popularly employed for the
same purposes. In either of these forms however, the physiological effects depends upon the presence of the reigning spirit, (Alcohol) which is a rapidly diffusible stimulant, making a prompt and powerful impression upon the stomach, and through that viscus and its appendages transmitting its action to the most remote organs and tissues of the human body. As a remedial agent it has been variously classed by different pharmacologists. By Eberle, it is ranked with the third class of Stimulan's, which he denominates Incitants. By Dunglison, it is classed with stimulants, but under the subordinate division special excitants; and by Pereira, with his cerebro-spinants of the 7th order, comprizing other "inebriating, paralyzing stupesfacients," as Ether, Protoxide of Nitrogen, Cannabis Indica, &c.—the same general action upon the animal organism, being, however, ascribed to it, by them all. And here, perhaps, we may be allowed to remark, that while its pharmaceutical value is indisputable in effecting the solution of many gum-resins, balsams, essential oils, &c.—thus furnishing an appropriate menstruum for their preservation and exhibition, for which their is no adequate substitute now known, yet there is scarcely a case within the range of professional practice, requiring the action of excitants at all, in which its administration may not be waived by the vicarious employment of some one or more articles of the class. It is nevertheless, a convenient and efficient drug when in the hands of a discreet and skillful therapist, but from the insidious and stealthy inroads which it rarely fails to make upon the physical and moral constitutions of its unsuspecting victims:—effected too, under the plausible pretensions of its hygienic or restorative properties, and often with the imposing and prevalent passport of professional authority, it should be kept like the fleet, but disciplined grey-hound, constantly under collar, only to be slipt when game is in sight, and forthwith restored to its leash when the chase is over. Its medicinal properties, however, may be made available internally in cases of asthenic dyspepsia, where the want of proper contractility in the muscular fibres of the stomach, involves a defective assimilation of its ingesta to the purposes of the animal economy—a disease too often superinduced by the habitual use of the very article under consideration. Here the remedy acts by whipping up the languid energies of the organ to more vigorous muscular action, and by inducing a temporary increase of the gastric secretions. And yet, probably, in nine cases out of ten, where this adynamic condition of the digestive apparatus requires the interfer-
ence of incitants at all, the continued use of pulverized capsicum with appropriate food, or in conjunction with an equal quantity of gentian, would yield decidedly more permanent and happy results. In the form of Wine or bottled Porter its use is sanctioned in the last stages of fever, or in low and exhausted conditions of the system, originating from other causes. In ataxic diseases, tetanus, metastasis of rheumatism, &c., it sometimes manifests its best powers. When in the active practice of the profession, several years ago, I was called to a painful case of acute rheumatism in the knee joint of a servant boy. The high vascular action and great general excitement, clearly indicated, as I thought, the propriety of venesecion. Fearing a transfer of the disease to some vital organ, I bled carefully and moderately; laid an emollient fomentation to the joint; gave some other directions, and then went to my room (about 200 yds. distant) and was in the act of retiring to rest, when a messenger came in haste, requiring my immediate presence again with the patient. I had not been absent, perhaps, more than 15 minutes, when on my return, I found him supported with difficulty in an erect posture upon his bed, his respiration, interrupted, labored and noisy, his abdomen, and especially the epigastric region, swollen and tympanitic, and the whole man suffering an intensity of agony which must soon have extinguished life. A sudden and fearful metastasis of the disease from the knee to the stomach was clearly developed, and required prompt and bold treatment. In the emergency, and perhaps within the space of two hours, the patient drank one pint of hot strong Rum toddy, with 2 ounces of Laudanum, which together with the external application of a large mustard cataplasm, entirely overcame the gastric distention and spasm, and opened the way for a speedy recovery. Here it is true, the alcoholic principle was only expected to act the part of an auxiliary in the cure, but did so decisively and satisfactorily.

In atonic and tetanic cases, alcoholic drinks may be given in large quantities without producing the slightest intoxication. In the form of wine it has been successfully employed in the latter class of disease, and according to Dr. Rush's authority, "should be given in quarts, and even in gallons daily." Mr. Carrie reports a case of tetanus cured in the Liverpool Infirmary "by drinking nearly a quarter cask of Madeira wine." In chronic Diarrhoea, or where there exists great feebleness of the vital powers, either from age, or as the consequence of acute, but subdued disease, the red wines constitute an agreeable
and effective form of administration for the remedy. To such cases the red Port wine seems peculiarly adapted from the larger proportion of tannic acid which it contains (probably derived from the husks and seeds of the grape which are allowed to remain during the process of fermentation) and from its consequently greater astringent action upon the relaxed animal fibre.

In that terrific malady of drunkards, Delirium Tremens, the physicians judgment has, perhaps, too frequently yielded to the insatiate cravings of the miserable inebriate, and he has continued to prescribe, though in more limited potions, the same fiery excitant which has already turned his stomach into a furnace, and his brain into a Bedlam, under the apprehension that without it, a dangerous collapse would supervene and the wretched sufferer sink. Such fears, however, we regard as without sufficient foundation, and in 99 cases out of 100 which occur, we believe, with Prof. Dunglison, that alcoholic excitants "are by no means indispensible, and the disease admits of cure without the use of any of them." Hundreds of those who within the last ten years have been safely rescued, by the temperance pledge, from the vortex of ruin, and who ceased their stimulating potations, suddenly and forever, in the midst of the horrible sequelle of a debauch, with a blazing stomach and a frenzied brain, amply sustain the correctness of this professional opinion. This temporizing mode of treatment, we are glad to learn, is losing favor with many scientific practitioners, and even the stimulus of wine, in the language of Pereira, "is much less frequently and copiously employed, than formerly." While, therefore, we believe, that prescribed under the decision of a discriminating judgement, and guarded by the imposition of suitable restraints, these stimulating liquors may be made subservient to the purposes of the profession, yet in accordance with the expressed view of some of the ablest and best physiologists and chemists of the age, we cannot but regard every fluid of alcoholic impregnation to be unnecessary or absolutely pernicious in a state of health—its dietetical use, therefore, as calling for the discouragements of the profession, and even when medicinally employed, as requiring much care and circumspection, lest greater evils be entail ed upon the patient, than it purports to cure. In short, in relation to the volatile spirit of which we treat, we are constrained to adopt the language of Dr. A. T. Thompson, viz:—"it is a medicine, or a poison, according to the discretion or moderation with which it is used, and the skill and judgement which direct its medicinal employment."
Its external use.—The decided and powerful impression made by Alcohol upon the living tissues, both by a dynamical and chemical action, gives it some claims to the attention of the profession as an external application. Its utility as a lotion in some forms of cutaneous disease, as a collyrium in ophthalmia, as a counter-stimulant upon the chest, or upon the umbilical and hypogastric region, to excite respectively the action of the heart, the uterus, or the bladder, in a debilitated or atonic condition of either of those organs, probably depends on its dynamical activity, by which we mean its capability to exert a strong influence upon the animal organism, without effecting any mechanical or chemical changes in the tissues. Guided by our own experience, however, we deem it proper to say, that when employed by way of warm embrocation for the above purposes, or in cases of feeble circulation or an asthenic condition of the extreme vessels—childblains, &c. &c., its volatile nature, aided by an elevated temperature, will result in such rapid evaporation from the exposed surface, as materially to counteract its excitant properties, and even make questionable the propriety of its use, unless the consequence be avoided by making the friction under cover, enveloping the parts in warm flannel &c., precautions which should not be neglected. But in cases of hyperæmia of the dermoid surfaces, where the engorged and distended capillaries cannot propel their languid contents, and local inflammation supervenes, as in erysipelas, or severe sprains, or in burns, or scalds, (where the cuticle remains sound,) upon the same principles advocated by Mr. Kentish in his "Essays on Burns," hot alcoholic frictions give tone to the feeble vessels, contracting their calibre, and relieving their engorgement, while the process of evaporation which ensues continues to favor these desirable results, and leaves an agreeable sensation of coolness upon the surface. Perhaps, however, its most valuable properties as a styptic, in restraining hæmorrhages from weak parts, are attributable to its chemical action upon the albumen and fibrin of the blood, in the production of a coagulum which mechanically checks its flow from the relaxed vessels. Its well known action in hardening the cuticle in the case of tender nipples, where the repeated application of ardent spirits for a few weeks before the close of pregnancy, secures freedom from soreness when lactation commences, is probably dependent also upon a chemical change effected in the dermic tissue.
The Physiological and Pathological Phenomena consequent upon its administration.—The extent of our foregoing remarks upon its external use, has necessarily led us to anticipate in some degree, the physiological action of our agent, and yet something more must be said, before its effects upon the internal organs can be well understood. For our general views on the Modus Operandi of poisons upon the animal system, the reader is respectfully referred to the first article in the Southern Medical and Surgical Journal for January, 1846. At no distant day in the history of the profession, the action of stimulants, narcotics, and other powerful and poisonous articles of the materia medica, was attributed exclusively to the sympathetic transmission of their several peculiar impressions to remote organs through the medium of the nervous tissue.

The progress of physiological and chemical science, however, has completely unsettled these theoretical views, and after a deliberate survey of the whole field of argument, we are still constrained to adopt the sentiments advanced in the article of the Journal above referred to, viz: "While, therefore, we could hardly feel justified in unequivocally denying the sympathetic action of all poisonous agents through the nervous tissue alone, yet we must regard the burthen of facts and experiments as opposing the existence of such action, while their venous distribution has been established in many instances beyond question." Without therefore admitting or denying the propagation of the alcoholic impression by nervous impulse, it is sufficient for our purpose to say that Alcohol is in many instances, and beyond the possibility of doubt, absorbed and circulated through the sanguiferous channels, and that most, or all of the phenomena attendant upon its use may be readily solved by this authenticated view of its action.

One striking and uniform consequence, resulting from a free indulgence in intoxicating potations, cannot have escaped the most careless observation:—I mean the high animal heat, accompanied by great muscular relaxation and enervation, after the first stage of excitement has passed away. These phenomena, we humbly conceive, are attributable to the absorption and subsequent decomposition of the fluid in its passage through the arterial tubes, where its Carbon and its Hydrogen,—both positively electrified elements—coming into contact with the Oxygen of the blood—a highly negative principle, which has reached the current of the circulation through the cellular structure of the lungs, enter upon a vigorous chemical combination
with it, when by a sort of slow combustion, carbonic acid and water are produced; the same result, only attended with less vived phenomena, which would follow were these elements (i.e., Carbon and Hydrogen) allowed to combine with Oxygen at an elevated temperature in the open air. Adopting the luminous and satisfactory views of the Professor of Giessen upon this subject, we believe that the vital forces necessary to supply the increase of mass, and to maintain the voluntary and involuntary motions of the human body depends upon the continued metamorphosis of the organic tissues effected by the combination of the circulating Oxygen of the blood-globules with the carbonaceous matter of those tissues, and in the normal condition of the corporeal functions, always accompanied by the extrication of heat. But in the case before us, the alcoholic elements, i.e., Carbon and Hydrogen seize upon the absorbed Oxygen, intercept its passage to the animal tissues, converting, perhaps, (for the time being) the whole of it into Carbonic acid and water, necessarily evolving heat in ample abundance, as is indicated by the hot skin and bounding pulse of the saturated toper, but accompanied by languor and inaction throughout the whole muscular system, for want of the renewed supply of vital force, which the Oxygen, if undiverted, would have furnished by the healthful transformation of the elementary constituents of the tissues.

Its Pathological Phenomena.—The intemperate use of a stimulant so powerful and so diffusible, might well be expected to make wide and signal ravages upon the human constitution. Nor can it be otherwise; and accordingly the established and prolonged habit of inebriety, leaves scarcely one organ or tissue of the whole physical man, unimpaired and normally active.

It wages a perpetual war with life, whether under vegetable or animal organization, and in the latter, the very inflammation which it engenders, and the tumult which it excites, is but the consequence of the prompt and vigorous attempt of the vis concervatrix naturae, or the aroused vital powers to resist the inroads of the desolating intruder, and repel its chemical attack upon the invaded tissues. In regard to its hostility to vegetable life, we need only remark that arsenic is scarcely less speedy and fatal in its action upon animals, than Alcohol upon the vitality of plants. It acts like Hydrocyanic Acid, but while, in an experiment reported by Mr. Griffiths of the Medical College of St. Bartholomew's Hospital, "Beans were killed by Prussic Acid in the course of a single day and deadly Nightshade in four days," the
"Spirit of Wine killed the plant to which it was applied in a few hours."* It shall be our province, however, briefly to notice its pathological effects upon the animal organism.

Stomach.—Repeated potations act upon this organ by obtunding its sensibilities—altering its structure—inducing a state of subacute inflammation, and in some instances a "seirrhous condition of the pylorus," followed by repeated eructations, Pyrosis, and Dyspepsia, with all the category of morbid and distressing symptoms which follow in its train. A post mortem examination, after poisoning with Alcohol from a single debauch, sometimes exhibits a natural state of the stomach, but "in animals killed by Alcohol, Orfila says he found the villous coat of the stomach constantly of a cherry-red color"—a statement confirmed by Dr. Christison's experience.† In one case, however, reported by Orfila, after 6 drachms of Alcohol had resulted in the death of a dog, his stomach presented "many longitudinal streaks of a darkish red color, formed by blood extravasated between the two membranes."‡ Mr. Brodie's examinations also "demonstrate a visible inflammation of the stomach."§ In old drunkards the mucous membrane of this organ "is often injected and thickened."∥

The Liver.—The crippled and deranged condition of the great central assimilating organ of the animal economy, the stomach, could not otherwise than result in the propagation of diseased action to the most remote organs, if from no other-cause than the defective chymoaction of its ingesta and the consequent impoverishment of the blood. But more than this:—The repeated draughts of ardent spirits, swallowed by the dissipated—long faithfully resisted by the lacteals and absorbents of the stomach and duodenum, at length overcome their declining powers of repulsion, break over the barriers, which active vitality had opposed, and the alcoholic principle makes its way through the current of the circulation, and comes in contact with the structure of every organ; for in such cases the circulating oxygen of the blood-globules cannot decompose the whole of this burning tide, and it has therefore been detected as unaltered Alcohol in the various tissues and serous cavities after death. Under its stimulating contact, then, the liver becomes first functionally deranged, elaborating a deformed, thick, pitchy, secretion, instead

* Chemistry of the Four Seasons, p. 83.
of healthy bile—then undergoes structural lesion, and becomes tuberculous and enlarged in volume. I was several years ago permitted to examine, after his death, the liver of a reputed drunkard. Instead of presenting the smooth surface, and chocolate hue of the healthy organ, and weighing 5 or 6 lbs., the whole parenchymatous mass was disfigured by large bluish-white protuberances, completely disorganized and indurated, and weighed, I think, between seven and eight pounds.

The Brain—is also the seat of great physical and mental disturbance from the action of our poison. Supplied with large bloodvessels and highly excitable, this great central organ of the nervous system is subjected, under the powerful stimulus of intoxicating drinks, taken in large quantities, suddenly, or within a short space of time, to profound coma, engorgement of its larger vessels—increased vascularity in the membranes, effusions of serum and the extravasation of blood into its ventricles—presenting every variety of functional aberration, from the most stupid and revolting idiocy, to the most wild and furious paroxysm of Delirium Tremens. While, in long continued habits of intoxication, the whole medullary mass of the encephalon loses its natural softness and elasticity—so indispensable to the highest activity and loftiest efforts of mind—becomes more firm and unyielding, and if the unhappy victim of his cups is not carried off in some drunken fit, corresponding mental and moral phenomena soon manifest themselves. A growing insensibility to the dearest interests and kindliest sympathies of life, and an evidently increasing languor and imbecility in his intellectual operations, followed by a soulless apathy and a stolid indifference to all the claims of earth and heaven—are the miserable sequellae of his unrestrained sensuality. To give plausibility to these deductions, let it be remembered that the action of our agent upon the entire cineritious and medullary matter of the brain, is so well understood by every anatomist, that the organ when designed for dissection is removed from the cranium and immersed for a day or two in a dilute solution of Alcohol, to give greater consistency and firmness, preparatory to the use of the scalpel. Again, its stupefying, deadening power upon the nervous tissue, impairing or destroying its irritability, and thereby preventing its healthy functional manifestations, either in the branches applied to sensation or motion, has been satisfactorily tested by a variety of experiments. Fontana found that when half the body of a leech was plunged in spirit, this part lost all motion, whilst the
other half continued in action.* The same experimentalist ascer-
tained that plunging the heart of a frog "into spirit caused its motion
to cease in 20 seconds." Turtles were killed by its administration
either through the stomach or anus, or when introduced under the
skin, "before death the animal became motionless:" — and applied to
the heart of these animals it destroyed the contractility of this vis-
cus.† Monroe applied alcohol to the hind legs of a frog and found
the pulsation of the heart to become less frequent, and sensibility, as
well as mobility to diminish. Administered by Flourens, to birds, it
resulted in the loss of their "senses and intellectual faculties."
Again, the reduction of functional capability in the nervous system
under the action of alcohol, is exemplified in the fact, that any por-
tion of that exceedingly delicate and sensitive tissue, so readily ex-
citable in its normal condition by the powers of the Voltaic pile,
when soaked in alcohol, loses all susceptibility to Galvanic impres-
sions. Now the cerebral mass is but the radix—the medulla oblongata
and the medulla spinalis—the trunk, and the multifarious nervous dis-
tributions—the branches, of one continuous growth whose chemical
constitution may be regarded the same, and whose physiological
relations are ever in harmony. The elementary vital manifestations,
therefore, made in one part of this great system, may be regarded as
characteristic of the whole. All the forms of human power and
activity—intellectual life, sensation and consciousness, are, in the
language of Liebig, "dependent not only on the existence, but also
on a certain quality of the substance of the brain, spinal marrow, and
nerves; insomuch," continues he, "that all the manifestations of the
life or vital energy of these modifications of nervous matter, which
are recognized as the phenomena of motion, sensation or feeling,
assume another form, as soon as their composition is altered."‡ No
wonder then, that the presence of Alcohol in the brain should signally
modify or change the functional manifestations of that organ, and
propagate its own de-vitalizing impression along the nervous cords.

The only question, then, it seems to us, now is—Can Alcohol, by
venous absorption, enter the circulation and be detected in the brain,
or other remote organs? The advocates of Solidism have for years
pertinaciously resisted the force, or avoided the point of accumula-

* A Treatise on the Venom of the Viper, translated by Skinner. See Pereira,
vol. 1. 317 p.
† See Pereira, vol. 1, page 317.
ted facts which have long since amply warranted an affirmative an-
swer to this interrogation.

Without entering upon the defence of the general subject of venous
absorption, we content ourselves with the exhibition of a few facts
illustrative of its truth in the history of the agent under investigation.
Dr. Cook, (on the authority of Mr. Carlisle) in his "Treatise on
Nervous Diseases" says that, "a few years ago, a man was brought
dead into the Westminster Hospital, who had just drunk a quart of
gin, for a wager," and upon examination, "within the lateral ven-
tricles of the brain was found, a considerable quantity of a limpid
fluid, distinctly impregnated with gin, both to the sense of smell and
taste; and even to the test of inflammability." This case has been
reported by Eberle, Pereira and Christison, the latter of whom (a
patient and scrupulous enquirer after truth,) at first, for physiologi-
cal reasons, questioned the correctness of Mr. Cook's observation
upon the subject of the inflammability of the fluid found, but has
since, in his own experience had ample cause to admit it, and has
done so.

Dr. Ogston, in the Edinburgh Medical and Surgical Journal, vol.
40, p. 282 et. seq., "adverts to an instance in which after death by
drowning, during intoxication, he found in the ventricles, nearly four
ounces of fluid, having a strong odor of whiskey."* Dr. Wolfe re-
ports another case when from the surface as well as the ventricles of
the brain, a strong smell of Brandy was inhaled. The late "exper-
imental researches" of Dr. Percy, however, confirmed by Dr. Chris-
tison, go to put the question of the venous absorption of Alcohol and
its detection not only in the brain, but throughout the whole animal
system, forever at rest. Dr. P. found it "in the blood of animals to
whom he had administered it."† Also in the urine, in the bile, and
in the liver. And in the case of "a man who died during the night
after drinking a bottle of rum, he detected it "in the urine and also
in the brain, by cautious distillation, and removing the water from
the distilled fluid by means of dry carbonate of potassa." Dr. Chris-
tison adds, "Dr. Per. y gave me an opportunity of verifying his re-
sults with the brain of the man, and I had no difficulty in obtaining
from a few ounces of brain a sufficiency of spirit to exhibit its com-
bustion on asbestus repeatedly."‡ After these interesting cases to

* See Christison on Poisons, Part 2nd., p. 733.
† Pereira Materia Medica, vol. 1, p. 320.
‡ Christison on Poisons—Part 2d 734 p.
report in detail the facts related by different writers, in which con-
gestions of the arachnoid membrane, effusion of serosity, and extrav-
asation of blood in the ventricles of the brain, and even the laceration
of some of the lobes, is deemed superfluous.

From the extensive survey which we have been led to take of the
action of Alcohol upon the animal organism, in our investigation of
its influence upon the important organ, the Brain, we feel constrain-
ed to study brevity in the remarks which are to follow.

The Heart.—The muscular contractility of this solitary, but
central organ of the circulation, excited by the stimulating tide which
passes through its cavities, charged with suspended Alcohol, labors
with increased vigor to hurry it onward—swelling the arterial tubes
and giving a bounding pulse and bloodshot eye; or under large and
sudden draughts whose narcotic effects reach the whole nervous cen-
tres, suffers the entire destruction of its irritability—ceases to
contract or dilate, and death ensues.

The Lungs.—The blood circulating through the pulmonary tis-
sues, by its alcoholic impregnation, irritates the delicate membrane
which lines the air cells, induces a free secretion from its mucous
surface, excites cough and throws off a large quantity of inflamma-
tory (?) vapor, strongly charged with the odor of spirit—or, in some
cases may superinduce an apoplexy of the organs, likely to termin-
ate fatally.

The Absorbtents, too, under the long-continued use of this dele-
rious beverage, lose their tone and their consequent activity, and fail
to perform their accustomed functions. The balance between the
absorbent and secerent systems, being thus destroyed, serous effu-
sions take place in the cellular tissue or in the thoracic or abdominal
cavities, and all the horrors of Dropsy—pale, swollen dropy, haunt
the inebriate to his grave.

But enough of these detailed views of the pathological effects of
our poison. A few words as to its Antidotal Treatment, and we
are done.

When comatose or asphyctic symptoms have come on from deep
drinking, the prompt use of the Stomach pump is not only advisable,
but, perhaps, indispensable, as, in cases of poisoning by narcotico-
acrids, such as Alcohol, Opium, &c., the obtunded sensibility of the
gastric surface seems unimpressible by emetics, and the contained
fluid (much of it perhaps yet unabsorbed, should the physician be
called in at an early stage of these symptoms) can be removed readi-
ly in no other way. If this, however, is quickly done, the stupor sometimes rapidly disappears and the patient recovers.

Dr. Christison reports the case of a boy who had been insensible for two hours before he was called to visit him, from having swallowed a large quantity of raw whiskey; when under his direction, “the stomach pump was immediately applied,—brought away a large quantity of fluid with a strong spirituous odor, and he recovered his senses in fifteen minutes, but remained very drowsy for the rest of the day.”*

When consciousness is not then restored, the regulation adopted by the Edinburgh Police in such cases, viz., the injection of cold water into the ears, is often powerfully instrumental in effecting the object. It is recommended, however, with confidence, only when the head is preternaturally warm, and the body not too cool.

The secondary stage of reaction which sometimes ensues, must be treated as its violence seems to require, but generally with antiphlogistic remedies. Happy is that physician whose sensibilities have never been shocked by professional calls to these self-sacrificed victims of sensualism, and thrice happy he whose clear head, and calm heart, have never been disturbed by the wild throes of a Bacchanalian revel.

ARTICLE VI.

Irritation of the Spinal Marrow and Ganglia of the Sympathetic Nerve, with Cases. By W. F. Barr, M. D., of Greenville, Tenn.

Whilst there are such works extant as those of Marshall, Teale, and others, on diseases dependent upon irritation of the spinal marrow, it may appear superfluous—a work of supererogation—to some, to say any thing more upon the subject, or take up the pages of a medical journal in the publication of cases. Although this subject may be very familiar to some, and although the works referred to have been so long published, yet I have been surprised to find so many in the profession who are entirely ignorant upon the subject. I find many—graduates and those who are not—who never refer to the spinal marrow, either as the origin or modifier of diseases. When we reflect that the nerves are distributed throughout the whole

* Christison on Poison, Part 2, p. 730.
system—that there is not a part but is under their influence, and that these nerves originate from the brain and spinal marrow, it is a matter of great surprise that so little attention has been, and yet is, paid to the subject.

It is quite common for physicians to make but a slight examination of their patients. Is there pain in the head, and delirium,—then, of course, the brain or its membranes are inflamed! Does a patient complain of pain in the right hypochondrium and shoulder?—here is a case of inflammation of the liver! Is there pain and tenderness in the abdomen?—this is a case of inflammation of some membrane of the intestines! If there be pain and tenderness in any part, it is immediately pronounced to be inflammation of the part! I have had, and now have, under my care, cases of two, four, ten, and twenty years standing, which have been considered chronic hepatitis, gravel, &c.

The means by which we ascertain the existence of irritation of the spinal marrow, &c., are pressure, percussion, and the application of a warm sponge, upon each vertebra.

The symptoms vary according to the particular part of the spine that is affected. There is either acute or obtuse pain in the scalp; stiffness in the neck; pain, numbness, prickling and creeping sensations, and often a sensation as if cold water was running over the part are felt in the extremities and shoulders; the arms, hands, fingers, legs and feet sometimes become so benumbed that they feel enlarged. When the pains are acute, they become intermittent, which is an evidence that the disease is nervous.

In cases of neuralgia of the bladder and kidneys, the nervous excitement sometimes becomes so great as to cause an effusion of blood, and the urine will be found tinged with it. In cases of bowel affections, the discharges will sometimes become frequent, painful, mucous and tinged with blood, and the abdomen will become tympanic and tender. These circumstances are apt to influence us to believe that inflammation does really exist. But we must make the true character of the disease our guide. In some cases of neuralgia of the head we will find redness of the eyes, intolerance of light and sound, and, during the paroxysms, violent delirium.

By close examination we will find cases of angina pectoris, palpitation of the heart, hysteria, flatulence, colic, dyspepsia, gastralgia, pyrosis, hysteralgia, dysmenorrhœa, and supposed cases of phrenitis, arachnitis, hepatitis and pneumonia, depending entirely upon irrita-
Irritation of the Spinal Marrow, &c. [February,

tion of the spinal marrow and ganglia of the sympathetic nerve; and I would add, as I have found them, supposed cases of rheumatism, white-swelling and gravel.

I make it an invariable rule, whenever called to a patient, to examine the spine as carefully as I would the pulse. I care not what the disease is, or what it may be called by others, this I never neglect.

Case 1. Intermittent Fever.—Some, I have no doubt, will be rather astonished to find, among cases dependent upon spinal irritation, a case of intermittent fever. But to others (those who have attended the Lectures of Dr. Ford, of the Georgia Medical College) it will not be a matter of so great astonishment. However, I believe the doctrine: for it was satisfactorily proven by Dr. F. in his lectures, and my own experience has also established it—at least in my view. I will give only one case, though I could give many, both of remittent and intermittent fevers.

S. B., aged 10, was confined with intermittent fever. I was sent for to see him, as soon as I could. In an hour or two I saw him. The chill had passed off, and the fever pretty high. Among other symptoms, found the dorsal vertebrae tender. Prescribed a purge of pills, sinapism to spine, and left quinine to be given when exacerbation had abated. After the pills had operated, and the sinapism had irritated the skin, the patient felt so much better that the parents were induced to postpone the administration of the quinine. He chilled no more, and recovered without the aid of any other medicine.

Case 2. Miss N. S., aged 14, had been attacked, about fifteen months previously to my being called in, with intermittent fever. Since then she had been afflicted with what she called "bad spells," during which she would fancy she saw ghosts, witches and hobgoblins! She would have nine or ten of these "spells" every day. When first taken, her face would become very red when the paroxysm was on; but towards the last, her face would be very pale. During the paroxysm, she could not speak, nor work at her sewing or knitting; she would think old witches were throwing ashes at her!—though when the paroxysm was off, she said she knew it was all imaginary.

Application had been made to four different physicians, and she had taken medicine for twelve months, but was not relieved. When her mother spoke to me about her situation, I remarked I could cure her—but she refused to take any medicine, as she had taken so much
and found no relief. As I did not wish her to take much internally, she agreed to place herself under my care. As she had had intermittent fever, I felt satisfied the disease was owing to spinal irritation, and in this I was not mistaken. The lower dorsal and the lumbar vertebrae were found to be tender. I gave her a dose of purgative medicine, and applied ung. tart. antim. to the spine. So soon as pustules made their appearance, she was cured. It has been about two years, and she has felt no symptoms of the disease since—and she says she is not now, as formerly, haunted by witches and ghosts!

Case 3. I was called to see, in great haste, a negro man belonging to D. H., Esq. He had got wet a few days before, and when taken, the pains in his breast were so violent as to cause him to scream out loud enough to be heard several hundred yards. I found him in this situation: violent pains throughout the chest—especially through the mediastinum; tongue but slightly furred; and pulse nearly natural. The pains were intermittent, and he was compelled to lie on his back—for he said it would kill him to lie in any other situation, or to move. His young master, who was then studying medicine, accompanied me to see him. After asking the boy a few questions, the young gentleman asked me what I thought was the disease. I remarked, it was dependent upon irritation of the spinal marrow. We turned the boy on his side, as easily as could be done, and the cervical and dorsal vertebrae were very tender. The least pressure would cause insupportable pain. I prescribed a dose of purgative pills, and a blister to the spine. This was at night. On next morning, he was walking about, and nothing else was done, only he was told to take a dose of salts.

Case 4. I was requested by Mr. S., to visit his wife, whom he said had been afflicted with Dyspepsia, for nearly three years. I visited her, and she informed me of her situation. About three years, previously, she was taken with a violent pain in the stomach, flatulence, pyrosis, and the general symptoms of dyspepsia. She had taken medicine from several physicians, who considered her disease dyspepsia, but she found no relief, in fact, she said she got worse. She now, complained of pain in the right hypochondrium. Upon enquiry, I found the pains in the stomach and liver, were intermittent. Upon examination, the cervical and upper dorsal vertebrae were found to be very tender. I then informed her, she had neither dyspepsia nor inflammation of the liver! but all her suffering was owing to irritation of the spinal marrow and ganglia of the sympa-
thetie nerve. I prescribed the compound tincture of Iodine internally, and the spine to be kept irritated with ointment, composed as follows:

Iodide Potassium, ... 3i.
Iodine, ... ʒi.
Ungt. Hydrarg. Fort., ... ʒss.

In a few weeks she was well.

Case 5. Numbness of the arm and hand.—I was requested by a lady to give her something to cure her arm, which she said had been numb for several days, her fingers felt enlarged. I examined the spine, and found the cervical vertebrae tender. Prescribed purge, and blister upon the back of the neck; which cured her.

Case 6. Irritation of the dorsal and lumbar vertebrae, simulating cystitis, nephritis, peritonitis, and enteritis.—I was requested to visit Mrs. ——. Tongue healthy appearance; pulse natural; she complained of pain in the fundus of the bladder, and the corresponding portion of the abdomen was very tender. The desire to urinate was frequent, but the discharge was small, attended with pain, and of a deep red color, on several occasions it was tinged with blood. The lumbar vertebrae were tender. Gave purge, and applied a blister to the spine. In a day or two she considered herself well, and went to church, and on her return she got her feet wet. On next day, the pain in the bladder returned, with pains in the abdomen and kidneys. The abdomen was slightly swollen—the desire to urinate was frequent—the quantity small, and on several occasions tinged with blood. The dorsal and lumbar vertebrae were tender. Gave purge; applied blister to spine. This seemed to give but little relief. I then prescribed ext. stramonium: she was soon narcotised with it, but no relief. I then narcotised her with acetate of morphia. No relief yet. The bowels now became very painful, the abdomen tympanic and tender; the stools were frequent, painful, mucous and tinged with blood. From all these circumstances, I was induced to believe inflammation existed; but in this I was mistaken. The swelling of the abdomen diminished in half an hour, under the application of warm fomentations. I reapplied the blister to the spine, and—as the patient said she would die before she would take any other medicine—I consented for her to take a dose of salts! After the blister drew, and the salts operated, all the pain and soreness of the abdomen, kidney and bladder, were relieved. I then used ext. belladonna, until she was narcotised. Her recovery was then rapid.
Case 7. Mrs. ——, was attacked with neuralgia of the scalp. Cervical vertebrae tender. Prescribed, purge, blister to the tender vertebrae, and extracts of belladona and stramonium in combination, until vertigo was produced. She did not recover, until she had been narcotised three times. The narcotics were given in doses of one-quarter of a grain each every three hours, until vertigo was produced, at which time they were to be discontinued, but to be resumed so soon as this disappeared.

Case 8. Hysteria, numbness in extremities, flatulence, &c.—The patient, Mrs. D., was confined to her bed with hysteria. During the day she complained of flatulence, and she was very much annoyed by a creeping sensation in the right groin; this would continue during the morning, but in the afternoon would cease, when she would have pain in the right hypochondriac region, or in the right leg. The tongue was slightly furred, with disagreeable taste in the mouth; pulse small, quick and weak; bowels constipated; pain in the head; the desire to urinate somewhat frequent; but the quantity was small, (and sometimes only a few drops would be discharged,) which was attended with severe burning heat, and some pain. When the medicine operated upon the bowels, the same sensations attended the discharges. At night she would have a hysterical paroxysm. She had on a former occasion been attacked with (as she was told by a physician,) “the gravel.” For three or four years she had been subject to numbness and obtuse pain in the shoulders, arms and legs. On several occasions, she lost the use of her right arm. Owing to having pain in the right hypochondrium and right shoulder, she was said to have the “liver complaint.”

It was with difficulty I induced her to abandon her notions of being afflicted with “gravel” and “liver complaint.” Upon examination, I found the cervical and lumbar vertebrae slightly tender. I prescribed a purge, and a blister to be applied to the tender portions of the spine—laudanum and ether, to be given on approach of paroxysm. After the blister drew, she had no more paroxysms, but the creeping sensation in the groin, pain in the right hypochondriac region, and the disagreeable sensations attending the discharge of urine and feces remained. To keep the bowels open, gave pil. hydr. The patient was then put upon the use of the comp. tinct. of iodine internally, and after the blister healed, to keep the spine irritated with the ointment, according to formulary in case 4. With the use of these remedies she began to improve, until the creeping in the
groin, pain in the side returned only on every Monday. In every other respect, she had entirely recovered. To prevent the periodical occurrence of these symptoms, sulph. quinine, in doses of 5 grains three times a day, was given. This had the desired effect. She is now well.

**Case 9.** I was called out at night to attend a negro woman, who it was said was in labor. Soon after my arrival, I found the pains occurring frequent and regular; and the old woman said the child would be born in a few minutes. After a close examination, I found the pains to be false. I then examined the spine, and found the lumbar vertebrae very tender. She was surprised, and would not believe me, when I informed her she would not have a child in less than two weeks—which would be the time for delivery, according to her reckoning. Gave purge, and applied blister to the lumbar vertebrae. She recovered, and in about two weeks I delivered her of a fine child.

**Case 10.** Mrs. W., about six months advanced in pregnancy, complained of violent cramping pains in the stomach. They were intermittent. The whole of the spine was very tender. Gave purge, and applied a blister to the whole length of the spine. Laudanum, 30 drops every half-hour, until relieved. Under this treatment she recovered.

**Case 11.** Mrs. H., aged about 50, complained of flatulence, colic, numbness, prickling sensations, and dull pain in the shoulders and extremities; pain in the right hypochondriac region. She had been under medical attention, on several occasions, for chronic hepatitis, which had now existed for twenty years! The whole length of the spine was very tender. In order to dissipate her gloomy feelings, at the thought of having the "liver complaint," as she was quite an intelligent old lady, I informed her of the true nature of her disease.

Mild laxatives, (Dewees's laxative pills,) comp. tincture iodine, and the ointment according to formulary in case 4, to irritate the spine, were prescribed. Under this treatment she had so rapidly recovered, as to pronounce herself well. But as the spine was yet somewhat tender, I requested her to continue the medicines a short time longer.

**Case 12.** Mrs. E. F., the mother of two children, informed me, while attending upon one of her children, that she had "sick spells" very often, sometimes every day. When attacked, she would be sick at the stomach, have swimming in the head, &c., and she
would be compelled to sit down, or she would fall. She also complained of pains in the right shoulder, arm, side, leg and foot. The pains in the foot would be at times violent. She was also subject to hysteria. At night she would be afflicted with nightmare. She had, on a former occasion, when complaining of the same kind of symptoms, been treated for hepatitis.

In a few days after she informed me of her situation, she was confined to her bed. She was now entirely helpless, and was so tender she would cry out if touched. The whole extent of the spine was very tender. I prescribed purgatives, and blister to be applied to the spine. This treatment so far improved the disease, as to cause the symptoms to be felt only in the afternoon. I then prescribed sulph. quinine, 5 grains every three hours. Under this treatment she recovered.

Case 13. Mrs. F., aet. 28. When called to see this patient, she informed me she had been afflicted with the "liver complaint" for ten years. She had been under the care of several physicians for this disease, and her case was considered incurable. I found the cervical and dorsal vertebrae tender. Prescribed purgatives, and blisters to spine—under this treatment she recovered.

I have now extended this article to a greater length than I desired, but I hope the reader will be compensated for the time consumed in reading it. Many other cases of chronic hepatitis, nephritis, calculus, &c., &c., could be given, but I will not take up more of the pages of the Journal with them.

PART II.—REVIEWS AND EXTRACTS.

ARTICLE VII.


Dr. Dowler is favorably known to the medical world as the author of several original views in physiology. His interesting trains of researches on "Febrile Caloricity," and on the "Post-mortem Contractility of the muscles," have not failed to elicit the attention of
the profession. In the pamphlet before us, the author proposes to
give us an outline of the Natural History of the great Saurian of
Louisiana. Physicians have always been foremost in the cultiva-
tion of the various departments of Natural History; and we are
always gratified to observe that the minds of the most gifted are
generally directed towards these rich and interesting fields of inquiry.
On the present occasion we intend to pass in rapid review Dr. Dow-
ler's "Contributions to the Natural History of the Alligator," and,
if it should be made apparent, that the author, in his zeal to expose
and correct the errors of others, has sometimes fallen into mistakes
and misapprehensions; it will not be considered as detracting materi-
ally from the value of his investigations. A long residence on the
coast of Georgia, has afforded me numerous opportunities of observ-
ing the habits of this curious reptile, and of making frequent exam-
inations and dissections of it.

Dr. Dowler remarks:—

"That the Alligator is identical with the Crocodile, can scarcely
admit of a doubt. Even those naturalist, who have labored most to
establish a difference, have admitted directly or indirectly, that there
is none of a radical character. As this animal is, nevertheless, mod-
ified to some extent by climate, it may be advantageous to adopt
names characteristic of the same, or at least, of the locality where
this great Saurian is found—as the Nilotic Crocodile, (crocodilus
Niloticus), the Gangetic, (c. Gangeticus), the Mississippi, (c. Mis-
sissippiensis), and so on. This topographical nomenclature will, for
the present, leave the question of scientific classification open, as it
ought to be, until vague and contradictory descriptions shall be re-
placed by exact observations."

It is very obvious from the above, that Dr. D. considers our Alli-
gator to be specifically identical with the Nilotic and Gangetic
Crocodiles, as he designates the different names which naturalists
have bestowed upon them, as a mere "topographical nomenclature."-
Nothing can be more clearly established in Herpetology, than that
the Alligators and Crocodiles constitute distinct species of reptiles.
Indeed, since the admirable researches of Cuvier, naturalists have
made separate genera or sub genera of the Crocodiles, Alligators and
Gavials. That this classification is neither fanciful nor unfounded,
will be manifest to any one who will compare the slender elongated
muzzle of the Gavials, with the broad obtuse muzzle of the Alliga-
tors. The specific distinctions are, of course, less marked, but suffi-
ciently characteristic and constant to constitute distinct species.
Accordingly, modern naturalists have established 6 species of true Crocodiles, 6 species of Alligators, and 2 species of Gavials. These specific distinctions will be pointed out more particularly when treating of the dental system of this reptile.

Prof. J. E. Holbrook notes the following characters as peculiar to our Alligator, (Alligator Mississipiensis,) each of which, I have verified by observation and comparison. "Nostrils separated from each other by a long partition; forehead divided by a short, prominent, longitudinal carina; four large tubercles along the neck, arranged in rows on each side of the vertebral line." (Vide. North American Herpetology—by John Edwards Holbrook, M. D., vol. 2, p. 53.

Dr. Dowler gives the following description of the dental system of the Alligator:

"The upper jaw is wider than the under, which it overlaps. The latter has forty teeth, none of which are grinders, as asserted by Professor Owen—none are cutting or incisor teeth, as they are described to be by Goldsmith. The teeth of the upper jaw are similar in number and structure.

"The Cuvierian classification is based on the teeth, which this author says, 'are for the Alligator, thirteen on each side of the upper jaw. The fourth tooth, on each side of the under jaw, enters a hole in the upper.'

"Professor Edwards, of Paris, in his work on Zoology, (p. 367) characterises the Nilotic Crocodile by its dental organization, but in the very same page, gives these identical characteristics, by which to distinguish the Alligator. Both are recognised by the fourth tooth, one on each side of the lower jaw, as entering sockets in the upper; an excellent example of a distinction without a difference, not unlike Shakspeare's two lovers:

"Two distincts, division none."

"Professor Owen, of London, is quoted in the British and Foreign Medical Review, for January, 1846, as maintaining, in his recent work on Odontography, that 'the Crocodile has as many as four generations of molar teeth.' Buffon's account of the teeth agrees with Cuvier's. Geoffroy St. Hilaire, naturalist to the Egyptian Expedition, enumerates 36 in the upper, and 30 in the lower jaw, all of which, according to his engraving, (pl. 2, croc. vulg.) are long and conical. Now, the facts are these: in both jaws there are 80 teeth, nearly half of these, that is 36 or 38, are short blunt teeth, rising but little above the gum, wholly different from grinders—never being worn—occupying the interspaces between the long conical teeth, which latter amount to 42 or 44, and are round, white, polished, tapering, salient, and project from the gum nearly an inch, usually exceeding a quarter of an inch in diameter. As the lower jaw is less expanded than the upper, its long teeth, 20 to 22 in number, are re-
ceived, not only within the dental range of the upper jaw, but fit into as many holes in the latter. Instead, therefore, of two long teeth fitting into two sockets, there are never less than 20 long teeth fitting into as many sockets in the roof of the mouth—an arrangement which totally prevents the possibility of using grinders, did any really exist. Moreover the teeth of the two jaws are not opposite each other. Hence, grinders would be wholly useless. It is evident that these, as well as all the other naturalists whose works I have seen, are wrong in every essential particular relating to the dental apparatus.

"Both sets of long, pointed teeth, penetrate plank and wood of all kinds, unless extremely hard. The crushing power of the jaws is vertical, not lateral or grinding. Both jaws present, along their dental or alveolar margins, an undulating or curving line, which, in the Nilotic Crocodile, seems more salient, if I may judge from the engravings of St. Hilaire, and a few others. The teeth correspond to this undulation, as does one jaw to the other. The general bearing of this line is several degrees above the horizon, commencing at the muzzle, and running backward to the posterior angle of the mouth. The form and situation of the dental organs, together with the osteological configuration of the jaws, render grinding operations quite impossible. The animals found in the stomachs of Alligators, examples of which will be given, show that their prey is killed by penetrating bayonet-like wounds, and are swallowed without mastication. The crushing and prehensory power of the jaws and teeth, is as remarkable as it is unquestionable."

The above paragraphs afford a curious and instructive illustration of the confusion produced by the assumption of erroneous premises, and of the false deductions which flow therefrom. As we have previously shown, Dr. Dowler sets out with the erroneous assumption that the Crocodile and the Alligator are specifically identical, and he forthwith detects a number of differences between the specimens of the Alligator before him, and the descriptions of the African Crocodiles given by distinguished naturalists. Dr. D. is correct in his descriptions, and so also are Geoffroy St. Hilaire and Cuvier:—but they are describing different reptiles. Justice demands that some notice should be taken of the charge which is brought against Prof. Owen, of London, viz: that he asserts that the Crocodile is furnished with grinders. It would, indeed, have been remarkable, that so accurate and distinguished an observer,—who is justly esteemed the highest living authority in comparative anatomy,—should have committed such an obvious blunder. The accusation is based upon the following quotation from the British and Foreign Medical Review,—viz: "the Crocodile has as many as four generations of molar teeth." From a careful examination of Prof. Owen's work on Odontography,
I have been able to discover but one passage relating to this point. It is as follows: "In the Crocodiles there are three and sometimes four generations of teeth, sheathed one within the other, contained in the same socket."—(Owen's Odontography, or a Treatise on the Comparative Anat. of the Teeth, p. 187; London, 1840-45.) Here no mention is made of molar teeth. But admitting that the term was applied to the dental system of the Crocodile, it by no means follows that Prof. Owen asserted that this reptile is furnished with grinders. Naturalists frequently speak of the molar teeth of the feline and other carnivorous animals, and yet, "the crushing power of the jaws is vertical, not lateral or grinding," Dr. D. has evidently confounded a dental nomenclature derived from the situation of the teeth, with one based upon the function of these organs. The teeth situated behind the fourth or large canine tooth, and corresponding in position with the true grinders of many mammalia, might be appropriately called molar by way of distinction. That Prof. Owen is accurately informed in regard to the dental apparatus of these reptiles, will be made apparent in the sequel.*

Dr. Dowler proceeds:

"To classify the crocodilian family by its dental organization, is altogether erroneous, so long as the shape, situation, arrangement and number of the teeth are not as yet ascertained. Scarcely any two authors agree in so simple a matter as the number of the teeth. Goldsmith says that there are 27 in the upper and 15 in the lower jaw, and the authors already quoted, all give different aggregates."

Our author is very much mistaken in supposing that very little is known of the dental organization of these reptiles. The illustrious Cuvier did not fail to direct the energies of his gigantic mind to this point. He examined 60 individuals of both sexes, from 12 to 15 feet long, to those just from the egg.—(Vide. Recherches sur les Ossemens Fossiles, 4th Ed. in 10 vols. 8vo.; Paris, 1836, vol. 9, p. 42.)

* Since the above was written, the subjoined paragraph in the work of Prof. Owen has attracted my attention. It was doubtless from this passage, that Dr. Dowler gathered the erroneous inference, that Prof. O. asserted that the Crocodile possesses molars or grinders. This will be apparent to the reader, from a perusal of the whole paragraph.

Prof. Owen is treating of the succession of teeth in the mammalia. The following extract relates to the cases in which the gemmiparous process allows the newly-formed teeth to come up by the side of the parents, as in the case of the 2d and 3d true molars of man:

"In this successive germ-production, we find repeated the multiparous property of the dental matrix of the crocodile; but the concomitant growth of the jaw allows the 2d, 3d, and sometimes even 4th generation of true molars to co-exist, and come in place side by side. In the ungulate and most of the ungulate species of the placental division of the mammalian class, the fissiparous repro-
Prof. Owen observes that, the ancient writers on Natural History appear to have been much struck with the great number of teeth in the Crocodile; and their descriptions were exaggerated to the tone of the impressions thus produced. According to Achilles Tatius, the Crocodile has as many teeth as there are days in the year: Alkazuin assigns it 200 teeth; Abuhamed was more reasonable and allowed 80. How many teeth a Crocodile may develop through the whole course of its life in uninterrupted succession will never perhaps be determined—they, then, would doubtless far exceed in number the liberal allowance of Tatius; but with regard to those teeth which are in use in the jaws at any given time, the number is now well established. The Crocodile of the Nile (Crocodilus vulgaris) has $\frac{13}{4} \frac{1}{4} = 65$; that of the West Indies (C. acutus) has $\frac{13}{8} \frac{1}{8} = 66$; our Alligator (Alligator lucius, or A. Mississippianus) has $\frac{3}{4} \frac{3}{4} = 80$; the great Gavial (Gavialis gangeticus) has $\frac{2}{4} \frac{3}{4} = 118$. Thus the different species and genera of Crocodiles differ from each other in the number of teeth, and also the individuals differ within small limits.—(Vide. Owens's Odontography, pp. 285, 286.) Indeed, the best and most readily recognizable characters by which the existing Crocodilians are grouped in appropriate genera, are derived from modifications of the dental system. In the Caimans (Genus Alligator), the teeth vary in number from $\frac{13}{4} \frac{1}{4} = 72$ to $\frac{3}{4} \frac{3}{4} = 88$: the 4th tooth of the lower jaw, or canine, is received into a cavity of the palatal surface of the upper jaw, where it is concealed when the mouth is shut; in old individuals the upper jaw is perforated by these inferior canines, and the fossae are converted into foramina. In the Crocodiles (Genus Crocodilus), the 1st tooth in the lower jaw perforates the palatal process of the intermaxillary bone when the mouth is closed; the 4th tooth of the lower jaw is received into a notch excavated in the side of the alveolar border of the upper jaw, and is visible exter-

duction of horizontally-succeeding teeth stops at the 3d generation; in other words, they have not more than 3 true molars on each side of the upper and under jaws. In the marsupial series the same process extends to a 4th generation of true or horizontally-succeeding molars; and in most of the species, the 4th true molars are in use and place at the same time; but in the kangaroos, the anterior ones are shed before the posterior ones are developed. This successive decadence is still more characteristic in the grinding teeth of the elephant, which consists exclusively of true molars.”—(Vide. Owen's Odontography, p. 308.)

It is obvious from the connection, that Prof. Owen merely compares or points out the analogy between the successive reproduction of teeth in the mammalia and the crocodile. The "true molars" alluded to, have reference to the former class of animals, and not to the latter. This is clear from the fact, that he points out distinctly a remarkable difference in the mode of succession of the teeth in the two classes. In the crocodilians, the teeth succeed each other vertically, whereas the "true molars" of mammalia succeed each other horizontally, as is apparent from the paragraph quoted.
nally when the mouth is closed. In the two preceding genera the alveolar borders of the jaws have an uneven or wavy contour and the teeth are of unequal size. In the Gavials (Genus Gavialis), the teeth are nearly equal in size and similar in form in both jaws, and the 1st as well as the 4th tooth in the lower jaw, passes into a groove in the margin of the upper jaw, when the mouth is closed.—(Owen, op. cit., p. 286.) Prof. Owen remarks that, "In all the genera of Crocodilians the teeth of the upper and lower jaws are so placed that their points, instead of meeting, interlock."—(Vide. p. 287.) This distinguished comparative anatomist cannot, therefore, be accused of maintaining that these reptiles are furnished with grinders, for the dental arrangements which he describes and delineates with so much accuracy, "render grinding operations quite impossible."

To proceed with a more particular account of the dental apparatus of these remarkable reptiles. In all the species of each genus, the teeth are present in the intermaxillary, superior maxillary and premandibular bones, and are confined to these bones, the palate being edentulous. The teeth are relatively larger and stronger in the Alligators and Crocodiles, than in the Gavials; they are almost always conical, and slightly recurved; the crown has generally a sharp border before and behind, and it is longitudinally striated.—(Vide. Owen, op. cit., p. 287.) The subjoined formulæ, taken from Prof. Owen's work, will exhibit the dental arrangement of each species.

Alligator Mississippiensis,

" palpebrosus, 20—20 4,5,8,9,10 = largest. 1,3,4,11,12,13   
" sclerops, 20—20 2,3,7,8 1,4   
" cynocephalus, 19—19 4,5,10 1,4   
" trigonatus, 18—18 3,4,9 1,4   
" niger, 19—19 74. 1,4,11,12   
Crocodilus rhomifer,

" Gravesii, 20—20 2,7 4,10   
" vulgaris, 19—19 66. 4,9,10,11   
" biporcatus, 21—21 3,4,5,9 1,4,11,12   
" acutus, 18—18 74. 1,4,11,12   
" intermedius, 19—19 66. 2,3,8,9 1,4   
Gavialis gangeticus,

" Schlegelii. 20—20 118. (Owen, pp. 287, 288, 289)
From the period of exclusion from the egg the teeth of the Crocodile succeed each other in the vertical direction; some are added from behind forwards like the true molars in Mammalia. It follows, therefore, that the number of teeth in the Crocodile is as great when the animal first sees the light as when it has acquired its full size; and owing to the rapidity of their succession, the cavity at the base of the fully-formed tooth is never consolidated.—(Vide. Owen, op. cit., pp. 294, 295.) This fact gives additional value to the dental system, as a basis of classification in the Crocodilian family; since the distinctions are equally recognizable at all periods of life, an advantage which does not obtain in the mammals.

We have thus endeavored to show, that Dr. Dowler has committed a great error in assuming the specific identity of the Alligator and the Crocodile, the differences being so marked, that modern naturalists have made three distinct genera out of what was formerly termed Crocodilus. We have also shown, that there is a striking difference in the dental organization, as well as the general appearance of the several genera and species of this family of reptiles; and that Geoffroy St. Hilaire, Cuvier, Edwards, Owen, and other distinguished naturalists were accurate observers of nature. A mere glance at the plates given by Cuvier in his Ossems Fossiles, and by Prof. Owen in his magnificent work on Odontography (Plates 75 et 75 A.), is sufficient to show that the genera are well-characterized and to place misapprehension out of the question.

There can be no doubt that Dr. Dowler is correct in attributing to Herodotus most of the errors concerning the Natural History of the Crocodile. But in the exercise of wholesome and legitimate censorship, he has sometimes overstepped the bounds of strict justice and propriety. Thus, he says:

“In the huge folios of Natural History, produced by the French expedition into Egypt, there is an elaborate history of the Crocodile, and which might be entitled, A Defence of the Errors of Herodotus; by Geoffroy St. Hilaire, naturalist to the expedition. It is doubtful whether any of the savans of the expedition saw or examined a Crocodile in Egypt. Certain it is that they have added nothing original to its natural history. St. Hilaire appears to have picked up all his information at the fisheries, from people more likely to deceive him than otherwise.”

This is rather a serious charge to bring against so eminent a naturalist as M. Geoffroy St. Hilaire. It is well known that he made a number of accurate dissections of the Egyptian Crocodile, and that he sent many specimens to Paris.
Again, Dr. D. remarks:—

"This able physiologist, lately numbered with the mighty dead, may have excelled his predecessors in certain branches of natural history, especially that portion so peculiarly his own, relating to Monstrous, or the deviations of nature in the animal kingdom, which he has reduced, in a great degree, to order, regularity and harmony. With all his reverence for Herodotus, he sometimes differs from the old Greek, but never when the latter is wrong, and nearly always when he is right. Herodotus says, the Crocodile is truly amphibious; no, says St. Hilaire, not "un véritable amphibie." And how does the French Herodotus prove this? Answer, ye who import facts, philosophy, and logic from Paris—the modern Athens! The Crocodile is not a true amphibium. Hence, says he, it is in a false position among animals! It is unsuited by nature either to live in the air or in the water! Hence, it is never satisfied, and is always restless; and this, says the great naturalist of the expedition, is the reason why the Crocodile is always ferocious, always cruel! And this is the argument of one of the principal savans, whose works, otherwise very learned and valuable, have on the title pages the following words: 'Publié par les ordres de sa Majesté L'Empereur Napoleon, Le Grand.' "

"Herodotus satisfied St. Hilaire, and St. Hilaire has satisfied the later naturalists, who continue to copy the blunders of the former and the latter, occasionally adding some on their own account, as will be seen hereafter. These errors have increased, are increasing, and ought to be checked, or rather, consigned to oblivion."

There we have another illustration of the misapprehension growing out of the want of a correct appreciation of the meaning of the terms used. Strictly speaking, amphibious animals in modern zoology, are such as are capable of living exclusively either on land or in water: that is, such as possess organs enabling them to breathe both elements, or are furnished with gills and lungs conjointly. The Alligator certainly does not come under this category; for it breathes air exclusively, and would perish if submerged a sufficient length of time. There is, however, a small family of perennibranchiate reptiles which have lungs like the batrachians, "so that they may be considered," as Cuvier observes, "the only vertebrate animals which are truly amphibious."—(Animal Kingdom. Amer. Trans. New York, 1831, vol. 2, p. 83.) The Siren lacertina which inhabits the Southern States, is a reptile belonging to this family. "The simultaneous existence and action of the branchial tufts and of the lungs in these animals, are as incontestable as any one of the most indubitable facts presented to us in natural history." (Cuvier.) It is very obvious, therefore, that the Crocodile is not "un véritable
amphibie"; and, consequently, the French savant is right, and Herodotus and Dr. Dowler are wrong.

Our author proceeds to give a minute and correct account of the tongue of the Alligator.

"Herodotus declared the Crocodile could move the upper jaw only. Pliny copied the statement. 'The Crocodile only moveth the upper jaw or mandible, wherewith he biteth hard.' (Holland's Pliny b. VIII.) St. Hilaire is much embarrassed with this statement, which he does not fully admit, and which he tries to explain in a very unsatisfactory way.

"Herodotus denied a tongue to the Crocodile. Pliny says, 'the river Nilus nourishes the Crocodile, a venomous creature, as dangerous upon water as upon land. This beast alone, of all that keep the land, hath no use of a tongue—unum hoc animal terrestre linguae usu caret.' (Lib. VIII.) Scarcely dissenting from Herodotus, St. Hilaire says that the Crocodile seems to have no tongue. The Professor of Natural History to the Royal College of Henry IV, H. Milne Edwards, in his new work Eléments de la Zoologie, says that the tongue is indistinct—'peu distincte!'

"The tongue at its tip, including its outer third with its frenum is pale, thin, flabby, wrinkled and adherent underneath, along its whole width, appearing to have but little motion. It is truly tongue-tied. The middle third becomes massive, and begins to assume a roseate hue. The base or inner third is enormously developed, being thick, wide and strong, filling the mouth, and being moveable upward and backward. When the mouth is forcibly opened, even to the greatest extent, the posterior portion of the tongue is thrown up against the roof of the mouth, just before the palatine arches, so as to act as a valve, completely closing the passage to the pharynx, presenting from one angle of the mouth to the other internally, an even horizontal line. This arrangement must completely exclude water and the like from entering the posterior fauces—a wise provision of nature, because, having no lips, the water must always enter the mouth, when the animal is in its favorite element. It is very seldom that this valve falls, even when the mouth is widely opened for a long period, as an hour or more. This pressure I have often overcome, with a slight force, when passing the thermometer and food into the posterior fauces and gullet. The upper surface or dorsum of the tongue is rough, from large papillary elevations, which are less developed at the tip, but larger or redder towards the base, where, also, the salivary secretion begins first to show itself, but the isthmus of the palate, and the posterior fauces only, are well supplied with that fluid. The roof of the mouth is white, dotted over with a few dark spots, rough, firm, almost leather-like, and almost dry, except near the velum or palate, where it is lubricated with mucosity."

Since the commencement of the present century, no naturalist of any note has ever believed that the crocodile could move the upper
The ancient error seems to have originated from the circumstance that the lower jaw continues behind the cranium; the upper one thus appears to be movable, although it only moves with the entire head. As regards the tongue of the Alligator, Prof. Holbrook has given a very clear and accurate description of this organ, which agrees with that of Dr. Dowler in a remarkable manner. He says that, "Having no prehensile organs but the mouth and the strong teeth with which they seize their prey, drag and retain it under water, and breathing as they do, only atmospheric air, and with lungs, it follows that they might soon be suffocated, when thus submerged, as their struggling prey. A curious arrangement of the soft palate prevents this; it hangs down to meet a broad cartilaginous plate that projects upwards from the lingual bone, so as to close completely the fauces, (in which the trachea is placed) when the mouth is widely opened, and effectually prevents the introduction of water to the lungs, which would cause the death of the animal."—(Herpetology, vol. 2, p. 57.)

The following extract is curious as well as characteristic:

"Herodotus says, that insects (Bde̱λa, hirudo,) or, as the translators have it, leeches, by getting into the Crocodile's mouth, suck its blood, and it dies exhausted. In good faith, he naively relates, that the Trochilus is the only animal that lives in peace with the Crocodile, into whose mouth it is in the habit of going to pick out these insects— in consideration of this service, the grateful Crocodile never injures the Trochilus. St. Hilaire believed, nay proved this story, if we are to credit the Royal Professor of Natural History, in the College of Henry IV, at Paris. He says in his Zoology (1837), That the enemies which the Crocodile fears are feeble insects; but, singular thing! little birds go to deliver him from this plague, and entering his mouth without fear, destroy these insects. 'Ce fait, observé par Hérodote et ensuite traité de fable, a été confirmé de nos jours par M. Geoffroy Sainte Hilaire, qui accompagna l'Empereur en Egypte. C'est une espèce de pluvier qui rend au Crocodile du Nil ce service intéressé, et aux Antilles le taudier a des habitudes analogues!' (p. 367). A modern sailor, who, returning home, told his mother that in his travels he had seen flying fish, was reproached for telling a falsehood, whereupon he said, that one day in drawing up his anchor in the Red sea, he brought up one of the wheels of Pharaoh's chariot, a statement which his mother admitted without hesitation. Verbum sat sapienti.

"It is a pity to spoil so good a story—one so honorable to the politeness of the feathered race, and so creditable to the reptilian character. An English Baronet, Sir G. Wilkinson, in his late superb work on Egypt, (London, 1843,) avers 'that leeches do not abound in the Nile!'"
I have frequently found leeches on our Alligators; but have never observed them in the mouths of these reptiles. Neither have I observed them relieved by the feathered rase; but it is well known, that our cattle quietly permit the crow (Corvus americanus) to extract the parasitic grubs from their backs. The Trochilus may do an analogous service to the Nilotic Crocodile.

Dr. Dowler gives accurate descriptions of the eye and ear of the Alligator, which accord generally with those given by Prof. Holbrook. Dr. D. judiciously observes that:—

"Among the many fabulous accounts of this reptile, not the least defamatory and false is that concerning its want of Sincerity. It is said to be a hypocrite, and that its tears are false. Hear an old poet:

'As cursed crocodile most cruelly can tote,
With truthless tears unto his death, the silly pitying soul.'

"Fuller declares that 'the crocodile's Tears are never true, unless forced by the influence of saffron.' I have seen the detestable juice of tobacco tried, by a negro, who, spirited his saliva in its eyes, as correctly as Boz could wish, but without producing any tears; it only enraged the animal—an example worthy of the imitation of the great Primate, concerning whose spitting Mr. Dickens has written so well. An alligator has no deceit. If he hates you, he will hiss you to your face."

In describing the feet of this reptile, our author has fallen into an error in supposing that they have not been accurately described by modern naturalists. He says:—

"The Hands, feet, or paws bear some resemblance to those of man and of some birds. The forefeet have five fingers, of which the three first or inner, have long bird like claws; the two outer, none. The hind feet have four fingers, the three first or inner of which have strong, curved, tapering claws. There is a slight webbing between the second and third, and a full one between the third and fourth fingers of the fore feet, counting from within. The outer or little finger of the hind legs, joins the next or ring finger, with a web for half its length or one inch. Now whoever will take the trouble to consult authors, will find nothing but confusion and contradiction on this simple matter—even by those who base their classifications on the feet.

"In the London Encyclopædia of 1845, there is an incorrect engraving of the Alligator, representing all the toes completely webbed. In the new Parisian editions of the works on Natural History, by Lacépède, and by Prof. Edwards, not a vestige of webbing is seen among the toes at all! The Encyclopædia Americana says, all the fingers or toes have claws! 'Their feet,' says Cuvier, 'are only semipalinate,' None of these accounts are correct. The Skin has
numerous, longitudinal, transverse seams, dividing the integument into square figures. Notwithstanding these seams or fissures, which render the skin uneven, it is rather smooth, polished and not very hard, except where the bony plates are found, that is upon the upper part of the trunk.”

Much of this confusion has arisen from confounding the Alligator with other genera of Crocodilians, some of which—as the Gavials—have the feet completely palmed. Prof. Holbrook gives the following description of the feet of our Alligator:—“There are 5 fingers, the 2d and 3d, and 3d and 4th, slightly palmate; the 3 internal only are furnished with nails. The posterior extremities are nearly twice the size of the anterior; they are rounded and covered in the same manner, but with larger plates. The tarsus is flattened and sustains 4 toes, the 3 external semipalmate, and the 3 internal armed with nails.”—(Vide. Herpetology, vol. 2. pp. 55, 56.)

Dr. Dowler has given a very minute description of the integumentary Plates of the Alligator, which he seems to have studied carefully. He very justly ridicules the common opinion that "this animal's hide is generally impenetrable to a leaden musket ball.” The bony plate which surmounts the cranium, will sometimes turn a rifle ball when shot very obliquely, but it will usually penetrate any other portion of the animal. Accident led me to discover a curious mode of managing a wounded Alligator. The animal had had its spine broken in the middle of the dorsal region by a buckshot, and was drawn out of the water by the tail. Wishing to dispatch my victim, I endeavored to strike him over the head with a heavy stick; but he suddenly turned over, and the blow fell across his throat. He was immediately thrown into convulsions,—the feet were extended and the toes expanded, and the animal remained apparently insensible for one or two minutes, and then gradually revived. Upon repeating the stroke, the same effect was produced, and I deliberately cut his throat with a pocket-knife before he revived. Since then, I have frequently resorted to this mode of stunning the Alligator, and with invariable success. The trachea is probably the organ which is most affected by the blow:—a distressingly suffocating sensation will be produced by a comparatively slight blow across the trachea of a man below the larynx. To produce the full effect in the Alligator the blow must be quite severe; the impression is only temporary, soon passing off.

When Alligators are wounded by a shot passing through the abdominal viscera, I have several times known them to run out of the
water; apparently incommoded by the introduction of the fluid into the abdominal cavity. As the diaphragm is merely rudimentary in these reptiles, and as the abdominal muscles are the agents in the respiratory movements,—it is manifest that, under such circumstances, inspiration would be attended with the introduction of water into the cavity of the pleura as well as the abdomen.

Dr. Dowler gives the following case of poisoning in an Alligator:—

"The following case, which may be fully relied on, shows that Alligators do not bear herculean doses of physic: Mr. L., an educated gentleman, engaged in the study of medicine, living near Fort Pike, in Louisiana, having observed in 1845, a recent "Alligator's wallow," and having at the same time killed a snake, he opened its abdomen, into which he inserted about three grains of strychnine, carefully enveloped in several folds of letter paper, which, being properly secured, the snake was left for the Alligator, which, the next day, was found dead, with its abdomen turned up. The snake had disappeared. The Alligator had been poisoned."

He notices some remarkable peculiarities in the inflammatory process as observed in these animals:—

"I have examined several wounds which Alligators have received during the conflict in which they were captured. The following is a good example of Crocodilian hyperæmia or inflammation: A torn and contused wound, of two or three inches in length, between the fingers, was tumefied, but without redness. Granulations appeared, coated over with a dense transparent exudation, not flakey, but resembling half coagulated albumen. On touching these, the animal expressed great pain, withdrawing its limb and blowing loudly. Another foot which had been bruised and swollen, without any branch of the skin, presented extensive exfoliations of the cuticle, leaving the true skin white. Some recent bruizes on the muzzle and in the mouth, together with an incision which I made in the back with the lancet, discharged a little thin, pale, scarlet colored blood. The general hue incidental to inflammation in man, did not occur. It was white—analogous types of which do sometimes happen in ordinary practice, as in white swelling, phlegmasia dolens, and in some fatal cases of glottidian and laryngeal hyperæmia, in which the submucous tissue is white, though swelled and infiltrated with lymph, serous, and purulent matter. I have found the epiglottis a mere sac, containing pus, though blanched. Hence, the necessity of changing the technology of pathological anatomy. Inflammation is, to some extent, a theoretical word, implying redness and so forth, which may not be essential to its physical history, an evil which may be greatly lessened by using words designating physical changes only, as cohesion, softening, brittleness, induration, size, figure, vascularity, injection, collapse, infiltration, and the like. In medicine, words, [prescriptions], are things, which blacken the body with leech-
es, blanch it with venesections, or modify its organization with the concentrated preparations of medical chemistry."

Our author has made some interesting observations on the Respiration of the Alligator.

"The Crocodilian Respiration is very irregular; I might say, sometimes altogether suspended for indefinite, or at least, very long periods, when the animal is not disturbed. The method I have adopted to prove this, is as perfect as could be desired. For several days, two large Alligators were so placed in their cages, that the water covered the mouth and nostrils completely. They lay perfectly still. There was no movement of the walls of the trunk. The least movement must have agitated the water. Every steamboat or dray that came near, caused slight undulations or waves—the Alligators none, when left unmolested, which, however, seldom happened, as persons frequently came near. On several occasions no interruptions occurred for half an hour, or even an hour. When they are annoyed, and wish to scold or frighten their enemies, they make deep inspirations, inflating their bodies very largely—this air they discharge in low bass notes, or rather with a bellows hissing sound, several times in a minute. There can scarcely be a doubt that one inspiration supplies a stock of air for hours, if not for days. * * *

By maltreating the Alligator, its inspirations and expirations may be produced at pleasure, but contrary to the chemical doctrine of pulmonary combustion, animal heat is not thereby augmented, as will be shown in the experiments on the temperature of this saurian."

In one instance in which I tormented an Alligator in his burrow or hole, (which was deeply submerged,) by means of a long pole;—at the end of two hours he found it necessary to come to the surface for breath; which was done by seizing the pole with his teeth, and following so gradually when it was withdrawn, that his approach was unsuspected until his nose protruded. There can be no doubt that temperature has a great deal to do with the time which respiration can be suspended in reptiles. When the circulation is vigorous, the necessity for receiving the air in the lungs is more urgent, than when approaching the state of hibernation.

So far as we know, the researches of Dr. Dowler on the Circulation in this animal, are original. He says:—

"The Circulation in this animal, after all my attempts to investigate it, appeared to me, at least, a perfect enigma. On several occasions I explored different regions, wherein I expected to find arterial pulsations, but without much success. This seemed the more surprising, as the axillae, flanks and limbs were sufficiently soft and flexible, to induce the belief that the pulse might readily be detected. The muscles of the limbs are small, cord-like, and pliable.
Either from policy or politeness, the animals allowed the fullest ex-aminations without resistance.

"I will give the details of one experiment: April 3d; noon; air, 65°; the axillae and groins, each 65°: a search for the pulse began, and continued for three hours without intermission or disturbance. The whole attention was directed to this one object. In the first half hour I felt three strokes like those of an artery, in the part corresponding to the wrist. Similar pulsations were noticed in the hind leg, near the foot, amounting in all, to fifteen in three hours—none were felt in other regions. When a stroke occurred, two or three followed in as many minutes or less. The animals were now irritated. The limb was held in my hand. They puffed and raged, but no increased arterial action was perceived. Is their circulation voluntary, paroxysmal, susceptible? Does the blood flow equably, without arterial impulsion, as in the veins and capillaries? Is not the quantity of red blood, very small in this animal? Doctor, now Professor Le Conte, of Georgia, in decapitating an Alligator, on which he made some interesting experiments, recently, noticed that "not more than two ounces of blood flowed from the wound. (Vide N. York Jour. Med. Nov. 1846.)"

I have several times observed thread-like worms in the blood which flowed from the Alligator. They were quite obvious to the unassisted eye, and continued to move about briskly until the coagulum became so firm as to interfere with their motions. Their presence might, however, have been accidental.

With regard to the dict of these reptiles, Dr. D. says:—

"A curious fact is mentioned by Mr. Audubon, and is directly in point, though shocking to the true disciples of Isaac Walton, namely—that the ornithologist was in the habit of killing Louisiana Alligators, for the purpose of getting fresh fish out of their stomachs. He says, "in those I have killed, and I have killed a great many, when opened to see the contents of the stomach, or take fresh fish out of them, I have regularly found round masses of hard substance like petrified wood. These masses appeared to be useful in the process of digestion, like those found in the maws of some species of birds. I have broken some of them with a hammer, and found them brittle and as hard as stones, which they outwardly resemble. And as neither our lakes, nor rivers, in the portion of the country I have found them in, afford even a pebble as large as a common egg, I have not been able to conceive how they are procured by animals if positively they are stones, or by what power wood can become stone in their stomachs" May not these masses be indurated clay? Are not Alligators, to a certain extent, dirt-eaters? Dr. Lindsay informs me that he has had many opportunities of knowing that these animals defecate large indurated masses, having all the physical properties of the mud banks in which they make burrows or dens."
I have almost invariably found these fragments of stones in the stomachs of Alligators. They are evidently intended to assist in the trituration of the food, in the muscular gizzard-like stomach. Their teeth being nothing more than prehensile organs, the food is swallowed in an unmasticated condition; this process being effected in the stomach as in birds. The muscles of the stomach arise from two white, shining, tendinous spaces on opposite sides of the organ, as in the rapacious birds. This organ has all the characters of a true gizzard, with the exception of the absence of an epithelium. That its function is that of a real triturating organ, is obvious from the fact that the stones are frequently worn by long attrition. I have extracted an Indian arrow-head of hornstone from the stomach of an Alligator, which was highly polished. I do not think this saurian can be considered a Geophagist, any more than the granivorous birds.

Our author continues:

"Many authors assert, that alligators cannot swallow under water. In offering some facts to disprove this assumption, the sagacity of these animals will be more or less illustrated. A gentleman, on two occasions, watched alligators while catching sunfish, which were swimming in shoals, in shallow water. The alligator placed his long body at a suitable distance from the shore. As soon as the fish came between him and the land, he curved his body, so that they could not pass; the tail was moored on land; the mouth was opened under water, and brought so close to the shore, that the fish had no method of escaping, but through the mouth, where they were entrapped. Incidit in Scyllam, qui vult vitare Charybdis."

We have never had an opportunity of testing this question definitively, but are disposed to accord with the opinion of Dr. Dowler, from various observations.

We heartily concur in most of the following sentiments:

"The learned and the unlearned, seem never tired of telling about crocodilian ferocity—Cuvier, among the rest. Professor Edwards, in his new work on Zoology, says 'this animal is very ferocious and dangerous, even to man.' So says the New London Encyclopedia, which gives a very dramatic story about an alligator, that invaded a South American city, and in the presence of the governor, carried off, in his capacious jaws, a living man! Mrs. Trollope's story, which follows, has become classical, and is quoted as authority. The scene is laid in Louisiana, the hero is a squatter. The poet is a lady: towards day-break, the husband and father was awakened by a faint cry, and looking up, beheld relics of three of his children scattered over the floor, and an enormous crocodile, with several young ones around her, occupied in devouring the remnants of their horrid meal. He looked around for a weapon, but finding none, and aware that he
could do nothing, he raised himself gently on his bed, and contrived to crawl from thence through a window, hoping that his wife, whom he left sleeping, might with the remaining children, rest undiscovered till his return. He flew to the nearest neighbor, and besought his aid; in less than half an hour, two men returned with him, all three armed; but, alas! they were too late! the wife and her two babes lay mangled on their bloody bed.' (Six killed.) Captain Alexander, a voluminous writer of travels, who visited Louisiana in 1831, says, the people 'are obliged to keep a sharp look out lest their children should be snapped up by alligators.' In Lacépède's Natural History, just from the French press, an engraving is given, representing an alligator as swallowing a negro! This work, quotes M. de la Coudreniére's account of the Louisiana crocodile, (Journal de Physique, 1782), in which he sets forth, that this animal feeds on men, particularly negroes—particulièrement les negres—and that it roars as loud as a bull! Other writers say, that this animal prefers negroes to all other kinds of diet. If this be true, the fondness is mutual. A gentleman of New Orleans, once a planter, assures me, that his slaves were in the habit of eating alligators, which, invariably made them sick. All his authority was insufficient to prevent this practice. The sickness was so frequent and so peculiar, that he could readily recognize it without difficulty. He gave emetics for its cure. The suspected substance was always brought up; though the negroes always denied having eaten the same. The fondness extends to dogs, which are often fed with the tail of this animal, which is the choicest part. A physician, who once tasted this animal's flesh, informed me that its flavour, in some degree, resembled that of fish, though unpalatable."

I have never known any ill effects to result from eating the flesh of the Alligator. To me it is exceedingly insipid, and, indeed, requires high seasoning to render it barely eatable. This animal is much more timid than is usually supposed. Where they are unaccustomed to man, they are apparently bold. Prof. Holbrook says that there is no well authenticated instance in Carolina, of their having preyed on man.—(Vol. 2, p. 58.) J. Hamilton Couper, Esq., of Hopeton, near Darien, Georgia, informs us that he has known a strong mastiff to whip an Alligator in three different instances. The dog would raise himself in the water and spring directly upon the head of the reptile. He also mentions the case of a negro, who, while asleep on the banks of the St. Johns river in Florida, was seized by an Alligator and dragged into the water, but succeeded in extricating himself by plunging his fingers into the eyes of the animal. He was bitten in the thigh, and was so much injured as to remain a cripple for life. We have heard of several analogous cases; but they are very rare, and on the whole, we are disposed to agree with Dr. D. when he says:
"Admitting these statements as altogether true, it may be truly said, that there is scarcely an animal, wild or domestic, which has committed so few injuries upon man—a position worth illustrating, as even twenty-two centuries cannot make a falsehood, true. Besides, it is right to give the alligator, as well as the devil, his due."

Again, Dr. D. remarks:

"The absurd story, that alligators eat their own young, cannot be believed for a moment. A gentleman informed me, that one of his negroes having caught a young alligator, which whined like a young puppy, the parent came towards the negro with a rapidity he had never witnessed on other occasions—a kind of jumping motion, which caused the boy to run, after dropping his captive. I have been assured, when danger is imminent, that very young alligators run into the parent's mouth for safety. I have this statement from a highly respectable physician."

The young reptiles would certainly fare badly if they should get into the muscular stomach of the parent, amidst fragments of stones! We have never heard that this is a custom among Alligators, but it is a very universal opinion, that such is the practice among the opheidian reptiles. Perhaps, the impression has arisen from the circumstance that several snakes are not oviparous. All the Crotalaloidea are viviparous, that is, the eggs are hatched in the female, and the young afterwards extruded. A gentleman of high authority informs us, that he saw a Water-snake killed, from which 52 young snakes escaped by means of a rupture in the side! Most likely they came from the womb of the parent.

We close our hurried and imperfect notice of this pamphlet, with the following extract in relation to the temperature of this saurian:

"The following experiments illustrative of the temperature of the alligator, made with an accurate thermometer, which was tested by freezing, boiling, etc.; and may be relied on. I have omitted to enumerate the duration and repetition of the experiments, for the sake of brevity. The thermometer was seldom changed short of ten or fifteen minutes, and never until it appeared stationary. These experiments, which might have been greatly augmented, are, if I may judge, quite sufficient to show, that Cuvier and his disciples greatly err, when they assert, that this animal approaches the hot blooded quadrupeds in temperature. It approximates not the hot blooded animals, but the mercurial column of the thermometer!

"March 31st, noon—air 62°; one alligator in the groins, etc., 57°—another 57½°; the water in which they reposed, about two inches deep, gave 57°. At 6, p. m., air 62°; the flanks, axillae, under the tongue, pharynx, and gullet, each 61°; both the water in which their abdomens rested, and other water near at hand, gave exactly the same temperature. The day was cloudy."
Remarks on Gastroty. [February,

"April 1st, sunrise—cloudy, humid, air 60°; alligator's flanks, etc., 59 1/2°; gullet nearly 60°; a little water in which they lay, 59 1/2°; other water, near, 60°. Noon, air 63°; alligators, and the water in which they lay, 61°; other water 62°. At 5, p. m., air 67°; alligator's 65°, water two inches deep 64°; other water 65°.

"April 2d, sunrise—air 59 1/2°; alligator's flanks and gullets, posterior fauces, each 63°; the water in which they lay, and which was now removed, gave 68 1/2°; other water 59°.

"April 3d, 7, a. m.—the animals and their cages are quite dry; air 64°; groins, gullet, etc., each 63°. Noon, air 69°; alligators 65°. Sunset, air 64°; alligators nearly 65°, and dry.

"April 4th, 1, p. m.—air 63°; flanks 60 1/2; gullet 61°. Sundown, air, flanks and gullet, each 64°; animals dry.

"The following experiments are deemed relevant to this subject:—

While engaged in making a most extensive series of thermometrical observations, illustrative of the diurnal and annual temperature of the Mississippi River, I have had a few opportunities of experimenting on its fishes, immediately after they were taken out of the water—an example of which is here subjoined. 1845, July 29, air at 5 2/3, at 6, and at 6 1/2, a. m., 70°; River 85 1/2°. A fish (perca) weighing about three pounds, was (after crushing its brain) placed on a plank, in a shade, with a thermometer thrust into the gullet. In two minutes, the temperature was 81°, in 3 m. 81°, in 5 m. 80 3/4, (dead) 5 m. 80°, (body flexible) 10 m. 80°, 10 m. 79 3/4, 20 m. 79 3/4, (now one hour—body somewhat rigid) 10 m. 79 1/2° (universal rigidity) 10 m. 79 1/2°. During these experiments, the air of the spot had raised to 83°; and had now, in one and a half hours, begun to communicate its caloric to the fish."

In almost every respect, this is a most remarkable reptile. If the heart and lungs of an Alligator be removed together, and the latter be inflated, the former will continue pulsating for 24 hours.

J. Le C.

Remarks on Gastroty. By John P. Ford, of Nashville, Tenn. Read before the Tennessee State Medical Society, and ordered to be published.—(from New-Orleans Med. and Surg. Journal.)

I do not so much expect to present new ideas on this subject as to collect, and perchance arrange those which are scattered through the pages of surgical writers. The importance of the operation will commend itself to the mind of every medical man, on account of the difficulty which often meets us in our efforts at diagnosis as well as the dangerous tendency of those affections which we may think require its adoption, and the capital character of the operation itself. There are many affections which have, by common consent, been denominated
opprobria medicorum; and if any efforts on our part can tend to reduce the number of them or in any way lessen the certainty of their character, they will be well applied. The consciousness of having mitigated human suffering and prolonged human life, is the fullest and most grateful reward incident to the practice of our profession.

The operation of gastrotomy for the delivery of the foetus from the mother's womb, when from any cause the effect cannot be produced through the natural passage, is, according to the generally received opinion, of ancient origin. That it is often successful is abundantly attested by the numerous recorded cases scattered along the history of surgery, and particularly in our medical periodicals of late years. Dr. Churchill has collected the number of caesarean operations, and finds 409 cases in which 223 mothers were saved.

Another class of diseases often calls for this operation, much more commonly than the first mentioned, and on account of the nature of the parts implicated, is much more successfully treated—for while in the caesarian section, not only the walls of the abdomen are penetrated by the knife, but the less important organ (the uterus also); in hernia our incision only reaches the cavity of the abdomen, and not ordinarily afflicting injury on other important viscera. Yet in some instances, even here, the intestinal tube does not escape the surgeon's cut, and success stands ready to crown his efforts.

In this, as well as the former class of affections, the operation is only mentioned to show, that gastrotomy may be performed in numberless instances without being necessarily fatal. And we may not reasonably say, that the operation for strangulated hernia, is not in the full sense gastrotomy. To all practical intents, it is the same with that operation properly called gastrotomy.

In the one as well as the other, the incision is made through the skin, the cellular substance, the muscles, and peritoneum down to the intestines. The best authorities as well as our own observations, prove that the operation for strangulated hernia, if properly performed, and performed sufficiently early, is one of comparatively little danger.

It is an opinion supported by ancient and somewhat modern authority in surgery, that in all operations involving the parieties of the abdomen, peritoneal inflammation was more to be dreaded than any other consequence. But it has been left to recent investigation, to establish the fact, that such fears have been by our surgical fathers greatly overrated. Travers, many years ago, and lately Dr. Gross, have proved by their experiments, that if the wounds of the intestines were properly attended to, inflammation of the peritoneum was not regarded as of very serious importance—if escape of faecal matter was prevented, peritonitis rarely supervened to a dangerous extent—while it cannot be denied, that wounds of any important organs of our system are accompanied by danger to the sufferer; the idea I would advance is, that peritoneal inflammation does not now stand pre-eminently and necessarily fatal in wounds of the ab-
dome, whether inflicted extensively by accident or made more neatly and sparingly by the surgeon's knife.

The diseases to which I would call the attention of the Society, as justifying and even sometimes loudly demanding the operation of gastrotomy for their relief, belong to that class which may be denominated obstructions of the intestinal tube from mechanical causes. All along the track of medical record, for a long time back, may be found here and there an isolated instance of daring surgery, which has tended to relieve the patients in some cases or to establish in my estimation, the practicability and justifiableness of such an operation in later days; especially since, by a careful collection of facts, we may better understand the value of the operation and its modified application to the various affections which we may be called to treat.

Invagination of the bowels is an affection of exceeding interest to the medical profession. However much medical science has advanced towards perfection in early days, to the present time, on many points, this disease, then as now, has been looked on generally in the light of a fatal one. Dr. Bigelow says, "internal strangulation, we have reason to believe, is a fatal disease, except in rare instances, in which a spontaneous restoration of the parts, under favorable circumstances, may have taken place." Dr. Dunglison says, in speaking of intussusception, the only hope we can have is, that the invaginated portion may be thrown off, and a cure thus obtained; although such a result, it must be admitted, is extremely rare. Heberden says, in such cases physicians should try to disarm death of some of its terrors: and if they cannot make him quit his prey, they may still prevail to have life taken away in the most merciful manner. Alluding to the administration of opium as the only means of soothing the pangs of death, Parr expresses the same opinion; and in fact it is the tone of almost all writers on the subject, that the disease is necessarily fatal unless purgatives relieve. There are some exceptions to this remark, as I shall show presently.

It is a matter of interest in the present inquiry to ascertain, if possible, the condition of the parts involving such serious consequences as we see in this affection. The symptoms of invagination are pain in the bowels, costiveness without fever and without tenderness, at first; often an elongated tumour may be felt in some part of the abdomen; as the case advances there appear disturbance of the circulation, enlargement of the abdomen, and soon comes on those alarming symptoms, such as small rapid pulse, distress of countenance, difficulty of respiration, vomiting of stercoraceous matter, cold tremulous extremities, cool skin bathed in clammy sweat, which becoming more violent, loudly proclaim to the physician that death is at hand. From the discovery, that gangrene has often affected the bowels in intussusception, it was readily supposed that that was the cause of death; and were the fact of its presence universally established, it would tend greatly to lessen the chance of successful treatment by an operation. But it can be shown, I think, that such is
not always the case; and when that condition of the bowels does exist, it is only incidental. The autopsy of Mr. "Legare, late Attorney-General, showed the abdomen greatly distended, sigmoid flexure of the large intestine in such a state of distension that its external circumference was in one place 15 inches. It had a dusky green color as if from commencing gangrene, but there seemed to be no softening nor diminution of its natural polish."

Lawrence in his work on Rupture says, "above the obstructed part the bowels is found after death inflamed and greatly distended—from the contracted part downward the bowel is smaller than usual, and not inflamed." Mr. Stephens, in a work on Hernia, published in London, in 1829, gives the history of a case in which, on post-mortem examination, the bowel was found doubled on itself, so as to obstruct peristaltic action and the passage of its contents; yet there was no stricture nor inflammation of the bowel or peritoneum.

Sir Charles Bell says, "the symptoms depend on the obstruction to the descent of the contents of the bowels and not on the state of the intestines of the sac," (speaking of Hernia), and says, "it is shown by dissection, that distension and the consequent excitement of the muscular coat produce those very symptoms which attend strangulated hernia; consequently all the symptoms will be rendered milder, and the life prolonged, by the ease with which the stomach ejects its surcharge. By the inverted action, and vomiting of stercoraceous matter, the distended canal is in a certain measure relieved.

It is within the recollection of several members of this society, that such was pre-eminently the case with a patient, attended by my colleague, Dr. Winston, Mr. Craig's negro girl, of this neighborhood—it was a case of obstinate obstruction, in which all the symptoms advanced to the last stage of distress and danger—stercoraceous matter was vomited freely, and at every discharge, which was exceedingly copious, the patient expressed herself greatly relieved. No doubt the free evacuation of the bowels above the obstructed point was one of the chief means of her ultimate recovery.

The details of the case I have not at hand, nor would they be of unusual interest, except to illustrate this point. A case occurred in the practice of my friend, Dr. R. C. K. Martin, which was shown on dissection to be a complete obstruction, by the passage of a knuckle of the ilium through another bend of the same bowel. There was great distension and no gangrene—and of such character, may it be seen, is the testimony of all who have made post-mortem examinations in this disease; not in every case of course, I would be understood, but in enough to show, that although gangrene may exist, it is not a necessary concomitant of diseases of obstruction, which even end in death. It can be easily conceived, that that amount of obstruction might exist which would allow the circulation of the blood to some extent, and still prevent the passage of the contents of the bowels—enough circulation going on in the parts to prevent gangrene; but still enough of pressure and distension capa-
ble of bringing about those symptoms of which we speak, and death itself.

When an obstruction exists in any portion of the intestinal tube, which prevents the passage of its contents beyond that point, and it is of such a character as not to cut off the circulation of the obstructing point entirely, the consequence is, the accumulation of matter above, distension and a corresponding pressure of the vessels of the neighborhood—this distension and pressure produce the strange, perhaps unaccountable lesion of the nervous system, as evinced by the rapid pulse, the gastric disturbance, and in a later stage all the urgent symptoms of collapse and speedy death; it may require a few days or as many hours to produce these effects. If the obstruction is entire and sudden from the beginning, these nervous symptoms supervene suddenly, as in the case of strangulation of the bowel, in hernia; whether produced suddenly or gradually, the condition of the nervous system will be the same, sooner or later. Now, if the circulation be cut off by the intensity of the strangulation, gangrene necessarily supervenes, though not as a certain connexion with the cause of death. To show that distension may produce those symptoms which will end in death, you will revert to the case of Craig's girl mentioned above. Again, in the case reported at the last annual meeting of this Society, by Dr. Manlove, the same train of facts was clearly exhibited. It will be recollected, that the boy was suffering under those symptoms which denote with unerring certainty, the approach of dissolution; and when the distension was relieved by the incision made in the bowel and by the discharge of its contents, they gave way as by magic.

Petit is said to have punctured several times the sacs of strangulated hernia, and thereby relieved the distension caused by the superincumbent mass, and the patients were cured (although in one case there was evidently gangrene) without artificial anus. A charlatan, not understanding the nature of strangulated hernia and supposing them to be abscesses, is said by Velpeau to have gained a brilliant reputation by puncturing them, and effecting a cure in many cases. The intestines being freed from distension by the puncture, soon recovered from the symptoms of strangulation.

Mr. Velpeau alluded, in the Academy of Paris, to a case of tympanitis, when a variety of means had been resorted to without success, in which he plunged a trochar into the intestines, and gave vent to a large quantity of gas through a cannula. In the course of five days he made four punctures; the man recovered perfectly. These cases are mentioned only to show the great influence of distension as a prominent cause of the distressing symptoms.

It will be, perhaps, always a source of difficulty to determine with absolute certainty, the existence of a mechanical obstruction in the bowels. But in regard to diagnosis in almost all important and serious diseases, we may not expect to be without difficulty.

Velpeau says, if the affection attack suddenly upon a strain or vio-
ulence, if the patient thought he perceived a tearing, accompanied with crepitation and pain, propagated from a given point to the rest of the abdomen—if from this moment vomiting, first of mucous and alimentary substances and then of stercorous matter continues, while alvine evacuations have been impossible, and the usual signs of evident peritonitis are absent, it would be very difficult not to admit the existence of internal strangulation. The distinctive symptom to which Dr. Watson, of the Royal College of Physicians, attached more value than any other was, that the intestines rumble and roll, and propel their contents downward to the same spot, and no further. But it will be of necessity left to the judgment of each practitioner to determine the value of all the symptoms which may be present in the case, and which may point his mind to the conviction of the existence of strangulation—his practice must be modified by circumstances impossible for me to enumerate in this paper. I would, that I could here point out that correct diagnosis which would lead us aright in all cases.

Should we still continue to view these cases as beyond the reach of remedial means? Shall we stand silently by and witness those results without any effort to relieve them? who does not regard a case of invagination or torsion of the bowels as necessarily fatal? It is so taught in the books—it is so practised by physicians.

Called to attend a case presenting the symptoms generally described above, in which all the remedies have been used which may be suggested to the mind, and still seeing the slow but certain approach of death, what should be done? We cannot doubt, but that this condition is brought about by a temporary injury to the bowels, nor can we doubt the fact, that if by any means we could remove the injury of the bowels, the symptoms would disappear as by a charm. Gastrotomy is the resort which I would recommend, an incision made into the cavity of the abdomen, would almost certainly reveal the point of mischief, and the course of conduct should be directed by circumstances. If, on reaching the intestines, it is found that a portion of the bowel is invaginated, a relief of that condition will probably be easily effected, when it will be seen that nature will again pursue her usual track and health will be restored. To this result, the greatest impediment will be the wound in the walls of the abdomen; and in the present state of medical science, I presume, no one will contend that such a wound, inflicted by a surgeon's knife, must be fatal.

Samuel Cooper, speaking of hernia, says there seems to be ample cause to believe, that the generality of fatal events consequent to the operation, are attributable to the disease and not to the attempt to relieve it. Mr. Potts' opinion was, that the operation when performed in a proper manner and in due time, does not prove the cause of death oftener perhaps than one in fifty cases.

Again, should it, on reaching the bowels, be found that there ex-
ists torsion or a passage of a portion of the bowels through the mesentery, the course is plain, the position should be corrected.

But suppose it is found, that there is neither invagination nor torsion, but a stricture of the bowels, producing permanent obstruction or impacted feces or other substances forming an insuperable barrier to the passage of matter from above, and this distension exists to which I have attributed so much mischief; what is the plan to be adopted? I should puncture the bowel as near and above the point of obstruction as convenient, and relieve the distension by the escape of the distending matter, taking care to avoid, by the usual means recommended by the best surgeons, the escape of fecal matter into the cavity of the peritoneum, thereby forming a temporary artificial anus, if the symptoms would justify me in attempting the operation of gastrotomy.

I would believe, that unless relief were speedily afforded, death would ensue. And, although, an artificial anus, permanent or temporary, may be justly considered as a great evil, yet it must be viewed as a less one than death. By puncturing the bowel, under these circumstances, we would gain time for the future administration of remedies suited to the character of the obstruction. With these views in the performance of the operation, I would hold myself authorized by the best dictates of humanity and science.

In the performance of this operation, there are many obstacles to success which will need to be met by the ingenuity and firmness of the operator; the opposing coats of the invaginated bowels sometimes become agglutinated by the deposition of lymph—if the connection be slight, but little tractile force will be required to disengage the bowel, or a careful dissection may become necessary. The same line of conduct should guide us in the event of finding the bowel in a gangrenous condition. It does not comport with the character of this paper to elucidate the plan to be pursued in minutiae—that is sufficiently laid down by our excellent late surgical writers, as how the sphacelated portion is to be cut off and the sound ends united; by what sutures, whether the gloves' or interrupted suture, whether cylindrical substances should be used to sew the two ends of the intestines on or not—these are not the subjects; they are to be determined by the taste of each one who reads the views of those who have written on the subject. My object has been to bring to the consideration of the Society, what I consider to be leading points in the subject, hoping to attract their attention to a condition of things seemingly to be too much neglected.

I will not tire the patience of the Society by the enumeration of the cases of gastrotomy which are scattered (rather sparingly I acknowledge) through the surgical books and journals. There are, however, many to be seen, and they may serve us as beacon lights to guide our professional conduct in similar cases.

In this paper I have endeavored to show, that distension above the point of obstruction being one of the prominent causes of danger, the
success of the operation may be calculated on with more certainty than if a gangrenous condition of the bowels were always present. That invagination, torsion, and even permanent obstruction of the bowel may be relieved by the operation of gastrotomy—the last mentioned, perhaps, imperfectly; the two first perfectly, with a restoration to health. That the operation, under proper circumstances, need not be necessarily fatal oftener than many other capital operations, undertaken by the most prudent surgeons, as every day occurrences.

I am aware I have trodden on somewhat forbidden ground. I think that good authority may be quoted to prove, that under any circumstances, the operation of gastrotomy is an unjustifiable operation; that it has been said to have been wisely discountenanced by almost all therapeutists, and condemned as the procedure of unenlightened quackery, and wholly inadmissible. Notwithstanding these things, let us go on and diligently add one mite of information to another until we shall have collected such an amount as we shall be able to draw and be served from in time of need, in professional conduct. No subject is at once cleared of its difficulties; and may we not hope that the period of investigation is now dawning, when not only this, but others, equally intricate and important, may be so far divested of their darkness and their doubts, that we may not err therein.

The most I can hope for in such a paper as this, with views so crudely and hastily thrown together, is to incite inquiry and experiment among the members of the Society, by which this subject may be brought to light in its various bearings on some of the direct ills to which the human system is liable.

Plague and Quarantine.

The abolition and modification of the quarantine laws by England and Austria, in 1841, has produced a strong sensation in France, and has led to strong and just remonstrances against her sanitary system. The government submitted the question to the Academy of Sciences, which made no report. The Academy of Medicine, harried incessantly, with communications on the subject of the Plague, named a commission of fifteen members to investigate the subject. This commission has been indefatigably engaged in the investigation, and have left no means unemployed to enable them to arrive at satisfactory conclusions. These are found in the Archives Générales de Médecine, and are as follows:

1st. The Plague originates spontaneously, not only in Egypt, Syria and Turkey, but in a great many other parts of Africa, Asia and Europe.

2nd. In every country where it originates its development may be
rationally attributed to causes acting on a great part of the population. These causes are, a residence on the alluvial and marshy lands near the Mediterranean sea; or certain rivers, the Nile, the Euphrates, and the Danube; low, imperfectly ventilated and crowded houses; a hot and moist atmosphere; the action of animal and vegetable matters in a state of putrefaction; unwholesome and insufficient food, and great physical and moral misery.

3rd. All these conditions united, exist every year in Lower Egypt; the Plague is endemic in that country, and it is found every year in a sporadic form, and about every ten years it prevails as an epidemic.

4th. The absence of any pestilential epidemic in ancient Egypt, for a long time, during which an enlightened and vigilant administration, and a good sanitary police struggled victoriously against the causes of the Plague, justifies the hope that the same means will hereafter produce the like results.

5th. The condition of Syria, Turkey, Tripoli, Tunis and Morocco, being about the same as at those epochs, when epidemics of Plague spontaneously manifested themselves, authorises the belief that similar epidemics may again burst forth in those places.

6th. There is little room to fear that Plague will appear spontaneously in Algiers, because the Arabs and the Kabyles living, the one under tents, and the other on the summits and sides of rocks, cannot engender the malady; and moreover the draining of many marshy places, and the ameliorations, in the construction and police of the few existing towns seem to offer a sufficient guaranty against the spontaneous development of the disease.

7th. The progress of civilization, and a general and constant application of the laws of hygiene, of themselves furnish sufficient means to prevent the spontaneous development of Plague.

8th. Whenever the Plague has raged in Africa, Asia, or Europe, it has always presented the characteristics of an epidemic disease.

9th. Sporadic Plague differs from that which is epidemic in the smaller number of its subjects, but more especially in the absence of the usual characters of an epidemic.

10th. The plague propagates itself in the manner of most epidemic diseases, that is to say by the air, and independently of any influence which can be exercised by its subjects.

11th. The inoculation with blood drawn from a vein of an individual laboring under the disease, or with the pus from a pestilential bubo, furnishes but equivocal results. Inoculation with the serosity taken from a pestilential carbuncle, has never produced Plague; it has not then been proved that the disease can be transmitted by inoculation.

12th. A rigid and attentive examination of facts shews that in the midst of epidemic foci, immediate contact with thousands of individuals laboring under this disease, may take place without danger to those who can exercise in the open air, or in well ventilated places,
whilst no rigorous observation has demonstrated the transmissibility of Plague by contact with its subjects.

13th. Facts in a great number prove that the furniture and clothing which have been used by persons laboring under the disease, have not communicated the Plague to those who have used them without any previous purification, and that too in a country where a pestilential constitution had recently existed. Facts which seem to furnish a different result possess no value until they are confirmed by new observations made beyond the epidemic or miasmatic foci of infection, and from those countries where Plague is epidemic.

14th. The transmissibility of the disease by merchandise, in countries where it is endemic or epidemic, has not been proved.

15th. Plague is transmissible in places where it is epidemic, by the exhalations given out by persons who are laboring under the complaint.

16th. It is incontestable that Plague is transmissible beyond the sources of its epidemic origin, in ships, or in the lazarettoes of Europe.

17th. There is no proof that it is transmissible beyond such sources, by the immediate contact of individuals laboring under the disease.

18th. It has not been proved that Plague is transmissible, beyond its epidemic foci by the furniture or clothing which have been used by Plague patients.

19th. It has not been established that merchandise can carry Plague beyond the sources of its epidemic origin.

20th. The classification adopted in our lazarettoes, or articles susceptible or not susceptible, does not rest upon any fact or observation worthy of confidence.

21st. The study of the means by which the pestilential principle contained in furniture, clothing, or merchandise, may be destroyed, will be useless, until the presence of this principle has been demonstrated.

22nd. Plague may be transmitted beyond its epidemic foci by miasmatic infection, that is, by air charged by pestilential miasma.

23rd. Plague is more or less transmissible according to the intensity of the epidemic, its period, and the organic dispositions of those subjected to the action of pestilential miasma.

24th. Individuals laboring under the disease, by vitiating the air of the places that they occupy, may create foci of pestilential infection which will produce the complaint.

25th. Persons who labor under sporadic plague, do not appear to create foci of infection as active as when the disease is epidemic.

26th. Foci of pestilential infection may continue after the removal of plague patients.

27th. Foci of infection once established on a ship, by the presence of one or more persons laboring under the disease, may be transported to a great distance, and often acquire a fearful intensity on vessels with troops and travellers.
28th. Moveable foci of infection cannot become the sources of secondary foci, unless they meet with the conditions necessary to the development of Plague in the countries whither they are transported.

29th. The ordinary time of incubation of Plague, is from three to five days. The duration of this incubation does not appear to have ever exceeded eight days.

30th. When a country becomes a prey to epidemic Plague, the inhabitants are exposed both to the pestilential constitution and to the influence of the subjects of the disease. Isolation preserves from the last, but not from the first. Beyond the epidemic foci of which the limits are generally easily determined, the influence of the pestilential constitution ceases. Isolation in this case secures from all danger of the disease.

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**Case of Doubtful Sex.** By Wm. James Barry, M. D., of Hartford, Conn.—(from N. Y. Journal of Medicine.)

In March, 1843, I was requested to examine the case of Levi Suydam, aged 23 years, a native of Salisbury, Conn. At the exciting and warmly contested election of the spring of this year, almost everything bearing the semblance of the human form, of the male sex, was brought to the ballot-box. It was at this time, and under these circumstances, that the above mentioned person was presented, by the whigs of Salisbury, to the board of Select-men, to be made a freeman; he was challenged by the opposite party on the ground that he was more a female than a male, and that, in his physical organization, he partook of both sexes.

The following was the result of the first examination. On exposing his person, I found the mons veneris covered in the usual way, an imperforate penis, subject to erections, and about two inches and a half in length, with corresponding dimensions, the dorsum of the penis connected by cuticle and cellular membrane to the pubis, leaving about one inch and a half free, or not bound up, and towards the pubic region. This penis has a well formed glans with a depression in the usual place of the meatus urinarius, a well defined prepuce, with foramen, &c. The scrotum not fully developed, inasmuch as it was but half the usual size, and not pendulous. In the scrotum, and on the right side of the penis, one testicle of the size of a common filbert, with spermatic cord attached. In the perineum, at the root of the corpora cavernosae, an opening through which micturition was performed, this opening large enough to admit the introduction of an ordinary sized catheter. Having found a penis, and one testicle, though imperfectly developed, and without further examination, I gave it as my opinion, that the person in question was a male citizen, and consequently entitled to all the privileges of a freeman.
On the morning of the 1st Monday in April (Election day) I was informed that Dr. Ticknor would oppose Suydam's admission. Suydam came forward, Dr. Ticknor objected. I then stated to the meeting, that from an examination I had made, I pronounced the person in question to be a male, and requested that Dr. Ticknor might, with the consent of Suydam, retire into an adjoining room, and examine for himself. This was done, when Dr. Ticknor stated to the meeting that he was convinced that Suydam was a male. Suydam accordingly was admitted a freeman—voted—and the whig ticket carried by one majority!

A few days after the election, it was told me that Suydam had regular catamenia. I then commenced further investigations, and learned from Mrs. Ayres, the sister of Suydam, that she had washed for him for years, and that he menstruated as regularly, but not as profusely, as most women. I next saw Suydam, who very unwillingly confessed that such was the fact. I then requested him to meet Dr. Ticknor and myself the next day at my office; when the following additional particulars were elicited. Said Suydam is five feet two inches in height, light colored hair, fair complexion, with a beardless chin, and decidedly of a sanguineous temperament, narrow shoulders, and broad hips; in short every way of a feminine figure. Well developed mammae, with nipples and areola. On passing a female catheter into the opening through which micturition was performed, and through which, he again stated, he had a monthly, periodical, bloody discharge, instead of traversing a canal and drawing off urine, the catheter appeared to enter immediately, a passage similar to the vagina, three or four inches in depth, and in which there was considerable play of the instrument. He stated that he had amorous desires, and that, at such times, his inclination was for the male sex; his feminine propensities, such as a fondness for gay colors, for pieces of calico, comparing and placing them together, and an aversion for bodily labor, and an inability to perform the same, were remarked by many.

I further learned from an old lady who was present at the birth of Suydam, that on the second day after his birth, Dr. Delamater, who attended as accoucheur, made with an instrument, the opening through which he has ever since performed micturition.

Homœopathy.—(Illinois and Indiana Med. and Surg. Jour.)

Prof. Linton thus describes Homœopathy; we take this extract from his article on that subject in the Western Lancet:

We assert that Homeopathy, whatever of truth there may be in some of its speculations, is perfectly inert in practice; and if we fail in proving this assertion true, then facts are mere illusions; logic a humbug, and reasoning a farce. To proceed. In the first place, our disposition to try all things, has induced us to try "Globules."
We have used them to ascertain their pathogenetic effects; we have taken the sulphur, but it caused nothing like the itch, which was promised us; we have used the quinine without experiencing the slightest symptoms of a chill; the belladonna, and nothing like hydrophobia followed. This we did at the suggestion of a Homœopathic practitioner. We have also tried these articles on some friends, without the slightest result. We have used the "globules" in affections which we were confident would get well of themselves. Here they were successful, the patient got well! But then we tried another experiment. We selected several cases which we felt confident would not get well of themselves, and these we subjected to the treatment of one who ranked high as a Homœopathic practitioner. The result was in every instance a complete and triumphant failure.

The following gives the author's opinion of the shaking, rubbing, and spiritualizing process:

But again say the defenders of small globules, the rubbing—the trituration of the medicines increases their power and activity. Some of them say that it spiritualizes matter to rub it! Hence they grind their medicines very fine, and shake the vial of drops—they rub about six minutes at each trituration, and shake about six times at each dilution, though Hahnemann says that he had to reduce his shakes, so powerful did six make them!!!!

Now, any one that is in danger of believing this monstrous nonsense, can easily test its truth or falsehood. A certain amount of arsenic will kill a dog—a small dose, say half a grain, will not hurt him. Give the dog then a half grain of arsenic and watch its effects. Then take another half grain and triturate, and grind it, and rub it, until it is spiritualized and strengthened as much as it is possible by this process. Then dilute it, and shake it well six times six, and give to the aforesaid dog. If Homœopathy be true, it will kill him in a very short time; if Homœopathy be false, the dog will go about his business. An easier test would be to ascertain if shaking a teaspoonful of brandy would enable it to make a man drunk. It would do so if Homœopathy be true.

Why, if this principle were sound, then the apothecary might double his stock at an hour's warning, not by the difficult and expensive process of importing fresh medicines, but by the easy one of shaking what he had on hand.

The liquid that was worth but one dollar, the dose being twenty drops, would be rendered of double that value by a few shakes, which would so strengthen it that ten drops would suffice! Sailors and soldiers would find this principle of great value; they would put a vial of whiskey in their pockets, and, by shaking it, have grog enough for a voyage or campaign! Nay, armies might subsist on a little portable soup, increased in power and spiritualized by shaking! What an invention for starving Ireland! what a great trade shaking would be if Homœopathy were not a humbug! Instead of endeavoring to accumulate, the world would sit down satisfied to shake what it has already gotten.
PART III.—MONTHLY PERISCOPE.

A Case of Uncommon Acuteness of the Sense of Vision.—There is living in this region a young man of 23 or 24 years of age, who is reported as being able to see, with his natural eye, animalculæ in common well and spring water. This faculty was noticed when he was some 15 or 16 years of age, by persons for whom he was at work, in consequence of his refusing very often to drink water handed to him, in which nothing could be discovered by common eyes. I made some experiments with him, enough to be satisfied that his case was no hoax; and did intend to make more, but have lost sight of him, and suppose he has left the neighborhood. His complexion is fair; temperament sanguine; eyes blue, less than the common size, with very small pupils.—[Western Jour. of Med. and Surgery.

Tincture of Iodine in obstinate Intermittent Fever.—Dr. Seguin, in the Bulletin Général Therapeutique, speaks very favorably of the effects of the tincture of Iodine in obstinate intermitents. He was led to its employment in such cases from its effect in a case of intermittent fever, protracted to eighteen months, in which he prescribed it for an enlargement in the spleen. This visceral engorgement was not removed, but the fever was promptly cured. Some months afterwards the disease returned, and was treated with sulphate of quinine without success; the tincture of iodine was again given, and the disease was soon removed. He relates several other cases, in which it succeeded, after the quinine had failed. He states, however, that it is not uniformly successful, but that was always so in cases where the quinine failed. He gives to adults thirty drops of the tincture in three doses, during the pyrexia, at intervals of one hour. He increases the dose, according to the effects produced, to forty, fifty, and even sixty drops, and continues its use for several days after the disease has disappeared.

Ext. of Tobacco in Neuralgia.—For a number of years Dr. Gower has been in the habit of employing, with great success, topical applications of the infusion and alcoholic tincture of tobacco in prosopalgia, and he was not sure whether it acted as an excitant or sedative, until M. Chippendale discovered that the active principle of this vegetable was nicotine. Dr. G., of all the various preparations of nicotiana, is most partial to the extract. He has seen three cases of this obstinate neuralgia yield instantly and permanently to a single application of the aqueous solution of this extract. And its success when rubbed upon the diseased jaw was no less marked in a case of tooth-ache.

[Ergotine as a Haemostatic.—On the occasion of M. Bonjean’s presenting the Academie des Sciences with an account of an additional experiment he made with Ergotine, in which the bleeding from the
Relapse of Cancer.

[Feburary,]

carotid of a horse, divided through a third of its circumference, was at once arrested by the application of ergotine, M. Velpeau delivered the following sensible and pertinent observations:—

"What M. Bonjean says of Ergotine has been said by an infinity of other persons concerning different substances. Hæmostatic means of a real efficacy are nevertheless as rare as ever. The error arises from these authors having forgotten two things in their experiments. 1. In animals, the plasticity of the blood is much greater than in man, whence it follows that means which will arrest hæmorrhage in the one, may easily fail to do so in the other. All those who have made experiments on living animals know that, in the horse, the ox, the sheep, for example, the largest wounds of arteries rarely give rise to mortal hæmorrhage. The blood, ceasing to flow almost of its own accord, leads the public and inexperienced authors to believe that it is the means or remedy employed which has closed the artery. Thus, what powders, waters, liquids, what arcana of every kind have been vaunted at first as infallible; and then, after a searching examination, rejected as useless! 2. In man, many arterial hæmorrhages also cease either spontaneously or under the exertion of mere compression, without our being obliged to have recourse to the ligature; so that it is easy to attribute to a pretended hæmostatic substance a result which takes place quite independently of its employment.

"I have neither cause nor desire to throw any doubt upon the value of M. Bonjean’s experiments; but practice has been so often deceived by similar announcements, that it behaves the Academy to accept them with due reserve. I must add, that the practitioners who have tried ergotine or the ergot of rye have as yet derived nothing conclusive from its use. When, in uterine hæmorrhage, the ergot proves useful, it does so by inducing contraction of the uterus, and not by any special action it exerts on the blood or on the arteries. Thus we see the question of surgical hæmostatics is at once a very complex and a delicate one: and we should not receive facts concerning it without a certain degree of distrust, and only give them a very limited publicity, until they have been tested by a more mature examination."—[Comptes Rendus.

Relapse of Cancer.—True as it is that relapse is much to be feared after operation for cancer, it is no less so that we may sometimes mistake the effects of inflammation for such. M. Lisfranc has made the part which inflammation acts in cancer the subject of very attentive study. A woman had her left breast removed recently. Cicatrization at first took place rapidly; when, all of a sudden, the wound broke out again, the surrounding skin assuming a slate-colour, and lancinating pains reappearing. Here was every appearance of a relapse; but M. Louis ordered a dozen leeches to the margin of the wound, the pains ceased, the slate-colour disappeared, and cicatrization was soon completed.—[Gazette des Hôpitaux.
Opium dressing for Cancers.—M. Tanchou speaks highly of the relief from pain to be obtained from employing the following dressing in cancerous ulcers. Digest, during 24 hours, at a temperature of about 78°, a certain quantity of rough-powdered or bruised opium in a sufficient quantity of water to form a thick paste. Cover the ulcer with this a line or two in thickness, once or twice a day according to the severity of the pain, and place over it a piece of thin gummed paper or court-plaster to prevent evaporation.—[Medico-Chirurgical Rev.

Tinct. Iodine to Hemorrhoids.—Dr. Vandervoort stated that he had used Tinct. of Iodine as an application to Hemorrhoidal Tumours, with highly satisfactory effects in a case to which it had been applied.—[New-York Jour. of Med.

Occlusion of Vagina.—Dr. Post gave an account of an operation performed by Dr. J. Kearney Rodgers, for congenital occlusion of the vagina. The patient was 24 years of age. There had been efforts at menstruation; the external organs were well formed, and half an inch of vagina existed. The uterus could be felt through the rectum. A catheter having been introduced into the bladder, and a finger into the rectum, an incision was made between them with the scalpel. The operation was continued in part by the handle of the scalpel, and of sufficient depth to admit the whole forefinger, when the cul-de-sac was reached. This was distinguished by fluctuation. An incision was now carefully made through the membrane. A thick dark fluid escaped. A sponge was then introduced to dilate opening.—[Ibid.

Solution of common Salt in Ophthalmia. (Jour. des Connaissances Médico-Chirurg.)—Dr. Moraes, of Lisbon, reports that having suffered a chronic ophthalmia which resisted all the means he had employed, he then tried a solution of common salt which procured a complete cure. He has since employed this article in his clinic. The degree of concentration he regulates according to the sensibility of the patient. He uses common water, warm in winter and cold in summer.

Congenital Dropsy—(Ascites.)—This case was that of a female child nine weeks old. I saw it October 25th, 1844, when the mother informed me that, at its birth, the abdomen seemed to be unusually protuberant, and that shortly afterwards it became subject to paroxysms of restlessness and crying, for which anodynes were administered without producing any relief. At my examination the general system was not emaciated, nor was there any anasarca of the extremities. The skin was rather soft and moist. It sucked heartily, had more thirst than natural, and had a slight coat upon the tongue. The abdominal tumor was so great as to extend down over the pubis,
and also upwards and backwards over the ensiform cartilage and false ribs.

I prescribed diuretic and purgative medicines, and directed iodine ointment to be rubbed on the abdomen twice a day. No amendment followed this prescription. The child fell into the hands of another physician, who tapped it and drew off a considerable quantity of water. It eventually, however, died.—[Western Jour. of Med. and Surg.]

Nervous Vomitings of Pregnant Women. (Bulletin Général Thérapeutique.)—There are few affections for which a greater variety of médications have been proposed than the vomitings which occur during pregnancy. The multiplicity of therapeutical means indicate their insufficiency. M. Bretonneau has recently discovered a process, as simple as it is efficacious to combat this derangement. He supposes that the vomitings like those in analogous conditions, as in hernial subjects for example, where there exists no strangulation, are purely sympathetic, and should be attributed to a difficulty in a dilatation of the uterus, from a defect in the proportion between the dilatability of that organ, and the development of the embryo. This theory, whether erroneous or otherwise it matters but little, led M. Bretonneau to institute the following medication. He caused friction to be made to the abdomen of the patient, with a pomade composed of five grammes of the extract of Belladonna to thirty of lard, or what is preferable, with a solution of the extract of Rhatany in water, made into the consistence of a syrup. The absorption in the last mode is more prompt and complete than when the pomade is employed. The internal administration of the belladonna, in whatever form it may be used, does not produce the same results. Ordinarily the vomitings continue until the belladonna inunctions are resorted to. Another fact which should be noticed, is that other stupfiantis, as opium, &c., have not a similar effect. We invite the attention of practitioners to this treatment, as it has uniformly succeeded in the numerous cases in which we have seen it employed.

M. Velopeau on Flexions and Engorgement of the Uterus.—"A proof of how often the term engorgement has expressed an error of diagnosis is found in the fact that of late years, and in proportion to the progress of science, engorgements of the uterus become more and more rare, while the number of vicious flexions is augmented. I do not fear to state, that of 50 women reputed to have uterine engorgement, 45 will be found upon examination to be suffering from some deviation from the normal position of the organ. How can we explain this error of diagnosis being committed by well-educated practitioners? The reason is simple. The woman is examined in the recumbent posture, and the finger meets, in a certain direction of the neck, forwards if there be anteflexion and backward if there be retroflexion, with a tumour of considerable size and sensible, which is declared to result from an engorgement. But the tumour is simply
the body of the organ bent at a more or less obtuse angle, and sometimes at a right angle. We can easily assure ourselves of this, especially when, as is the case with most women who have borne children, the walls of the abdomen are neither tense nor thick. By gently depressing the hypogastrum, we may grasp the body of the womb between the two hands, and appreciate its volume as accurately as if we could see it. Engorgement is one of the least usual conditions of the organ that we meet with, and on the contrary the body of the organ is often found somewhat atrophied.

"Accurate diagnosis, in consequence of the treatment it designates, is here of great importance; for when we have to do with a simple deviation we dispense with the use of means proper for resolving a tumefaction which does not exist, of debilitating remedies each more mischievous than the other, and with confining the patient for months in the recumbent posture. We order for her, moderate exercise, a substantial and tonic regimen, antispasmodic, ferruginous drinks, saline baths, astringent vaginal injections, and lastly an abdominal bandage which may support the viscera and prevent their weighing down the deviated organ."—[Gazette des Hôpitaux.

Treatment of Chronic discharges (gleet) from the Urethra by the application of a blister upon the knee. (Gazette Médicale.)—Dr. Deane, instead of placing the blister as is generally advised near the seat of the disease, pursues a different practice. Having to treat a case three years ago, for a discharge from the urethra which had lasted nineteen months, and had resisted various kinds of medicines, he thought of trying a blister around the knee. The same evening there was a distinct strangury—the following morning the discharge had considerably diminished, and at the end of 24 hours it had disappeared completely. Since then the author has treated in the same manner twenty cases. Nine were cured as promptly as the one mentioned above, and not one resisted the treatment. In some the blister was renewed twice, and in one only three times.

THE PERMANENT RELIEF OF TOOTHACHE.

To the Editor of the British American Journal:

Sir,—In a country where so many are martyrs to this species of suffering, you will, I think, be conferring a general benefit, by making known through the medium of your journal, the following simple, and, as I have found it, successful method of securing carious teeth from the effects of cold and changeable weather, and keeping them perfectly free from pain at all times. This wonder-working remedy consists in the daily and habitual use of a weak solution of creosote, saturating the tooth-brush with it and using it first; after which cold water and whatever tooth-powder the individual may be in the habit of employing.

This practice, in my own experience, and in that of others at my suggestion, I have found a very successful preventative to toothache arising from the presence of carious teeth. I am rather disposed to
believe, too, (contrary to the opinion of some dentists, that the carious process is suspended by its employment; but on this head I would not be confident, although Reichenbach has recorded cases of caries cured by the use of the watery solution of creosote.—“Bulletin Gén. de Thérapeutique for May, 1835.” M. Freanger is also of the same opinion as to its effects, and considers that it acts “by combining with the calcareous salts of the bones and forming a new combination, which, by its solubility, tends to disengage the areolar tissue and stop the ulceration at the proper point for the commencement of cicatrization.”—“Cormack on Creosote.” I wish the profession in Canada would take up the subject.

Yours respectfully,

J. D. McDiarmid,
Staff-Surgeon, Prescott.

R. Crosote, 5i.; Spt. Rectificat, 3ss.; Aq. Distillat, 3viiss. M.
It may be colored with cochineal.

Method of making Leeches Bite.—Dr. Boursier says, that by placing leeches in a mixture of two parts of wine and one of water, they are in a few minutes very active, and take hold instantly; and that if they are gorged with blood they disgorge themselves and will draw again.—[Journ. de Chimie Méd.

Mystery of Nature explained.—The mystery of nature, advertised to be seen in Boston, and declared to be the wonder and admiration of the medical and scientific men of Europe and the United States—the right hand representing an eagle’s claw and the left a lobster’s—is simply a malformation; one hand is furnished with a thumb and one finger, and the other with three—no more resembling the extremity of a lobster’s leg, or an eagle’s, than the horn of a rhinoceros.—[Boston Méd. and Surg. Journal.

Opium not poisonous to the Rabbit. By M. Lafargue. (Comptes Rendus des Séances de l’Académie des Sciences, March, 1845.) M. Lafargue, having observed that the poppy was a favorite food with the rabbit, on which it thrived and got fat, felt some curiosity to ascertain whether that animal would be affected by opium. For this purpose he dissolved three grains of the acetate of morphia in a quantity of water, and mixed with a certain quantity of bran, which a rabbit eat in two days, but was not in the least affected by it.


Number of the Insane in France.—The most recent account of the insane in France, which we have seen, is that contained in the great work on statistics, published by the Minister of Agriculture and Commerce for 1843.

According to this the population of France in 1835, was 33,540,910
And the number of the Insane, was 14,486
In 1841, the population was 34,213,927
And the number of the Insane was 19,778
Death among the Insane in 1835, was 1,394
1841, 1,770
In 1841, there were in the various public establishments for the Insane in France, 10,111 patients. The following are the assigned causes of this disease.

<table>
<thead>
<tr>
<th>Effects of age,</th>
<th>541</th>
<th>Onanism,</th>
<th>273</th>
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<tbody>
<tr>
<td>Idiotism,</td>
<td>2,294</td>
<td>Diseases of the skin,</td>
<td>80</td>
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<tr>
<td>Excessive irritability,</td>
<td>655</td>
<td>Wounds and blows,</td>
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<td>Excess of labor,</td>
<td>176</td>
<td>Syphilis,</td>
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<td>Destitution,</td>
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<td>Hydrocephalus,</td>
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<td>Epilepsy and convulsions,</td>
<td>1,157</td>
<td>Chagrin,</td>
<td>1,185</td>
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<td>Fever-Pthisis, Disease of the heart,</td>
<td>215</td>
<td>Political excitements,</td>
<td>118</td>
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<td>Breathing deleterious gases,</td>
<td>88</td>
<td>Ambition,</td>
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<tr>
<td>Abuse of wine and liquors,</td>
<td>792</td>
<td>Pride,</td>
<td>291</td>
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<tr>
<td>Love and Jealously,</td>
<td>767</td>
<td>Religious anxiety,</td>
<td>471</td>
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</tbody>
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**Total, 10,111**

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**MEDICAL INTELLIGENCE.**

**Epidemic disease of the Genitals in Children.—**Dr. J. S. Peacocke, of Louisiana, in a letter to the Editors, describes a disease which prevailed quite extensively among the young negroes in the section of the state in which he resides. "It consisted in the discharge of a puruloid matter, resembling that of gonorrhoea, from the vagina. None over ten years of age were the subjects of the disease. The males discharged a similar matter, and it seemed to issue from the inner lining of the prepuce. At first the discharges looked healthy, but ultimately became streaked with blood. There was no pain, and the general functions were in a normal state. The disease was periodical, returning at irregular intervals. It yielded at first to simple tepid water, followed by some vegetable astringent. When the disease returned the metallic astringents, as the acetate of lead, &c., were employed, but although they acted beneficially at first, the disease continued to return until cool weather. Tinct. of Cantharides, Balsam Copaiba, and Tinct. of Guaiac—all succeeded in arresting it, but only temporarily. This disease was observed at several places at the same time."

**Trismus Nascentium.—**Dr. W. H. Robert, of Madison, Ga., in a letter to one of the Editors, relates a case of this usually fatal disease, which terminated favorably. He says: "The case occurred last winter. The child had been sick two days before I saw it—it could only open its mouth sufficient to take fluids. Tetanic spasms were very frequent, and at each spasm the umbilicus was forced out by the contraction of the muscles, it (the umbilicus) had not healed in the least, and presented a very sore surface. To prevent as much as possible the pressure of the intestines against the umbilicus, a piece of adhesive plaster 3 by 2 inches, with a hole in the centre, just sufficient to let the chord pass, was applied over the abdomen, and it was dressed with Turner's Cerate; small doses of a mercurial, passed off with Castor Oil, were given for three or four days, during which time the child was nourished with milk poured into its mouth, which was readily swallowed. The child recovered entirely."

**Extraction of a piece of Pewter from the Ear.**—We have received from John B. Bowers, M. D., of Barnwell, S. C., a piece of pewter which he extracted from the ear of a negro man. The general appearance of the metal shews very clear-
ly that it must have been poured into the ear while in a melted state. Dr. B. says: "A negro man came to me to do something for him, saying that his wife had attempted to kill him, by pouring melted lead into his ear, he being intoxicated at the time when she committed the act. I paid no attention to his story, supposing he was mistaken. I frequently saw him afterwards, and he always would say that if I did not take the lead from his ear that it would kill him. His master consulted me on the subject, but I told him that it was only an idle tale of the negro. Fifteen months after, the ear became so painful that his master requested me to examine and see if there was any thing in it. On laying him on his side, so that the sun shone on his ear, I discovered the metal, which was extracted with considerable difficulty. The pain ceased immediately on the removal, but he cannot hear as well in that ear as in the other."


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<td>1</td>
<td>43 30 6-100</td>
<td>29 30 3-100</td>
<td>S. E.</td>
<td>Fair.</td>
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<td>2</td>
<td>45 30</td>
<td>29 30 94-100</td>
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<td>59 29 87-100</td>
<td>69 92-100</td>
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<td>68 30 3-100</td>
<td>N. E.</td>
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<td>6</td>
<td>47 33 10-100</td>
<td>66 30 8-100</td>
<td>N. E.</td>
<td>Cloudy.</td>
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<td>7</td>
<td>46 30</td>
<td>71 29 87-100</td>
<td>S. F.</td>
<td>Fair.</td>
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<tr>
<td>8</td>
<td>54 29 63-100</td>
<td>71 55-100</td>
<td>S. C.</td>
<td>Cloudy—wind and rain 80-100.</td>
</tr>
<tr>
<td>9</td>
<td>56 60-100</td>
<td>76 66-100</td>
<td>W. F.</td>
<td>Fair.</td>
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<tr>
<td>10</td>
<td>59 55-100</td>
<td>66 65-100</td>
<td>N. W.</td>
<td>Fair—rain 10-100, at night.</td>
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<tr>
<td>11</td>
<td>38 90-100</td>
<td>57 95-100</td>
<td>N. W.</td>
<td>Fair.</td>
</tr>
<tr>
<td>12</td>
<td>31 30 3-100</td>
<td>55 99-100</td>
<td>N. E.</td>
<td>Fair.</td>
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<tr>
<td>13</td>
<td>30 29 90-100</td>
<td>62 94-100</td>
<td>W. F.</td>
<td>Fair.</td>
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<tr>
<td>14</td>
<td>38 93-100</td>
<td>52 90-100</td>
<td>W.</td>
<td>Cloudy.</td>
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<tr>
<td>15</td>
<td>44 90-100</td>
<td>61 90-100</td>
<td>N. E.</td>
<td>Fair.</td>
</tr>
<tr>
<td>16</td>
<td>41 75-100</td>
<td>40 44-100</td>
<td>N. E.</td>
<td>Rain 95-100 of inch.</td>
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</tbody>
</table>
| 17  | 41 30 7-100      | 53 20-100            | N. W. | Fair—moschites now killed.
| 18  | 34 29 67-100     | 48 47-100            | S. W. | Cloudy. |
| 19  | 36 50-100        | 42 80-100            | N. W. | Fair—some clouds—wind.|
| 20  | 29 97-100        | 49 30 2-100          | N. W. | Fair. |
| 21  | 27 33 7-100      | 55 30 7-100          | W.   | Fair—some clouds.|
| 22  | 27 33 10-100     | 60 30 14-100         | S. E. | Fair. |
| 23  | 34 30 20-100     | 60 30 20-100         | N. E. | Fair. |
| 24  | 28 30 20-100     | 57 30 12-100         | N. E. | Fair. |
| 25  | 32 30 4-190      | 50 29 90-100         | S. W. | Cloudy. |
| 26  | 38 33 3-100      | 64 30 7-100          | S. F. | Silver morning.|
| 27  | 34 30            | 66 29 91-100         | S. W. | Fair. |
| 28  | 52 29 83-100     | 68 81-100            | S. W. | Cloudy during morning.|
| 29  | 49 90-100        | 79 86-100            | S. E. | Cloudy during morning.|
| 30  | 58 86-100        | 68 86-100            | S. W. | Cloudy. |
| 31  | 55 92-100        | 76 90-100            | S. F. | Fair. |

21 Fair days. Quantity of Rain 1 inch and 85-100. Wind East of N. and S. 9 days. West of do. 15 days.

ERRATA.—The reader will please correct the following errors in the Review Department of this No.—viz: page 91, line 8, for long read bony. Page 96, line 2, for some read none. Page 99, line 7, for prehensible read prehensible—the same correction on page 103, line 4. Page 103, line 94, for receiving, read renewing. Page 104, line 29, for 1846 read 1845.