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THE

PRINCIPLES

OF

FORENSIC MEDICINE,

SYSTEMATICALLY ARRANGED,

AND APPLIED TO

BRITISH PRACTICE.

BY

JOHN GORDON SMITH, M.D.

LONDON:

PRINTED FOR THOMAS AND GEORGE UNDERWOOD,
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1821.

54

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TO

THE RIGHT HONOURABLE

SIR ROBERT DALLAS, KNT.

Lord Chief Justice of the Court of Common Pleas,

&c. &c. &c.

THE FOLLOWING WORK,

INTENDED TO FACILITATE

THE JUDICIARY INVESTIGATION OF

PHYSIOLOGICAL QUESTIONS,

IS

MOST RESPECTFULLY DEDICATED,

BY

HIS LORDSHIP'S

OBEDIENT, HUMBLE SERVANT,

THE AUTHOR.

PREFACE.

THE design of this work is simply to explain the physical grounds on which we are to conclude that the human person has sustained injury—whether fatal to life, or not. It is offered to the consideration of CORONERS, MAGISTRATES, BARRISTERS, and MEDICAL PRACTITIONERS, in the hope that some useful hints may be derived both in asking, and in answering the questions that should be put, when events of such a nature are judicially enquired into.

Medical Jurisprudence has been long and sedulously cultivated in some parts of the Continent. About the beginning of the seventeenth century, several voluminous works appeared, to which great additions have continued to be made in Germany, down to our time; and, since the Revolution, much attention has been paid to the subject in France. The science had dawned in that country somewhat earlier; but I am not aware that any systematic

work was produced, or that any institution for teaching Juridical Medicine, as a separate branch, was established until that time.

In Great Britain it has been suffered to remain in comparative obscurity until this day; but with what advantage or disadvantage I shall not pretend to determine. One thing is undeniable—that the testimony of medical practitioners on questions belonging to the department of Forensic Medicine has been conspicuous enough for discrepancy. Whether this inconvenience (to give it no harsher designation) might be removed by the particular study of these questions, experience has not yet enabled us to conclude; but I have no hesitation in expressing my own belief that it would. It can require no arguments to prove that a person who has considered a subject in all its bearings, must understand it better than one who has paid attention merely to some of them.

The earliest production in this country, professing to treat of Medical Jurisprudence *generaliter*, was an abstract from a foreign work, comprised in very small space. It bears the name of "Dr. Farr's Elements," &c. and first appeared above

thirty years ago. The next was produced in 1815, under the title of a "Treatise on Forensic Medicine, &c." by Dr. Bartley, the limits of which alone would have precluded the possibility of doing justice to the subject; but it is not confined to the topics of which it professes to treat. A larger book has since appeared, by Dr. Male, superseding the two former; to which if I may add "a Treatise on Medical Police, by John Roberton, M.D." I believe I shall have registered the list of our English productions on Forensic Medicine, *collectively and exclusively*. One of the most interesting allusions to the subject, however, is given in the elegant work of Dr. Percival, entitled "Medical Ethics," though neither intended, nor calculated for practical reference.

The Medical Journals contain a considerable variety of valuable papers on particular points; many of them professedly written with a Forensic view, while from others we cannot help obtaining useful information, which may not have been originally offered under the same impression *. We have

* The oration of Mr. Pettigrew, delivered before the London Medical Society, in 1819—an abstract of which appeared in the Medical Repository for June, the same year—gives a *general* view of Medical Jurisprudence.

also a few separate works on single topics; among which it is imperative to mention the paper of the late and the renowned Dr. Hunter, "on the Uncertainty of the Signs of Murder in the case of Bastard Children"—Mahon's "Essay on the Signs of Murder in New Born Children; translated from the French by Mr. C. Johnson, of Lancaster;" enriched with judicious notes—and Dr. Hutchinson's "Dissertation on Infanticide*." Dr. Haslam has also contributed a small work entitled "Medical Jurisprudence as it relates to Insanity, according to the Law of England."

Circumstances having thrown me in the way of access to a vast number of authors on Forensic Medicine, curiosity to see what had been done abroad for a scientific subject, till lately unknown almost even by name in our own country, excited a powerful inclination to attempt the task of doing something to promote its cultivation among my professional brethren. My researches led to the accumulation of a considerable stock of materials, among which

* I have likewise been favoured with the perusal of an Inaugural Dissertation on the same subject by Dr. Beck, of New York, which has afforded me great satisfaction. It is but justice to mention that the American schools have outstripped us in attention to Forensic Medicine.

are many recorded facts, strongly illustrating these questions. It was my original intention to have devoted myself to the duties of a public lecturer on Medical Jurisprudence; and, with this view, the idea of preparing a text-book suggested itself. I could not be satisfied with the assistance to be derived, in this way, from any work in our own language; and to have adapted a foreign one to my purpose would have been as great a task as to prepare one for myself. Having once commenced, however, I was unavoidably led to introduce a greater quantity of materials than could have been brought forward in the execution of my original design.

With regard to the arrangement, I am ready to confess that it is faulty: to some of its defects, I am perfectly alive. But a bad arrangement is often better than none; and when a numerous class of subjects can be placed in relationship to each other, there is this advantage to the reader —that if he should not be enabled to understand them better in detail, he will have readier access to their different bearings. The first class of questions, being the most important, I have dwelt upon at considerable length, while the two succeeding are but lightly touched—both on account of the compa-

rative rarity of their occurrence, and the smaller degree of obscurity that will in general be attached to them.

With regard to those parts of the work which may appear to meddle with Legal details, I have to observe that they have been introduced for the sole purpose of reminding the members of my own profession of the important nature of their duty when called to give evidence in court. I profess no acquaintance with those matters beyond what it is in the power of extra-professional men to obtain; and I have resorted to such sources, for the statements in question, as are considered the safest guides, in matters of duty, for those who have not been educated in the law. I disclaim all pretension to connect medical with judiciary science—beyond the simple endeavour to *assist*, by bringing together the scattered bearings of physical intelligence. I trust that the merits of the book will not be estimated by the extent or even the accuracy of its references in *Jurisprudence*.

As to other sources of information, I would remark that I have looked over many works, both old and recent; and the general conclusion to be drawn

is—that the modern writers have preserved most of the valuable information contained in the earlier, and have likewise contributed to enlarge our stock. They have also (as might be expected) separated the sterling matter from much dross, though it must, perhaps, be admitted that there is in many of them even too large a proportion of irrelevancy. Some of it may be fairly ascribed to the different economy of other countries, rendering discussions necessary there, which are quite superfluous to the British practitioner. In pursuing my task, I have endeavoured to gather useful information from sources where it was unexpected, as well as in quarters where it had been forgotten; and many facts applied to the elucidation of these "Principles" have been literally *found* in the CHAOS of recorded occurrences.

London, July, 1821.

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CORRIGENDA.

Page 48, line 7 from the bottom, for *qua* read *quasi.*

208, line 22, *dele* not.

401, last line, *for* deflorare *read* deflorari.

498, thefollowing note should have been added—

Who introduced Ipecacuanha, at first as a secret remedy. Saviard actually performed the cure, as recorded by Foderé and others; but the patient was placed in his hands for that purpose by Helvetius.

PRINCIPLES,

&c.

FORENSIC MEDICINE—LEGAL, JUDICIARY, OR JURIDICAL MEDICINE—and MEDICAL JURISPRUDENCE are synonymous terms for that application of the science of Medicine of which I propose to treat. They have been used by all writers, and I shall employ them indiscriminately in the subsequent pages. Examined critically, the first will appear to be the most appropriate; though the last has been more generally adopted.

JURISPRUDENCE has been defined "the science of law"—"the science of what is just or unjust"—"the science of public and private right," &c. The literal meaning of the term MEDICAL JURISPRUDENCE requires no interpretation.

In the administration of matters relating to law, right, or justice, according to the constitutions and usages of particular states or tribunals, the knowledge required is vast and profound. It necessarily engrosses those who apply themselves to it as a profession so entirely, that due proficiency therein is incompatible with the exercise of any other.

Hence the attainments of the Physician in Jurisprudence can be but slender.

The same remark, with regard to medicine, is applicable to the lawyer; and the truth of it is manifested by the universal practice of requiring members of the medical profession to assist in Forensic investigations, where the matter in question relates to the physical economy of man. The Jurisconsult may be acquainted with many general facts, but when particular or unusual occurrences call for that elucidation which professional study, and the details of experience alone afford, he cannot with propriety rely upon his own knowledge. Nor is the practice of requiring the testimony and opinions of qualified persons confined to Practitioners in medicine.

The assistance thus procured from the physician or the surgeon, is afforded under somewhat different forms, in different countries. On the Continent, for the most part, it is the duty of a particular person to attend the summons of authority. It is necessary for this officer, who (strange as it may sound) is not always of the medical profession, to proceed according to prescribed formalities. His physical duties are frequently connected with the exercise of a magistratorial function; and his operations are to be carried on within a particular district. Accordingly we find that many works on Forensic Medicine contain instructions as to forms and qualifications, quite foreign to our ideas of medical duty; as

the designation *Jurisconsult* is totally irrelevant to the character of a medical practitioner in this country.

In the courts of Great Britain, the physician * appears for the most part in the simple capacity of a witness. He is generally examined *viva voce*, either as to his knowledge of a particular event, or his opinion on a fact that may be submitted to him; and to this exposure every member of the profession is equally liable. He is required to prepare himself by no course of study foreign to that of his proper profession, and to observe no formalities, but those of prudence and decorum. Juridical disputation and legal casuistry can hardly combine with medical reasoning, or illustrate the laws of our physical economy. It is the *prudentia Medicinæ* rather than the *prudentia Juris* that we are bound to cultivate—even with a view to Forensic application.

To be less acquainted than his fellow-citizens with those general principles of law and justice, which are objects of paramount interest in the estimation of society at large, would be disgraceful to the physician. It has been remarked by an eminent legal authority, that the members of the medical profession have no occasion to apply themselves to the study of the law; and this opinion is founded on the exemptions as to burdens of public service

* I use this as a general term, applicable alike to the practitioner in medicine or in surgery; and request that it may be so understood.

which our profession enjoys*. Others however contend for the propriety of studying the economy of administration in the different courts, in order that we may discharge our duty before a tribunal with competent ability. I shall not stop to enquire whether a practitioner might not speak the truth as intelligibly, in what relates to physic, without having ever known the purport of a single act of parliament, and perhaps serve the cause of justice with equal effect, as the physician who may have diligently perused the Commentaries of Blackstone, or the best text books in the science of law; but I may confidently assert, that he will discharge this part of his duty, if not with better success, at least with greater pleasure and credit to himself, and more satisfactorily to others, if he becomes familiar with the import of the duty he has to discharge. It is somewhat different from that of healing the sick.

"It is a complaint," says Dr. Percival, "made by "coroners, magistrates, and judges, that medical "gentlemen are often reluctant in the performance "of the offices required of them as citizens qualified "by professional knowledge to aid the execution of "public justice. These offices, it must be con-"fessed, are generally painful, always inconvenient, "and occasion an interruption to business, of a

* Discourse on the Study of Law, prefixed to Blackstone's Analysis of the Laws of England. He immediately adds a recommendation to make ourselves acquainted with the formalities of *last wills and testaments*.

"nature not to be easily appreciated or compen-
"sated. But, as they admit of no substitution, they
"are to be regarded as appropriate debts to the
"community, which neither equity nor patriotism
"will allow to be cancelled*." We are bound to discharge public as well as private debts, and the debt we publicly owe is, on the score of *equity*, due for those exemptions which, by law, we enjoy.

The reluctance here alluded to is not altogether founded on the inconvenience, the trouble, or the loss; there is much personal apprehension about making a professional appearance in a court of justice. I am aware of the impossibility of entirely dissipating this source of uneasiness. The consideration that the life, the reputation, the fortune of an individual, and the happiness of many others, depend on what we say, is very important; and the consciousness that we are subjected to a responsibility, to which, in the ordinary discharge of our duties, we are unaccustomed, together with the terrors of a public display, under circumstances of high solemnity, is sufficient to shake the nerves of very bold men. Under this state of agitation, a minute examination, with the view, perhaps, of perplexing the witness rather than obtaining from him real information, will prevent that cool reflection and pertinent exercise of judgment, which the case requires, and in which the witness may not usually be deficient.

* Medical Ethics.

Disagreeable as such a situation must be, it is by no means without remedy. The great importance of human life, character, and fortune, renders it necessary to guard against the easy sacrifice of either; and as testimony is the mode by which criminal charges are established, or annulled, the management thereof is of the last importance. Where evidence is deficient, or where it is even doubtful, much must depend upon its consistency, even in minute and otherwise insignificant points.

The real remedy for the professional evidence is to apply himself to study, with a view to his appearance in a court of justice. It is not only as much his duty to go there when called upon, as to the bed-side of a sick person, but to be able to speak as much to the purpose in the one situation as in the other, as far as the state of professional improvement will enable him.

The contradictions and other extraordinary circumstances that have characterised the testimony of medical practitioners in this country, are too well known to require, and too painful a subject of reflection, to encourage elucidation. Much of this must be attributed to the strange, though general neglect of preparation for the purpose; and this want of preparation may be again referred to the comparative rarity of calls for such practice. Many have passed through a long and busy course of professional life without having once been summoned into court; and too frequently the mere expression of

an opinion from a respectable quarter has been deemed satisfactory. But Medical Jurisprudence is making rapid and extensive advances. The gentlemen of the bar are aware of the importance of many circumstances that till lately attracted but little attention, and will be able to confound the practitioner of physic, if he trusts to the specious resources of general professional knowledge. He must know that there are scientific facts of high import, whose practical application is confined to the purposes of Jurisprudence, while it necessarily belongs to his province to study, to explain, and to apply them aright.

His duty, when called before a tribunal, is to put the judges of the cause in full possession of circumstances which relate to the physical question, (whatever that may be) as far as he himself is conscious of them. I am aware that medical students are advised by teachers of great eminence to say no more than is necessary in answer to the questions put to them. The advice is excellent in one way, but I cannot admit the propriety of it on the principle by which it is dictated. For any witness to *babble* in a court of justice must be highly indecorous; for a man of science to do so on matters of opinion, would be ridiculous ; but to adhere strictly to bare replies to questions, whatever they may be, lest a clever interrogator should lead the respondent into confusion and contradiction, is an injunction applicable, and in fact likely to be useful to those

only who are altogether unqualified to undergo such an examination. It may be supposed to screen the witness from self-commitment, and perhaps might prevent *gross* exposure of his ignorance; but, if uniformly observed, it could not but lead—sometimes to the implication of innocence, more frequently to the exculpation of the guilty, but almost always to an unfavourable impression as to the practitioner's sense of duty.

If, therefore, it appears to a professional witness that the questions put to him, are not calculated to produce the real explanation belonging to the point at issue, he ought to bring forward of his own accord whatever may be essentially wanting. In his answers he is sworn not only to speak the truth, but the WHOLE truth; and this he may do without incurring censure for untimely or indecorous officiousness; without improper interference with statements given on the part of other practitioners; and often with the gratifying result of preventing mistakes, by explanation, to which by bare replies he might have contributed.

A more appropriate occasion may not occur to offer an observation on the conduct of medical men towards one another under the circumstances in view. I trust my mind is impressed with due respect for the honour of the profession; and I am thoroughly convinced of the necessity of a scrupulous regard to the reputation of professional brethren. If we allow a propensity to decry individuals to

prevail among us, we not only act imprudently towards those in whose power it may lie to subject ourselves to similar treatment, but the character of the profession itself is affected, and its utility threatened. In private practice, when we are under the necessity of differing from our brethren, we explain the grounds of such difference to the parties only, and confine the knowledge of the circumstance, if possible, to members of the profession.

Our duty in a court of justice, however, may compel us to act under different impressions. We may hear from other practitioners what we cannot assent to, and when required to give our own evidence, we may be unable to conceal,—nay, be obliged to declare wherein we differ, and also *why*. Much obloquy has been thrown upon physic by the discrepancies of medical testimony, a great portion of which would have been avoided, had practitioners considered the nature of the duty required of them, and consulted together before examination. This may not always be practicable; but, where possible, it should be observed. For if, after all, there should be a discrepancy of opinion, it will preserve an observance of respect towards each other, which has not been always maintained*. Every medical

* See a case particularly illustrative of this caution in Dr. Percival's Medical Ethics, chap. iv. §. 18.

practitioner being liable to a subpœna, should make it his business to know the relations of physiological and pathological principles to the facts upon which he is likely to be interrogated, and likewise the principal judiciary bearings of the case. The former of these are to be found in works on Forensic Medicine; the latter in those on Jurisprudence, a perusal of some of which cannot be too strongly recommended; though it is the duty of the Medico-legal writer to enumerate the chief points that ought to be borne in mind.

He should know the nature of the process in question. If it be an imputation of crime, although it is not his business to establish the charge of criminality, he may, and in certain charges of homicide, must afford the means of ascertaining the validity of the grounds for such charges, by fixing the death of the individual upon the real cause, whether violence, or disease, as will be shortly exemplified. If it be a civil process, such as a question of physical capacity for certain situations, or of the existence of some disqualification, depending on the state of the physical system, he should not be the less qualified, or the less anxious to explain every possible bearing, because the result may not compromise the life, or even the reputation of the individual; and in the detection of imposture, while due regard to the claims of humanity should never escape from his view, the interests of justice

and of morality demand that the unworthy should be consigned to chastisement, even at an expence of feeling on the part of those whose duty it is to award it.

With regard to the usages of the court in which he has to deliver his evidence, the knowledge which every well-informed man should possess, will be nearly the whole of what is necessary for him to attain. I need not remind any medical practitioner that there should be no farther difference in his conduct and statements, when examined on oath, or when giving his simple opinion in any other way, than what arises from his inability *to suppress information,* as it is often his duty to do in the management of the sick. Observations will occur in the sequel calculated to familiarize him with the nature of the duties he may have to perform, according to the tribunal before which, or the bearings of the enquiry concerning which his testimony may be desired; and to the work at large, I must refer him for the elucidation of the preceding observations.

It should be remarked, that many questions belonging to Forensic Medicine may be *privately* referred to the medical practitioner for solution, where no judiciary measures are agitated; as, for example, doubtful pregnancy, imputed or pretended diseases, malformations, &c. &c. The peace of families, and the settlement of property may often

depend upon his knowledge of such cases, though they may not come strictly within the scope of the healing art.

FORENSIC MEDICINE.

THE subjects embraced by Forensic Medicine, admit of arrangement into four distinct classes.

I. Those which regard the extinction of human life; particularly by unusual or violent means. Such are many kinds of sudden death, and all cases of homicide.

II. Injuries done to the person, not leading to the extinction of life. Such are disfiguring and maiming; causing diseases; the violation of females, &c.

III. Circumstances connected with the physical system, that disqualify for the discharge of civil offices, or the exercise of social functions. Such are mental alienation, the existence of certain diseases, the want of certain organs, &c.

IV. Whatever regards the preservation of the public health; as the proper regulations in times of public sickness, the administration of public institutions for the cure of diseases, public nuisances, and many subjects of the last importance, forming that conspicuous department, termed *Medical Police*.

It is of the three first only that I purpose to treat; and more especially of the first class of questions; which are the most important both in their nature and frequency; and to which I pass without further preamble.

CLASS I.

The first class of subjects for our consideration, or QUESTIONS, as I prefer to call them, regards the extinction of human life; and I propose to consider these according to the following detail.

1. Of *sudden death* in the healthy state.
2. Of death by personal agency, or *homicide.*
3. Of death by spontaneous agency, or *suicide.*
4. Of *Infanticide.*

SECTION I.

OF SUDDEN DEATH IN THE HEALTHY STATE.

By this is to be understood the death of a person in apparent health, from some cause, whether manifest or not, which has no connection with personal or spontaneous agency. Before proceeding, however, to discuss the relations of this topic, some remarks on the state of death itself appear to be necessary.

CHAPTER I.

Of the Reality of Death.

Certain diseases, or states of the *living* body, resemble death so closely, that mistakes have occurred, which have given rise to very deplorable consequences. Persons have been allowed to perish, who might have been restored to vigour, and to the enjoyment of protracted and useful existence: it is credibly asserted that the knife of the anatomist has been prematurely employed, under a mistaken persuasion of the extinction of vitality; and such and so many accounts are recorded of living persons having been consigned to the tomb, that we cannot altogether refuse our belief.

With due allowance for the credulity of mankind, and their love of what is horrible and wonderful, I must confess that some of these instances appear to be authenticated; and if so, we have sufficient warning to guard against the risk, however small, of their repetition: it is our duty to prevent such miserable results of ignorance or inattention, by ascertaining what are the proper criteria in cases of doubt. By first enumerating the phenomena of death, then quoting some diseases or states of the living body that might be mistaken for it, and lastly by mentioning the tests by which we may discriminate, some light may be thrown upon the subject.

§ 1. *Of the Phenomena of Death.*

If we are aware of what *indicates* life, which every one may be supposed to know, though perhaps no one can say that he truly and clearly understands what *constitutes* it, we at once arrive at the discrimination of death. It is the cessation of the phenomena with which we are so especially familiar—the phenomena of life. The distribution of these phenomena according to the vital, natural and animal functions is sufficiently convenient for the present purpose.

Death is the cessation of all these functions; manifested in the first instance by the absence of their phenomena, and afterwards by the decomposition of their organs, or of the respective parts of the animal frame.

This state of the *human* body, for we speak of that only, is characterised (where no mechanical impediment exists) by the prostrate posture; absence of pulsation in the arteries, and stoppage of circulation in the veins; cessation of respiration; paleness or lividity of the surface and of the countenance, the latter ghastly; insensibility of all the parts; and coldness, accompanied by rigidity of the muscles.

These are the universal signs of death, and are always consequent to it. But some of them may not occur at the usual period. The countenance often remains unchanged for a considerable time, and in death from certain causes, its colour, instead of becoming pale, is heightened. Warmth frequently continues about dead bodies for hours and even days; while occasionally rigidity of the limbs does not occur at all. On the other hand, there is no single phenomenon of death that may not, and which does not frequently take place in the living body; and sometimes several of them together. It is also a fact, that they have all occurred apparently in persons who have lived, notwithstanding, for many years.

§. 2. The second thing proposed, was to enumerate *certain diseases or states of the living body, that resemble death,* and might be mistaken for it.

The first of these which I shall notice is *Asphyxia;* in some varieties of which there is perhaps identity with the state of death rather than resemblance to

it; for, as far as observation and experience have gone, in certain cases which have been designated Asphyxia, it would appear that the functions of the living system have really ceased. The term which familiar language has adopted here is very significant, viz. *suspended animation.* The phenomena of recent death are not only present; but in the majority of cases, (were the individual neglected) the supervention of decomposition would demonstrate the actual cessation of vitality. It might therefore be considered as the state of death itself: but as in many instances the proper application of means will restore the exercise of the functions, we must maintain it to be no more than *apparent* death.

The indications here are in fact those of death itself, with some variation according to the cause. Motion and sensation, circulation and respiration have all receded, and the slightest token of the existence of any of these functions may be undiscoverable by the most careful examination. With regard to sensibility, it may be difficult to express exactly the state into which it may pass. In some degree we may suppose it frequently to exist where the other phenomena of life cannot be detected; and to argue for the presence of excitability, or the capacity on the part of certain organs of being roused into action, in cases where the proper applications are successfully employed, would be superfluous.

The most common causes of suspension of animation are hanging, submersion in water, inhaling

certain noxious gases, and some diseases. Authors have improperly included Syncope and Apoplexy under Asphyxia; but there is a characteristic difference in each, which will be treated of in the proper place. It is to be understood in general that as the sufferer has been exposed for a longer or shorter time to the influence of these causes, the state of suspension will be more or less complete, and the approach to real death more or less perfect. This consideration leads us to the relation which such events bear to medico-legal enquiry.

When a person in a state of suspended animation is to be examined, it can scarcely be supposed that the case will be of so very strange a nature, that we can obtain no clue to the cause. The mere examination of the body may teach us but little; but, if the history of the case be attainable, we may expect to learn readily enough how long the individual has been exposed to the influence of destructive circumstances. In recent events of this nature there may be sufficient warmth and flexibility in the body to indicate that it has not been long in a state of Asphyxia; and the diligent use of restorative means, with the result of their application, will be the best and surest mode of discriminating between Asphyxia and death. Upon this, and the history of the event, we must rely for the diagnosis.

It does not come within the compass of this work to detail the process for restoring suspended anima-

tion ; and it would be equally irrelevant to enlarge upon the duty of its application. This belongs to the art of curing diseases and preserving human life ; our business at present is merely to distinguish between the reality and the simulation of death.

Another state in which many of the signs of death are presented to us is that of *Syncope* or fainting. We find here the tendency to prostration, paleness, insensibility, with impeded circulation and respiration ; added to which we have frequently the duration of these symptoms for a considerable time, notwithstanding the diligent application of remedies. Nor will the previous history of the case at all times enable us to discover what has taken place. There are however certain events usually productive of Syncope ; and in a case of this death-like nature, where the knowledge of such occurrences is connected with the appearance of Syncope, we shall readily form a right judgment, particularly where the habits of the individual are known to us. But people faint under circumstances that do not, *prima facie*, imply the existence of a common exciting cause ; and on the other hand, death not unfrequently strikes a blow in the very same apparent manner. On a sudden alteration of posture, for instance, a person may fall down and expire immediately ; and from the same cause another shall fall as suddenly, and lie as motionless, but in a short time shall recover and rise uninjured. In the former case an aneurism of the aorta will be found to

have burst; in the latter it will be no more than an ordinary fainting fit.

The principle of discriminating, by the effect of remedial applications, as in Asphyxia, might be considered equally valid here; but that which depends upon the history of the event must in some measure be set aside; for a sudden change of posture, in instances like those just contrasted, may procure the immediate extinction of life, or induce merely a paroxysm of Syncope. We must therefore, in respect to the event that has caused the phenomena, look beyond the more recent occurence to the previous state of the individual; whether he was suspected to labour under any organic affection, or had been subject to fainting. Restorative measures, however, prove successful in mere Syncope; and there are commonly warmth in the body, contractility of the pupil, some pulsatory motion (about the heart at least) and perhaps a movement in certain muscles.

Of *Apoplexy*, *Catalepsy*, *Hyteria*, and *Hypochondriasm*, all of which may be, and some of which certainly have been mistaken for death, it is not necessary to speak particularly. In these cases due examination, aided by knowledge of what preceded or apparently caused the phenomena, will enable us to decide that the vital principle is not yet extinct, or even that certain functions of life are still in activity, though feeble and obscure.

In certain diseases, *exhaustion* takes place to

such an extent, that it is often matter of great uncertainty, even where the strictest attention is paid, whether the vital spark is actually fled; and in cases of precipitancy, or of confusion, as in times of public sickness, the living have been mingled with the dead. In warm climates, where speedy interment is more necessary than in temperate or cold countries, there can be no doubt that such mistakes occur. I was eye-witness of an instance, in a celebrated city on the Continent, where a poor woman, yet alive, was solemnly ushered to the margin of the grave in broad day, and whose interment would have deliberately taken place, but for the interposition of by-standers. Some degree of delay therefore is often clearly necessary, and to what extent it ought to be carried will presently be shewn.

Trance is a familiar term in our language, but to which, though there are corresponding words in other tongues, it may be questioned whether any precise ideas are attached. With what the vulgar understand, or pretend to understand by a trance, I shall not here concern myself. If we look into cyclopædias, or scientific dictionaries, we are referred from the term *trance* to *ecstacy* or *lipothymia,* the latter term being one received into certain systems of Nosology. In this sense, it is impossible to mistake between the state alluded to and that of death; for the definitions of Lipothymia imply that pulsation and respiration continue to be carried on.

The popular notion of a trance, is at least too mysterious, if not too extravagant to be entertained by the physician. We have no experience now a-days of a state in which the soul can for a time leave the body (to all appearance) dead, and return to it as a resuscitating application. A trance therefore cannot (according to such ideas as knowledge of organic life will warrant) amount to more than a deep comatose state, in which the continued exercise of the vital functions may be so obscure as to escape the observation of uninformed individuals.

We must also refuse our belief to the histories on record of people being reduced to a state of close simulation of death, by the administration of drugs; a conceit to which we are indebted for so many dramatic plots and romantic tales: a profound or a morbid sleep, is all that we can suppose to have been believed in by Shakspeare himself, who has not disdained to make use of this very article of machinery*.

* Friar Lawrence's account of the drug to be swallowed by Juliet, is a fair enumeration of the common signs of death.

———Take thou this phial,
And this distilled liquor drink thou off;
When presently thro' all thy veins shall run
A cold and drowsy humour, which shall seize
Each vital spirit; for *no pulse* shall keep
His natural progress, but soon cease to beat.
No warmth, no breath shall testify thou livest;
The roses in thy lips and cheeks shall fade
To paly ashes; the eye's windows fall
Like death, when he shuts up the day of life:

§. 3. Certain experiments have been practised, in order to ascertain the reality of death; upon some of which considerable stress has been laid, though I believe there is not one of them which cannot be shewn to be fallacious, while even the concurrence of them all will sometimes prove unsatisfactory.

In order to verify the fact as to the existence or cessation of respiration, several tests, supposed to be delicate, have been applied; as the flame of a taper, light floculent substances, or the clean surface of a mirror, near the outlets of the breath; agitation of the two former, and dimness produced upon the latter have been set down as proofs of existing respiration. But the result cannot be considered proof positive of the reality or simulation of death; for a very slight and otherwise imperceptible current of air may be caused, by means of which we are inconscious, and will agitate the light bodies now mentioned; while an exhalation, not of respiration, may tarnish the surface of a mirror: on the other hand, mirrors have been held near the mouths and nostrils of persons in a state of mere Syncope, without being sullied. Nor can placing a vessel of water on the thorax, in order to judge by the stillness or agitation of the fluid, be considered more satisfactory. Respiration may be restored where this proof has ap-

> And in this borrow'd likeness of shrunk death
> Thou shalt continue two and forty hours,
> And then awake, as from a pleasant sleep.
>
> ROMEO and JULIET, Act IV.

parently indicated its absence; but I should think it useless in almost every instance, on account of the difficulty with which the influence of other agitating causes can be avoided.

It must be recollected as a matter of the greatest importance, to examine carefully for arterial pulsation. If this be perceptible, life cannot be extinct, though the impossibility of ascertaining it is not of itself sufficient to warrant the opposite conclusion. When we can discover no pulsation at the wrist, it is perhaps to be found elsewhere. We should try the temporal arteries, the carotids, the femoral, and even the heart itself; for which purpose it has been recommended to turn the body to one side, in order to examine with more effect whether any pulsatory motion be communicated from the interior of the thorax. Of course, if change of posture be of consequence, the proper position would be to turn the body towards the left side, and bring the fore part undermost. With regard to proofs applied to the senses, as noise, strong odours, &c. and the tests which have been termed surgical; blistering, scarifying, and even cutting off parts of the body, I conceive them to require no elucidation. They can scarcely ever be necessary, and are not likely to produce advantage.

§. 4. The particular object of these observations is not to point out where the means of resuscitation are called for, but where interference in the disposal or abandonment of persons apparently dead must

be avoided. It may therefore be proper to *recapitulate* the most important phenomena of death.

Of these may first be noticed that peculiar state of the features, which, from the accurate description given of it by the greatest of physicians, has been called *facies Hippocratica.* The expression met with here is rarely produced but by the approach of death; and it is in disease merely that we are to look for it; as in cases of accidental death the features may retain much of their accustomed expression, and there are certain diseases that alter the countenance in a different manner. Taken therefore alone, paleness of face, with contraction and distortion of the features cannot be relied upon. Nor can we altogether place confidence in the state of the eye; for it presents no small variety of appearance, according to circumstances. In some cases of Asphyxia it has a very perfect resemblance to death.

Cessation of circulation and respiration, coldness combined with rigidity of the limbs, though not of themselves absolute proofs of death, amount when combined to very strong evidence. The stiffness of the limbs has been observed to commence at a very early period, even before warmth has been diminished. Many circumstances occur to maintain the temperature for a long time after death, and on the other hand, people have been taken up for dead quite cold, as in cases of freezing and submersion, who have been afterwards restored. The stiffness

is of greater importance. As long as the limbs retain their flexibility, the fact of death may in general be doubted, although in some particular cases they may continue to do so, even until putrefaction comes on, to place every thing beyond a doubt.

Putrefaction is allowed by some to be the only *proof* of death; and it is certainly the most conclusive. The necessity for waiting until this state manifests itself, may rarely occur; and even where doubt does exist, the *commencement* of the process will be sufficiently satisfactory. It cannot take place during life. Suppuration and gangrene, which are destructive of living animal matter, cease with life; and putrefaction cannot begin till life, however morbid, no longer exists. Its approach is known, not so much by tumefaction and discoloration, for these may occur in the diseased living body, but by its peculiar smell—different from any other, even from that of the gangrenous state; and it is often perceptible very soon after death.

To the foregoing signs of death may be added a few others, which, though not of universal occurrence, generally take place. Not only do parts, naturally flexible in the living state, become rigid after death, but other organs, whose living healthy state is that of contraction, become relaxed; as the sphincter muscles. There is an elasticity in the living body which it loses at death, and which is shown by the impressions that substances leave upon the surface. In the living state the pressure of

hard bodies will leave their marks, but these, if no lesion has been inflicted, will shortly disappear; or, if they remain, such impressions are generally accompanied with discoloration. In the dead body the shape of the object is indented in a more permanent manner, and without discoloration, at least such as takes place in the living.

Professor Louis observes, that the transparent cornea of the eye in those who are dead, is commonly covered with a thin slimy membrane, which breaks in pieces when touched, and is easily removed by wiping the cornea. He remarks that some appearance of it takes place in the eyes of the dying; and though he allows that the same may be produced by disease, he adds that in a very few hours the eyes of the dead become soft and flabby, an effect not to be produced under any circumstances in the living body. He holds it as indubitable, that while the globe of the eye retains its firmness, the person cannot be said to be dead*.

These observations might appear incomplete, if no allusion were made to the effect of galvanic stimulus applied to dead bodies. It is no proof of life, any more than other external agents that might be brought to act upon the carcase—as a large fire causing heat, or the introduction of a Catheter producing a flow of urine. It merely proves that the fibre has not yet lost its contractility; and even if

* Lettres sur la certitude des signes de la mort.

resuscitation should ever be produced through the agency of galvanism, as it has been done by other means, and that in the case of criminals supposed to have undergone the final sentence of the law, it will prove useful only where animation is *suspended*.

CHAPTER II.

Sudden Death without Cause of Crimination.

When a person is suddenly cut off, in apparent health and vigour, it is on various accounts desirable to ascertain the real cause of death. Suspicion may exist as to criminal interference, and were measures never taken to ascertain the real state of the case, scope might be given for slanderous reports, or mischievous insinuation. In European nations provision is made by the legislature for clearing up every occurrence of the kind where doubt might arise.

I need not detail the practice in other countries. It will be sufficient to inform, or at least to remind the reader, of the established mode of procedure in our own.

In England there is a magistrate of high powers called the *Coroner*, part of whose duty it is to enquire into the circumstances connected with every instance of sudden or suspicious death. In cases

where suspicion of murder is excited, the body should, if possible, remain untouched, and must not be interred until this investigation, or *inquest*, as it is termed, be held, *super visum corporis*. The inquest is made in presence of the coroner and a competent jury, summoned by him for the purpose, and upon whose verdict further proceedings are instituted, or not, as the terms of the verdict may demand.

In many instances the evidence of medical men is required. True it is, that in some cases the facts are so clear, that no professional opinion can be wanted: where, however, there is the least uncertainty, such opinions should be taken, and for the most part a dissection must be made.

In general we find the terms of a verdict returned by the coroner's jury pretty nearly the same in cases of a similar description: occasionally, however, a particular statement of facts is entered into, without regard to any form or custom. The following are the terms most commonly employed; exemplifications of which are to be found in almost every newspaper: *natural death—accidental death—died by the visitation of God—wilful murder—felo de se—and lunacy.*

A verdict of *natural death* is commonly returned, where the event is traced to an adequate cause, independent of culpability, or unusual accident. Such, for instance, as sudden death by apoplexy, bursting of an aortal aneurism, a rupture of the heart, or other derangement of organs upon whose integrity

and healthiness the continuance of life depends. In many instances of this nature, however, the verdict specifically records the cause of death.

Accidental death requires very little elucidation. It relates to death either from personal agency, or unforeseen exposure to external injury; as when a man is driven over in the dark by a coach. If no culpability be attachable to the driver either for furious driving, or wilfully taking the wrong side of the road, it would be considered an accident, and a fine would be inflicted on the coach or horses: in like manner, if a person should fall into the water, and be drowned, notwithstanding attempts to save him, the verdict would, in all probability, be "*accidentally drowned.*"

Died by the visitation of God is a common phrase, in which the verdict of a coroner's jury is couched; and is used, I believe, in those cases of sudden death, where no immediate or satisfactory cause is discovered, but where there is no ground for suspicion as to criminal interference. There are some fatal diseases and derangements, which by ordinary inspection may not be discoverable, or which may bid defiance to very accurate and minute researches, referable to this description of cases. I might instance some affections of the heart, and perhaps certain disorders that attack the stomach, or supervene in the brain. It is no reproach upon the character of the deceased, although the term "visitation of God" would seem to imply some-

thing of this nature. It merely conveys the sentiments of the Jury, when they consider the event as one of the numerous occurrences in the administration of Providence, for which our limited knowledge cannot account.

Where a verdict of *wilful murder* is returned, it may be founded either upon personal evidence of the commission of that crime, or from evident signs that fatal violence has been inflicted on the body, or from both. It is frequently in the power of a medical practitioner to assist a jury in the formation of their opinion about the nature of the injury inflicted, as well as upon the material question whether it has been inflicted by assassins, or has been the act of the individual himself; though for the most part these circumstances are traced through other evidence. Cases, however, have not been rare in which the proof has rested solely on the testimony of professional men. On such occasions I need but hint how very necessary it is for the practitioner to possess some knowledge of a cast rather different from that of the mere practitioner of physic.

The laws of every Christian country are extremely hostile to self-destruction. It is a crime of the highest magnitude, and when committed among us, the opinion of the coroner's jury is given in the term *felo de se*, implying that the individual has perpetrated the heinous crime of felony upon himself; and the law has awarded a punishment to which I shall advert hereafter. The medical prac-

titioner is often able to clear up doubts in such cases, and may be instrumental either in fixing a charge of guilt where due, or in rescuing the character of the dead, and shielding the feelings of the living from impending obloquy when not merited.

It often happens, that where the deceased has clearly made away with himself, the criminality of the deed is nullified by proofs that the unfortunate person was incapable of exercising his reason at the time. A verdict of *lunacy* is brought in, and no penalties are then incurred. On the frequency with which this form of verdict is returned, I shall have occasion to remark in the sequel.

This allusion to the various results that may arise out of medical evidence on coroners' inquests, may be of use in preparing the minds of practitioners for an important duty, with which they must lay their account to be occasionally charged. There are, as I have already observed, frequent deviations in point of expression as to verdicts; but these cannot be more particularly mentioned, as they depend upon the infinite variety of circumstances that influence the events of human history. With regard to the most important of these cases, that of a charge of murder, there is frequently a salvo (where a person has been killed, by accident in effect, but which accident has been caused through carelessness, or culpable neglect on the part of another,) by a verdict of *manslaughter*, which still subjects

the accused to a criminal trial. Of this, as well as *culpable* and *justifiable homicide*, the medical profession are not to be supposed better qualified to judge than other men.

Although indictments for murder most commonly proceed at the instance of the coroner, it does not necessarily follow that the person accused is to suffer the pains and penalties of the law, as provided in such cases. The coroner merely ascertains whether there be grounds for a charge of crimination. The establishment of the crime rests with a higher tribunal, and not unfrequently the accusation of the coroner is discovered to be unfounded. Hence it is obvious that medical men, however positively they may have given their opinions in the first instance, may find them controverted and set aside afterwards. Whether a due attention to Forensic Medicine, as a separate and collateral branch of study, may do away with discrepancies among medical witnesses, it is not for me to say; but I think it my duty to warn my brethren against swearing to one thing in the presence of a coroner, and afterwards giving a contrary testimony before the judge. In other words, we should be as well prepared for a sudden summons from the coroner, as for examination at the assizes, on a distant day, of which we have perhaps long previous notice. It is a grievous and often irreparable misfortune, for a person to lie in jail for several months under a criminal charge, even though fully acquitted in the end; and it should

be the study of the medical practitioner not only to avoid contributing, by want of due knowledge on his part, to the escape of the guilty, but also to the distress and serious danger of the innocent.

I shall arrange the consideration of sudden death in the apparently healthy state into two descriptions of cases; first, those which take place from *intrinsic or morbid* causes; and secondly, those which are occasioned by the agency of *external but natural* causes.

§. 1. It is unnecessary to be more precise in the explanation of what is to be understood by the first description of cases. If there be any ambiguity at present, it will vanish as we proceed. Nor need I illustrate the importance of opening the bodies of those that die suddenly, or unexpectedly, for the sake of professional information, or the satisfaction of surviving friends. These inspections are now so intimately blended with the researches of the profession, that they are become indispensible adjuncts to practice. The present object is to shew the necessity of acquaintance with morbid, as well as sound anatomy, that we may be able to give a proper opinion as to the cause of death when enquired into at the instance of public justice.

And in every instance of *sudden* death, where the cause is not already manifest, such an examination should be made. It is always alarming to find a corpse where but a few hours before a healthy

person retired to rest; still more so, if the dead body of an individual be discovered in an unfrequented place, while there is no clue to the history of the event. People have often been found dead, who were known to have been in perfect health but a short time before; and marks of violence being discovered about them, have, in the first instance, excited suspicion of criminal interference, though upon due examination these have been ascertained to be merely incidental, and not productive of the catastrophe; or to have been the unavoidable consequence of a paroxysm of disease, where no assistance was at hand. In such cases, we shall suppose that death has been caused by morbid action, or organic lesion. To the former the individual may have been previously subject, or it may be the first time that he has been affected with it. In such an instance, there will be a clue to the investigation; in the latter case, we must commence our research in obscurity.

There are several diseases that either, in the first instance, make a sudden and fatal attack upon organs necessary to life, or having existed in an obscure and unsuspected manner for a longer or shorter period, come at once to a fatal termination. It is proper to enumerate the principal of these, that the practitioner may carry them in his mind as points of direction, when called to perform a duty of this nature, though the illustration of one or two will answer every purpose of explaining the relations of the whole to Forensic enquiry.

To begin with the most common of these morbid causes of death, I may mention *Apoplexy,* which carries off so many members of civilized society. The phenomena of this formidable disorder are generally well defined, and very well known ; and where its attack is perceived, judicial interference may perhaps scarcely ever be thought necessary. But it sometimes varies from the ordinary course of its appearance, and may either be mistaken for some other state of the system, less dangerous, or even unconnected with danger, or it may come on, and terminate fatally in situations that preclude any observation of the event. We must suppose a case, therefore, in which there has been no professional interference.

A person may be carried off by apoplexy, under circumstances calculated to excite suspicion either as to the conduct of the deceased himself, or that of others, and to throw a mystery over the event, which a judicious examination may entirely remove. For instance, the usual turgidity and discoloration about the countenance may be wanting, while wounds and bruises appear in various parts of the body ; and all this, upon careful examination, may admit of easy and natural explanation. A man may be overtaken with an apoplectic paroxysm in a place where there are hard or sharp objects, upon which he falls, as against furniture in a room, or among stones out of doors ; he may thus receive wounds that appear extensive, and may lose a considerable

quantity of blood. This would be ample cause for popular alarm and clamour, by which the scientific practitioner is fully aware that he never ought to be swayed. On dissection the real cause of death will appear, which, together with the extent and nature of the wounds, will shew that death has not been produced by external violence. A still more complicated case however may occur. It is possible that a person in the apoplectic state may fall alive, into water, and be taken out dead. In such a case we may expect that the signs of apoplexy will be manifest; and circumstantial considerations must have weight; such as the place in which the deceased is found; the appearance of the ground on the margin of the water; the previous state of his mind, health and general circumstances; as also the degree in which the phenomena of death by submersion exist; of which mention will be made in the proper place. It is to be understood that I am talking of *Apoplexia Sanguinea.*

Let us suppose another case, one that perhaps may never occur, but which, however extreme, is possible. A person may fall from a height in a fit of apoplexy, or in any other paroxysm that deprives him of the perception of danger and the power of avoiding it. In consequence of this, his scull is fractured, and he is found dead. It can hardly be supposed that the manner in which the fracture has been inflicted can remain a mystery; it will be seen, from the situation of the body relative to surrounding ob-

jects, that it has happened by a fall; but three questions may arise. Has the deceased accidentally come by his death in this way? Or has he sought it of his own accord? Or has he been precipitated by the agency of other persons? Between the question of *mere* accident, and that of suicide, other persons may, perhaps, be as able to decide as ourselves; for dissection may discover nothing but the fractured scull and its consequences. Previous history must here be considered; but it may be, that on opening the cranium, evident marks of apoplexy are found, and further enquiry may lead to the conclusion that the deceased was seized with a paroxysm of this disorder in a dangerous situation, by which he received the fall in question.

To enter upon a description of the symptoms, causes, and morbid derangements of apoplexy, would be foreign to the scope of this work: there are some considerations connected with it, however, which cannot be entirely omitted. Sanguineous apoplexy implies an irregular determination, or flow of blood to the head, by which the vessels are so distended as to compress the brain, obscure its functions, and ultimately extinguish life. Various causes may produce it in different people, but there are certain circumstances understood to give a predisposition to it, which we shall do well to keep in mind. A peculiar conformation of body has been termed the apoplectic make; consisting in a plethoric habit, large head, and short neck; and though

arguments have been brought forward to prove that this is without foundation, little more seems to have been proved than that apoplexy is not confined to persons of this description. When, therefore, we are called to inspect the corpse of an individual, in which these characteristics exist, they may have their effect in leading us to the discovery of the real cause of death. With regard to persons of this habit, it is established that certain things are in them highly dangerous, which in others might not be considered even inconvenient; as postures by which the head may be brought low, ligatures about the body, or tight clothes, whereby the circulation may be improperly directed, or impeded; excess in eating, so as to load and distend the stomach, increase the flow of blood to the head, particularly on going to bed soon afterwards, which implies the recumbent posture; and the stimulus of wine or other strong drink.

Now, if called to aid the researches of authority in a case where a person is found lying dead, and no one is forthcoming to give any information on the subject, the following is an outline of what we ought to do.

It is a rule, under such circumstances, which should universally be observed, that if the body cannot conveniently remain where found until an inquest can be assembled, an accurate examination should be made into every appearance connected with it on discovery. It will be of importance to the medical practitioner to know the spot of

ground, the situation of the objects, and the posture of the body. He must carefully examine the whole surface of the corpse, not merely to discover wounds and bruises, but also to detect any improper tightness, pressure, or other impediment to free circulation. If there are any wounds, they must be carefully traced, and the anatomical relation of the parts in which they are found, taken into consideration: if there are bruises or other marks of violence, the parts beneath are to be dissected. These things being premised, whether we have yet discovered any presumptive cause of death or not, we are to proceed to examine the cavities of the body. It is perhaps not very material with which we begin; but in such important cases we should never be satisfied with the morbid appearances found in one only, however conclusive these may appear. The circumstance of having rested there, and the consequent necessity of admitting the possibility that by further search, other phenomena indicating fatal disorder, might have been discovered, may mar the whole process, and subject us to censure.

If we have reason to expect the appearances of apoplexy, the head must be considered the principal object of our attention, and the dissection of this important part must be very minute and particular. We are to look not only for turgescence of the vessels, and hæmorrhage at every stroke of the knife, but also for serous effusion in the cavities of the brain, and extravasations of blood, not only in

them, but in the medullary substance itself. We must attend also to the circumstance of adhesion between the membranes, and the increased vascularity generally discoverable in them.

To this examination we must on no account neglect to join that of the stomach. If we there find a large quantity of alimentary matter, or an unusual portion of strong liquor, or both, together with the above appearances in the head, such a circumstance will strengthen the presumption of apoplexy having extinguished life; and with the greater force, if the person is of the apoplectic make, or is known to have suffered from, or to have been menaced with former attacks.

Where we discover the leading and important phenomena of the apoplectic state, such as they have been now described, unaccompanied with any other lesion, or derangement adequate (according to the known laws of the living economy) to produce death, we must set it down to the account of this particular morbid cause occurring in the healthy state.

What has been said on the medico-legal relations of apoplexy will apply to other causes of sudden death discoverable in the organization of the system. The observations, *mutatis mutandis,* in respect to parts and lesions, will also guide us in a case of *Epilepsy* proving fatal—either directly, when connected with derangement of organs beyond the reach of medical aid, or indirectly when occurring

in circumstances of danger, where the sufferer perishes through inability to avoid them, or by being at a distance from the help of others. In this way epilepsy may be the means of causing a person to be drowned, burnt, suffocated by noxious gas, or thrown into other situations equally fatal. In dissecting the bodies of those who have laboured under epilepsy, derangements of various kinds, in and about the brain and its membranes, such as tumors and ossifications, or disordered structure and causes of irritation in nerves are frequently discovered. But it may, and no doubt often does happen, that we do not light upon so satisfactory a demonstration of the nature of the case; and we may perhaps under these circumstances be restricted to a conjecture as to the manner of the person's death, notwithstanding other morbid appearances have been given as found after death in epileptic persons. Here perhaps justice had better vindicate herself by other means than the opinion of the medical practitioner; for there are questions in which we must leave her to do so. But the previous history of the individual, and the circumstances in which the body has been found, will contribute greatly to strengthen even a conjecture.

It belongs strictly to Pathological Physiology to enumerate the morbid phenomena discoverable in bodies after death. I shall therefore merely recal to the recollection of the practitioner that sudden death is the consequence of certain disorders in other parts of the body. Rupture of the heart

itself, without any great alteration of structure, has repeatedly occurred *. Aneurism of the aorta suddenly bursting causes immediate death. A person may be incommoded for awhile, or in the common phrase be *indisposed*, without any alarm being excited, and be suddenly cut off. Certain disorders about other organs, such as inflammation in the thorax, may exist for some time, and the patient go about his usual occupation until within a very short period of his death. Such is now and then the case in Pneumonia; and while the course of this disorder is going on, almost imperceptibly, should the patient meet with an accident, or receive any violent treatment, a good deal of perplexity might arise †. There are inflammatory and spasmodic complaints also that attack the heart and stomach, and produce instant death, leaving no indication of any previous inflammatory attack, or perhaps any morbid sign whatever. In such cases as these, where we can discover no satisfactory

* Besides older writers, the reader may consult a memoir on this subject in the Nouveau Journal de Medicine for April, 1820, by Dr. Rostan; an abstract of which is given in the London Medical Repository for October of that year; and in the same work for the month following, a copious extract is given from a Memoir on the subject by Dr. Bland, which is on every account entitled to perusal.

† The notorious *Oldham inquest*, about the death of John Lees, is a celebrated event (in recent times) of medico-legal interest. It particularly exemplifies this very point. The whole has been fully recorded, and published in a separate volume.

cause, the mere absence of indications of a suspicious nature, will warrant the verdict "Died by the visitation of God."

§ 2. Under the second head of this chapter * are to be included those cases where persons lose their lives without reference to any previous disease, or lesion of organs; caused by the interference of certain agents that kill, but not to be considered as connected with crime. Such are death by lightning, exposure to noxious gases, to cold and hunger, immoderate use of spirituous liquor, imprudently swallowing cold water, &c. All of these may, and for the most part do take place in a sort of accidental manner, or are at the worst but the consequence of imprudence, being scarcely imputable either to criminal intent on the part of the sufferer, or to criminal attempts on that of others. To settle this point is very often the object of magistratorial investigation; and our aid may be necessary towards establishing the truth.

The remarks given upon apoplexy will be applicable here. If a person is known to have exposed himself to such dangerous agencies as I have now enumerated, and thereby comes to his death under the observation of reputable witnesses, there can be no mystery about the case; for all the world knows that the circumstances alluded to are adequate to cause death. A person, however, may be found dead with no other means of accounting for the

* See page 35.

catastrophe than what conjecture may furnish. His body may be discovered in a remote place, without any signs of violence about it. It may be known that a thunder-storm had raged in the neighbourhood, and it may be surmised that he perished by lightning; but the jury assembled to investigate the matter may not be satisfied with such conjectural explanation: an examination of the body, and the deductions of professional men from what they may discover in the course of such examination, will be necessary.

In a case of death from cold and hunger, it may also be requisite to open the body, although the nature of the event be almost self-evident; and in sudden death from throwing cold liquid, or strong drink into the stomach, an inspection *post mortem* is absolutely necessary, even if the occurrence took place in the presence of a hundred witnesses.

To begin then with death by *lightning*. There is scarcely a season in which the awful phenomena of thunder-storms present themselves without causing the loss of animal, and even of human life. The merest tyro in natural philosophy knows that the animal body is a ready conductor of the electric fluid, and if it be the nearest object of attraction in its course, it will be seized upon by the subtile matter, which passes through in such force as to extinguish the principle of vitality. But there is a circumstance of frequent occurrence when people are overtaken out of doors in a thunder-storm, that

contributes to heighten the danger. They often repair to a tree for shelter; and in such a situation it is that most of those who have perished by the electric shock *from the clouds,* have been found. Persons, however, have perished by lightning upon open ground, and at a distance from elevated objects. This has been said to arise not from the shock of the electrical matter passing from the clouds to the earth, but in its transit from the surcharged earth to a negative cloud passing over the spot at the time*.

As this is a case which the art of medicine cannot remedy, comparatively few dissections have been made of the bodies of those who have perished by lightning.

Sometimes it has been found that the clothes of persons killed in this manner have been consumed, and metallic substances about them melted. In such instances, the necessity of dissection, in order to satisfy even the most scrupulous as to the cause of death, can scarcely be contemplated. But as a much inferior force of electrical matter may take away life, or as, perhaps, the lightning may pass

* An elaborate explanation on this subject will be found in the late Earl Stanhope's Principles of Electricity; and a most interesting account of a thunder-storm is given by Mr. Brydone in the 77th volume of the Philosophical Transactions, in which the notion of *the returning stroke* is clearly exemplified. Long before this, however, a remarkable event of the same nature was communicated to the Royal Academy of Sciences at Paris, by Morand.

through the body, without including the clothes, we must enquire if there are no other marks by which we may come to a right conclusion.

If there be scorching about the surface of the body, the supposition as to the cause of death will be strengthened. This not unfrequently is the case; but I know not if, beyond the appearances that may present themselves on the surface, there be much of a satisfactory nature in the morbid anatomy of those killed by lightning. Mayer paid particular attention to the discolorations that accompany this sort of death, and had drawings made of them. They seem peculiarly to be traced in the direction of the spine. It is also said that the bodies of persons killed in this manner are unusually flaccid, that the blood is found in a fluid state, and that there have been inflammatory appearances internally. These however, even if always present, cannot be conclusive, as they have been found also in the bodies of those who have died from other causes. But if they do present themselves where lightning is suspected to have produced the fatal event, they will strengthen the probability as to that particular cause. Death by lightning has been said to take place, *qua* suffocation. To any particular opinion on this point I see no necessity for attaching a great deal of importance. If persons are thereby suffocated, it may be said that the known phenomena of suffocation in general are rather irreconcileable with the instantaneous manner of death here. I fear, however,

that were we in such cases to draw our inferences solely from the appearances in the body, without any information, or suspicion as to exposure to lightning, we should have some difficulty in coming to the right conclusion. In every instance of the kind, the history of the event will most probably be known.

I have already alluded to *Asphyxia*, under the article of apparent death; but a few words are now required, concerning some of its causes, as producing sudden death in the healthy state. Various are the circumstances in which a person may be exposed to inhale noxious gases; and the mere mention of a few of them will introduce such observations as may be pertinent to this part of our subject. Most people are now aware of the danger of burning charcoal in places where ventilation is impeded, and of the impropriety of sleeping on lime-kilns, descending rashly into mines, cellars, and other places that have been shut up, and into brewers' vats that have been standing empty; or of confining persons in close apartments without a renewal of atmospheric air. Former events, and even the frequent recurrence of fatal illustrations in the present day, ought to do away with exposure under these circumstances; but every now and then, accident, ignorance, or imprudence, causes the death of individuals, and renders investigation necessary. It might be imagined that such a catastrophe cannot easily occur, without at the same time a manifesta-

tion of what is the real, or at least the probable history of the event. We may readily suppose that carbonic acid gas may have been inhaled to a fatal extent; yet when the body of the victim is found, the circumstances as to noxious influence may be altogether changed. For instance, a person goes into a cellar, and has occasion to stoop, in order to accomplish the purpose for which he entered. The accumulated gas, which is specifically heavier than the air of the atmosphere, is at the time, high enough to deprive him of sensibility, and, falling still lower among it, he perishes. Some time elapses before he is discovered, while the gas having found an outlet at the open door, has escaped; and a burning object will then be supported at the very lowest part of the place. In such circumstances, perhaps, there will be evidence enough of what has occurred, from the state in which objects are found. The process by which the evolution of so much gas had been produced, may be found going on; the closeness of the door may be attended to, the length of time during which it had been unopened may be recollected, and the whole event be satisfactorily explained. But we may find persons killed by this gas, under circumstances of a more doubtful nature. Is there nothing therefore in the appearance of the bodies of those who have died by carbonic acid gas, which will explain the manner of their death?

The eyes of such as are killed in this way, are

generally found wide open, and, as some say, protruded from the sockets. The tongue is commonly thrust out, and that at one side of the mouth; the jaw at the same time clenched, and the face livid. We may not find marks of violence, unless where there has been a fall from a height, and then the nature of the external injury will explain itself, in connection with the other circumstances.

On opening the body we shall find the proximate phenomena, if I may so express myself, of suffocation. What is meant by these will be discussed hereafter*. I shall merely remark now that there will be a congestion of blood in the right side of the heart, and in the veins leading into those cavities. Where this exists, and no other cause of suffocation is demonstrable, such as drowning, strangling, or morbid impediment, we have proof enough, when added to the history of the event, to decide in what way a person in such circumstances has been carried off.

The next cause of death belonging to this division which I shall notice, is *exposure to cold.* By this I do not mean that state in which people are frozen through exposure to the air, at a degree of severity rarely known perhaps in this country, or seldom producing greater evils than chilblains, (at least in the healthy and vigorous); while in other and more northern latitudes, it causes gangrene

* Vide *Suffocation.*

and the loss of parts. Nor do I allude to those extraordinary events that have happened to travellers, seamen, and even whole armies. The exposure in question is for the most part connected with misfortune, and is commonly combined with exhaustion, from hunger and fatigue. There is hardly an inclement season in which, (not only abroad, but even in houses) the event does not occur. That desolate wanderers should be found dead in the fields, or in unfrequented wilds, under such circumstances, need not excite surprise. An event however more particularly illustrative of the cases I now allude to, occurred in this metropolis lately, when a man and his wife, aged persons, and poor, but not suspected, or indeed proved to have been quite destitute, were found dead in their apartment; although food was discovered in the room, and money was in the pocket of the man. The night of the 28th December, 1819, had been extremely inclement, and there was neither bed nor fire in this miserable couple's apartment. It appeared that they had been previously ailing.

In such a case as this it might readily be surmised that criminal attempts had been made by the sufferers on their own lives. In the present instance no other view was taken of the bodies than an external one. Persons in distress, even whole families, have been known to seclude themselves and to guard against intrusion, in order to destroy their lives; and on the above occasion the door was found

locked on the inside. The verdict recorded that they had perished from the inclemency of the weather, under the destitute circumstances in which they were found. There can be no doubt that feeble and sickly individuals, so exposed, stood every chance of perishing in this manner; but there was a defect in the investigation of the case, which, though probably of no great moment in this particular instance, should not have occurred, and which an internal inspection of the bodies would have supplied.

Such events, however, must depend more upon the history for clearing them up, than upon the particular appearances to be found in dissecting. But there is an important result, of the negative kind, which should not be neglected—it is the ascertainment of the fact that no deleterious ingesta have been made use of. Search should also be made for traces of organic derangements, and of morbid action. If none be found, the probability of the cause alleged will be materially augmented.

Those who perish in this manner commonly belong to the wretched classes of society; and we may generally rely on perceiving marks of privation in the exhausted state of the stomach and intestines, as well as in the general emaciation of the body, and miserable state of the clothes. There are cases on record of people who have killed themselves by voluntary abstinence from food, and others have perished from hunger, under circumstances where

cold could not be taken into account; but in such instances the real cause may perhaps be more clearly made out by the history than the appearances *post mortem.* Nor is there much risk of confounding such cases with those of death through inanition, brought on by loss of appetite, or other morbid causes, impeding the power of swallowing, or digestion; for in these, along with the appearance of emaciation, we shall be able to detect the morbid state of the organs; and no one in social life can have laboured under disorders of this kind, without some person or other being aware of the fact.

In mortalities from cold, hunger, &c. we shall not only find emaciation and emptiness in the primæ viæ, but very scanty remains of blood, especially in the more distant parts of the body.

People who perish by exposure to cold, in the open air, not unfrequently bring themselves into these unhappy circumstances through excessive drinking. When the stimulus begins to subside, and the consequent debility to supervene, the well-known soporific influence of cold acts with greater effect; and a comparatively small quantity of strong liquor, previously taken into the stomach, may thus become the cause of death, without producing the immediate fatal effects, that are the result of great debauchery, and of which I shall presently speak. The discovery, in such cases, of a quantity of spirituous fluid in the viscera, easily recognisable by the smell, will account for the death of individuals, who

perish in the cold, without any of the concomitant circumstances of misery. They are rendered unable to resist the impulse to sleep, and in this way many have slept the sleep of death in situations of no extraordinary severity or exposure, and where even the apoplectic state has not been induced.

There is a cause of sudden death in the healthy state of not unfrequent occurrence, from imprudence on the part of the victim, viz. the ingestion of cold water into the stomach, when the system is under great excitement from exercise. This is an event which always occurs in hot weather, and one which a little care, under the most extreme thirst, would enable every person to avoid. It happens among people who are labouring in the open fields, travellers, especially pedestrians, as soldiers on a march, &c. I entirely set aside the consequences of this practice that sometimes result in the form of fatal, and even rapidly fatal *disease,* and confine myself to those cases in which it causes sudden death.

Dr. Currie * is of opinion that the danger arises from remaining in a state of rest after swallowing the cold water, and considers that there is no risk if the exercise be continued after the draught. But we must recollect that where a large quantity is hastily gulped down, exercise is out of the question, for the person probably falls dead, or such painful effects are immediately felt as prevent the experiment of the remedy.

* Medical Reports, Vol. I. Chap. 12.

It is difficult to give an accurate explanation of the manner in which the death of an individual is operated by these means; but we know that under such circumstances the whole system is in a very high state of excitement, and that the sudden application of cold to any part of the body must produce a sedative effect, inversely proportionate to the degree of excitement. Applied to other parts of the system, its action would be less powerful, than when thrown upon the stomach, an organ of such exquisite sensibility, and so intimately connected with other organs whose activity is essential to the continuation of life. Here the sedative effect is so overwhelming, that no re-action can afterwards take place.

The consequences being so immediate, or perhaps it may be said, the fatal action being so rapid, we can hardly expect any very decided marks in the dead body. Indeed vitality is so suddenly extinguished, that the parts cannot be supposed to have time to alter their appearance; and we may therefore expect to find them in the state in which they were surprised.

Here, I apprehend, we must be satisfied with negative evidence. This will consist in obtaining a history of the case—coming to a knowledge of the fact, that the deceased, in a state of health and high exertion, drank imprudently of cold water—and finding no marks about the body of any other cause of death.

Death from ingesta into the stomach, not connected with criminal interference, also arises from *intoxication.*

Of the numerous ills that flow from this fertile source of mischief and danger, and the various ways in which it may lead individuals to an untimely end, I shall allude to one only—that in which it proves directly fatal, after the manner of a poison. There may be some doubt as to the propriety of distinguishing between strong drink, and poisons strictly so called; inasmuch as there is a very close, nay, perhaps, a perfect analogy between the consequences of strong liquor, improperly used, and those of many poisons that act either rapidly or slowly. I make the distinction, however, because I am unwilling to separate from poisoning the idea either of criminal intention, or of pure accident; neither of which is applicable here, according to the usages of society, and habits even of those addicted to the abuse of spirituous liquors. Excess in drinking is universally allowed to be a vice, and in morals the *habit* of so doing constitutes a very high crime; but where that consequence occurs which we have now in view, we can scarcely venture to consider it as any other than an awful result springing from lamentable imprudence.

I do not take into account the slow, and, for a time, imperceptible inroads made upon the health by a long continued course of indulgence in the use of spirits; nor am I warranted to enter upon a

dissertation concerning the comparative degree of mischief induced by liquors of various descriptions. I confine myself to death as the *immediate* result of a debauch.

In this point of view, the difficulty in any case of the kind will be trifling. In most instances, we shall find the victim to have been carried off by apoplexy; and of these cases I have already spoken. In others we may perceive no internal derangement, nor any appearances to indicate a sudden death. In them it must be presumed that the stimulus has been so powerful in the first instance, as to bring on a fatal state of collapse, by which the powers of vitality are speedily exhausted; and instances have been by no means rare, in which persons have fallen dead instantaneously upon swallowing a large quantity of spirits.

Sometimes these fatal events take place in the presence of witnesses. An individual can hardly be supposed to drink an immoderate quantity of strong liquor, without some one being aware of the fact, and some account of the action being obtained. In whatever way also the person may die, who commits so imprudent a fault, whether apoplectic, or comatose, without the ordinary marks of apoplexy; or suddenly, without inducing any intermediate train of symptoms, we shall find great light thrown upon the case by the presence of the liquor in the stomach and intestines. For the most part, we shall discover that death, under such circumstances,

has occurred when the persons were alone, and out of the reach of any assistance, which if administered might have saved them from destruction. They fall asleep in dangerous situations, or in the cold; and when we are called upon to give our opinion, the appearances in the body, whether positive or negative, the history of the case, and the presence of the fluid, will sufficiently guard us against erroneous conclusions.

I know not if I can any where so conveniently allude to a subject that certainly belongs to Medico-legal enquiry, though one more of curiosity and even wonder than practical utility. It can no longer be doubted, that persons have retired to their chambers in the usual manner, and in place of the individual, a few cinders, and perhaps part of his bones have been found. There are several instances of this nature on record *. The event is but of rare occurrence; and I am not aware that on any occasion either the interference of others, or any unusual contingency of events, has been supposed to occasion it. Nor, as far as I have been able to ascertain, has it ever been *seen* in what way the phenomena were produced, or in what manner the process of combustion proceeded. One case, and that I believe the only one of the kind, has been recorded in a foreign journal; where the person survived for a short time, and gave an

* Among other sources of easy access, the Philosophical Transactions, Annual Register, and other periodicals for 1775; and Gentleman's Magazine for 1736, may be consulted.

account of the manner in which he was *struck* with the fire. In this instance, other people arrived in time to see him in the state of combustion, and to extinguish the flame; but his death supervened through gangrene consequent to the event. In almost every recorded instance, however, the agency of Alcohol seems to have been concerned, for nearly all the victims appear to have been great drinkers, and in some cases to have taken an extraordinary quantity of spirits shortly previous to the fatal catastrophe.

Various ideas as to the mode in which this effect has been produced, have emanated from those who have reported instances of it; but I fear we know little of the real fact. The agency of the electric fluid has been supposed; and also actual contact with fire, while the animal substance was highly impregnated with Alcohol. Of these two opinions, the former will probably prove the right one; but as it is little better than conjecture, I decline entering into the subject. If such an occurrence should come in our way, it is of some importance to be aware that it has happened before*.

* Those who desire a key to the amount of our information on this mysterious subject, down to 1814, may consult the *Dictionnaire des Sciences Medicales*, article *Combustions Humaines Spontanées*. Two cases have since occurred in France. One was reported in a provincial journal, and is alluded to in the Literary Gazette of January 29, 1820. The other, which seems to have taken place about the same time, is given in the Lond. Med. and Phys. Journal for April, 1821.

SECTION II.

DEATH BY PERSONAL AGENCY, OR *HOMICIDE.*

THE subjects discussed in the preceding section have prepared us to enter on those questions that relate to criminal attempts on human life.

Homicide literally signifies the killing of a MAN, generically speaking; and such is its signification in law. It implies deeds, to which very different degrees of culpability are attachable; while in the establishment of that which is really incurred, our careful investigation and consequent testimony may be of the last importance. Murder, the highest degree of criminal outrage, implies a malicious disposition—an *intent* to take away life; nor does it follow that the party offending is not guilty of murder, because the person killed by him did not happen to be the individual against whom the design was conceived. This species of murder is syled *felonious homicide.* Again, there is a degree of homicide, called *culpable*, where a person kills another without such intention; as when he acts in a dangerous manner, or places the sufferer in circumstancs of danger, in consequence of which he loses his life. Such for instance would be the consequence of firing a loaded gun at a person with intent to miss

him, and thereby causing his death; mixing certain articles in food with a jocular design, and, through ignorance, either putting in a deadly poison, or an overdose of some drug, that in smaller quantity might do no harm. *Manslaughter* is a peculiar term for slaying a person without any design of an unwarrantable nature, or where death is occasioned by little more than a mere accident. The degrees of punishment vary in these cases; and in *justifiable homicide*, where a person kills another in defence of his own life, as when attacked by robbers, no penalty is incurred. The circumstances that warrant a verdict according to either of the foregoing specifications, do not fall particularly within the province of the medical practitioner; but other important questions may arise, which it is his particular study to solve.

He may be asked—are there no *diseases* that occasion death, and leave appearances similar to those found in the body on the present occasion? Could the person have inflicted this injury on himself? Has not a fatal result taken place in this instance from a cause that in another person would have been of little or no consequence? Was every thing done for the recovery of the deceased? Or—might he not have recovered, had proper treatment been pursued? And in certain cases, as hanging and drowning, it has been matter of enquiry, whether the person was killed in the manner alleged, or first deprived of life, and then placed in that

situation, in order to baffle suspicion? All the preceding questions, and others of equal importance, have been repeatedly put to professional witnesses.

I shall divide this section according to the means by which criminal attempts are *usually* made on human life; and these appear to be separable into three chapters:—Poisoning; Suffocation; and Mechanical Injury, or Wounds and Bruises.

CHAPTER I.

Of Poisoning.

Poisoning is understood to have been cultivated as a science, and even practised as an art, though in this country it has never gained the footing, on which it seems to have been established in others. Our present business, however, does not regard the mysteriousness, and intricacy of poisoning, of which there are so many stories in the annals of history. In Great Britain, we shall generally have to do with cases, in which the administration of deleterious substances is *suspected;* and for the most part, I presume it will be matter of no great difficulty to surmise what particular article has been employed.

Poisons are either administered by design on the

part of others, or are consciously swallowed by wretched individuals, in order to take away their own lives. They are also very often taken by mistake for other substances; and are not unfrequently furnished through the ignorance or inattention of those whose business it is to dispense drugs and medicinal preparations. On the part of the medical practitioner, it is necessary to be acquainted with those substances of a poisonous nature which we are exposed to meet with in the ordinary economy of life, whether for medical use; for application in the arts; in the composition of utensils; on account of their beauty, as certain shrubs and plants that adorn our gardens; or as individual objects belonging to different kingdoms of nature, that may imprudently be mistaken for articles of food, or be applied in other ways to the living system, in consequence of their resemblance to substances useful or innocent.

Poisons may be defined substances, which being ingested into the living animal system, in small quantities, produce deleterious effects, and if given to a certain extent, occasion death.

There is scarcely a noxious substance, however, which may not, perhaps, by habit be rendered harmless in particular instances. We have strange exemplifications of this on record; as in the story of the old man at Constantinople, who had been in the habit for thirty years of swallowing enormous

quantities of oxymurias hydrargyri * ; those people who bring themselves not only to bear, but even to *require* immense supplies of opium ; and we have a more familiar exemplification in the universal use of tobacco—from the minute particle applied to the nose, to the solid mass that is masticated in the mouth, and even swallowed into the stomach. On the other hand, by idiosyncrasy, in certain individuals, things, that in every body else cause one uniform effect, will in them produce the opposite, or some other singular action ; while articles that the rest of mankind consider innocent and agreeable, are to some perhaps of the most disgusting or dangerous nature. I have heard of a person who was always purged if he took opium, and I know another who suffers the most excruciating torments if he partakes of any thing into the composition of which an egg has entered. But these anomalies are not to be taken into account ; and the definition of poisons just offered is applicable to those substances that are considered poisonous, according to the general effects they are known to produce.

But although the definition ought in this sense to be applicable to all poisons, they differ among themselves very widely as to their effects, each individual of the numerous tribe possessing some distinctive peculiarity ; although the difference may be of such

* Pouqueville. Voyage de Morée. His dose came to be a drachm daily ; and it appears he dissolved it in water before he took it !

trifling importance, as neither to require, nor indeed to admit of consideration in the practical treatment of the subject. There are very wide shades of distinction, however, between many poisons, in their mode of acting on the organized system, although they all tend to the same fatal result.

This fact has rendered it equally necessary to institute some division or arrangement of poisonous substances, in treating of them as such, as when studying them in their other relationships to material objects; and various methods of classification have been adopted. Without pretending even to *enumerate* these, it may be sufficient to observe that the two principal methods which have prevailed are—that which is founded on the basis of natural history, or the kingdoms of nature whence the poisons are derived, as animal, vegetable, or mineral; and that which classes them according to their action on the living animal system, as Corrosive, Astringent, Narcotic, &c. These two are certainly the most perspicuous and convenient.

For the purpose of Medico-legal discussion, the classification according to natural history is perhaps to be preferred; for it is not so much with the symptoms and derangements caused by poisons, that our business lies, as with the mode of detecting their presence, or at least of ascertaining the fact of their having been administered; for which purpose, though symptoms may be useful, they are no more than auxiliaries.

By the application of chemical agency, almost all *mineral* poisons, (by far the most numerous, and upon the whole the most destructive) may be detected with a singular degree of certainty; but we cannot place the same reliance upon this method when we have to do with animal or vegetable matter. For the sake therefore of a long and uninterrupted application of processes allied to each other, and depending upon similar principles, I shall adopt the arrangement of Natural History, as the *basis* of classification.

But, as the effects produced by many of these substances on the system will be of very great use in forming an opinion as to the fact of poison having been administered, or even of the individual article that has been employed, reference must be had to the other classification—that which considers poisons according to their action on the living system, and which has been adopted by the celebrated Professor Orfila, after Foderé, with some variation in the mere order of arrangement. It has also been assumed by several other writers on poisons; and by this eminent authority, of whose labours it is my duty and intention to avail myself, poisons are treated of in the following order.

Corrosive, or Escharotic.
Astringent.
Acrid.
Narcotic or Stupifying.

Narcotico-Acrid,
and
Septic or Putrifying *.

Of some of these classes there are examples to be found in every kingdom of nature; though the same means of detection will not apply to each individual of the same class. We cannot, for instance, expect to produce Spanish flies from the human intestines, though metallic mercury ought to be obtained, if corrosive sublimate has been administered. Both of these poisons, however, belong to the Corrosive class.

It may therefore be expedient, before proceeding to discuss the subject of poisons in detail, to explain what is meant by the terms of this classification, or in other words, to advert generally to the action of poisons on the living animal system.

Escharotic or corrosive poisons comprehend those substances which destroy the texture, or consume the parts to which they are applied. They are, when fatally employed, for the most part ingested into the stomach, though many of them, (as the mineral acids,) will also corrode the surface of the body. This effect, however, can only be contemplated as an accident, for were a person to be

* Foderé, to whom the merit of this classification is due, arranges them as follows: Septic — Narcotic — Narcotico-Acrid—Acrid—Corrosive—Astringent. The change introduced by Orfila is certainly an improvement.

even killed by the external application of one of these substances, we could hardly consider it as an occurrence of poisoning, according to the known history of such events.

The general symptoms that ensue when a person has taken corrosive poison, are violent pain and sense of heat in the stomach and intestines, accompanied with constriction of the mouth and fauces—frequent vomitings, often of blood, followed by bloody diarrhæa, and occasionally attended with hiccup and tenesmus. The pulse is quick, small and hard, becoming at length imperceptible. The body becomes very cold, and suffused with cold moisture—though these symptoms vary; there being sometimes intense heat, accompanied with inextinguishable thirst. Some poisons of this class produce priapism. There is generally great anxiety and oppression at the præcordia, and fœtor of the breath. In the mean time gangrene is rapidly advancing within, although the production of this state of the parts is not required to bring on the fatal result. The countenance becomes altered and convulsed; while the internal senses remain unimpaired.

The rapidity with which this course of symptoms may run, will depend upon the quantity of the poison swallowed. If it be small, the death may be comparatively slow, and induced indirectly through the medium of inflammation in the primæ viæ running to gangrene. But where this is not the case, and the patient dies of the more direct conse-

quence of the poison, death for the most part is not sudden; the patient commonly enduring the torments for several hours.

On examining the bodies of those who have died in this manner, the following appearances have generally presented themselves. Externally they have been found livid, with more or less of a distorted appearance about the countenance. On laying them open from the fauces downwards, the specific and immediate effect of these poisons can generally be traced. The parts over which they have passed will be found more or less excoriated, if the texture be not destroyed. In the stomach and neighbouring intestines there are generally traces of the most violent inflammation, indicated by destruction of the villous coat, and even extending to gangrenous spots and eschars—nay, frequently to absolute perforations. In various parts of the intestinal canal, constrictions also are found.

Separation of the coats of the intestines likewise takes place; and this circumstance has been considered conclusive. But cases are on record, in which detachment of the villous coat of the stomach and intestines has taken place, without the slightest ground to suspect the administration of poison*.

* A very remarkable case of this kind, with respect to the stomach, is recorded in the Edinburgh Medical Essays. And there is an account of one where the villous coat of the urinary bladder separated without any known cause, in the history of the Royal Acad. of Sciences at Paris for 1714.

It will likewise be proper to keep in mind the statements given by Dr. Yelloly respecting the appearances found in the stomachs of several criminals soon after they had undergone the sentence of the law*. From these statements it is established that a very high degree of vascularity may be found where poison is out of the question.

It is often the case, where a small quantity only of corrosive poison has been swallowed, or where the greater part has been rejected by vomiting, that we may find no distinct traces of it until we come to the larger intestines.

There are certain other appearances occasionally found in the bodies of those poisoned by articles of the corrosive kind, of which it will be more advantageous to speak when treating of them individually.

Among the poisons belonging to this class which are best known, and come most frequently in our way, are the Mineral Acids, and the Oxalic; the Oxymuriate of Mercury; Salts of Copper, Arsenic, Baryta, with other Saline compounds—of the most important of which I shall speak explicitly.

The term *Astringent poison* is applicable to those substances that chiefly produce constriction in the alimentary canal. Given, however, in sufficient quantity, they also excite inflammation, but they do not directly destroy the organization in the manner of the former class.

* Medico-Chirurgical Transactions, Vol. IV.

Lead and its preparations comprehend nearly the whole of this class of poisons; and as more detailed observations on Astringent poisons in this place would be anticipating the sequel, I shall reserve all remarks on their symptoms and effects, until I come to their individual consideration.

The *Acrid* or *rubefacient poisons* are those which produce inflammation when applied to the intestinal canal; while many of them cause the same effect, followed by suppuration on the surface of the body. If taken internally in sufficient quantity, they produce the same effects as the Corrosive. With a very few exceptions, this class is furnished from the vegetable kingdom; and among the individuals may be mentioned the Helleborus Niger, Veratrum Album, the Euphorbia, Aconitum Napellus, &c. — Colocynth, Gamboge, and perhaps all the drastic purgatives, when given to an improper extent.

Narcotic poisons are those that affect the system with torpor; denoted by sleep, or more properly speaking, by stupor. This is a characteristic of all these poisons, though some of them vary in their effects; as along with the stupor and drowsiness, in various degrees of intensity, we occasionally find convulsions, delirium, paralysis, and even apoplexy. They do not seem to act upon the structure of the parts to which they are applied. We have here to include Opium, the Laurel, Henbane, &c. &c.

The next class of poisons according to this arrangement, is styled the *Narcotico-Acrid* *, and must be understood to embrace such articles as produce the united effects of the two former. From the illustrations of them, as given by Orfila, and from the notorious effects that arise from their administration, it would appear that some of the poisons belonging to this class produce one set of symptoms, while others occasion symptoms somewhat different; or that the effects of these poisons are not always the same.

Orfila enumerates the following symptoms as induced by the Narcotico-Acrid poisons—agitation; pain; acute cries; *sometimes* stupor; insensibility; convulsive movements of the muscles of the face, jaws and extremities—the head frequently reflected on the back; vertigoes; falling down; extreme stiffness of the limbs; redness of the eyes, dilatation of the pupils—sight and hearing impaired; contraction of the Thoracic muscles; foaming at the mouth; lividity of the tongue and gums; nausea, vomiting, and frequent stools; with great variety in the state of the pulse. Death supervenes at last—

* The title of this class is objected to by Orfila himself, among other reasons, because the narcotic or sedative effects only follow the previous excitement. Belloc surmises that where acrid poisons have been swallowed, narcotics may have been taken to relieve pain; and thus a sort of combination of the symptoms of both classes may be produced. See a case quoted under the head of *Arsenic*.

less speedily when the poison has been introduced into the stomach, than when it has been thrown directly into the circulatory system *.

Many of the symptoms produced by these poisons are common to them with diseases, and we cannot on this account be too particular in making dissections, in order to be very certain of the actual introduction of the poison; or on the other hand, of its absence; for although some act on the structure of the organs to which they are applied, there are others which do not; and therefore the presence or absence of the poisonous substance itself must be carefully ascertained.

This class comprehends some of the most deadly poisons known to exist—the Upas tree of Java, the Ticinas of America—the deadly Nightshade of our own gardens—the Foxglove, so common about our hedges, and the well-known Hemlock; of these and others I shall speak more particularly in the proper place.

The last division of poisonous substances, which I have to notice in this way, is the *Septic*. "Those," says Orfila, "which produce a general debility, dis-"solution of the humours, Syncopes—and which "do not in general alter the intellectual faculties †." This is not a clear account of the matter, for the Narcotic poisons induce debility, and one striking

* Orfila. General System of Toxicology, Vol. II. page 359 of the translation. I quote from the second edition.

† Toxicology, Vol. II. page 371.

characteristic of the Corrosive poisons is the unimpaired state of the intellectual faculties. As these articles all belong to the animal and gaseous kingdoms, their application to the living system can scarcely ever be considered as a criminal affair—accident, or imprudence alone being the probable cause of exposure to their influence. They are of less importance therefore to the medical evidence than to the practitioner; as we shall seldom expect to find such cases buried in much mystery, a history of the event being generally obtained with great readiness.

These observations will not be without their use; but before proceeding to the consideration of individual poisons, there are some further remarks of a general nature that require to be introduced.

In the investigations which it may become our duty to perform, we may have to do either with the living or the dead body. The law contemplates the crime in the same light, whether the evil intent has been carried into execution or not. In those cases to which we may be called during the life of the person who has taken poison, the primary object of the practitioner must of course be to save life, and remove suffering; and though in both of these indications he may be successful, it will not be the less necessary to institute a judicial inquiry into the facts connected with the case. It may still be of the utmost importance to know what particular poison has been administered, and it is incumbent

on the practitioner to be careful, in his endeavours to save his patient, not to destroy the means of verifying or disproving the imputation of guilt.

One rule to be invariably observed when we are called to a case of poisoning, is to ascertain, if possible, what the individual last swallowed, to get possession of the utensil in which it has been contained, and of the remains, if there be any. If the person has vomited, it is of equal importance to secure the rejected contents of the stomach.

If we are called while the sufferer is yet alive, we must also observe the symptoms; and a corroborative proof as to the particular deleterious article administered, is to be obtained from the successful application of an established antidote. Having obtained a portion of the substance in which the poison was mingled, or of the matter vomited, we may submit a part to the tests that can be most readily obtained, and the result will assist us in forming an immediate opinion as to what course should be pursued for the recovery of the patient; though for satisfying the enquiries of justice, it is necessary that the mass of these substances should be reserved for experiment at leisure, and with the means of accuracy. It has been suggested as important, and in several authors recommended not to omit the administration of part of the suspected substance to an animal. I should say nothing on the cruelty of such a measure, were it conclusive; but some substances that have a fatal effect on the

human system, do not act thus upon lower animals; besides which, loss of time, that cannot be afforded, may be thereby incurred; and after all, the utmost result is the mere verification of our suspicion, that the article in question is poisonous; while we shall yet have to seek by other means for the knowledge of what particular poison has been administered.

In every case of suspected poisoning, where the history is unsatisfactory, it will be of considerable importance to enquire into the patient's habits of life, peculiarities of constitution, and liability to complaints, as well as the nature of these—whether he is known to have been formerly affected in a similar manner; whether particular articles of food, generally considered wholesome, used to disagree with him; of what his last meal consisted; and whether any mistake, or deleterious interference could have occurred in the culinary department.

These injunctions are palpably necessary where the person is yet alive, and the great object is recovery; but they should be attended to in many cases, even where death has taken place. The only object we have then in view is the detection of the poison; and being masters of time, and having it in our power to carry investigation much farther, and pursue it more deliberately than during life, we must be careful to throw no obstacles in the way of a full elucidation of the question, by hurry or impropriety in our mode of proceeding.

We are to seek the cause of death, by negative

as well as positive proofs. By the former I mean the absence of all signs of injury or derangement, whether from violence or disease, that might be urged as the cause of death; and by the latter, the presence of the fatal substance, and the known or presumed effects of such substance on the system.

In searching *post mortem* for the presence and traces of poisonous ingesta in the internal parts of the body, the following rule of procedure will be applicable in all cases. The whole canal for alimentary functions should be examined, from that part of it which is appropriated to deglutition, to the ejecting extremity; laying open the fauces and œsophagus, and examining the large intestines as well as the small.

We are not to be deterred from this examination, merely because there may have been an inconvenient lapse of time between the death of the individual and the period of investigation. It was formerly believed that after a few days, any researches in the body would be useless, and even dangerous. With regard to the danger, it may be observed, that much is placed to this account that belongs merely to disgust; and as to our being baffled in the search, if it be rightly conducted, the detection of *mineral* poisons at least, cannot be affected by the approach of putrefaction.

We are now ready to enter on the discussion of individual poisons; in the examination of which,

our duty will be more explicitly detailed, under various circumstances that may affect its proper discharge. To enumerate all the articles of a poisonous nature with which we are acquainted, would be unnecessary; and indeed to elucidate all their peculiarities would be impossible. I must confine myself to the most notorious, and most important, leaving the reader from what shall be said concerning these, to draw his inferences respecting others that must be passed over; and referring him to other sources of information.

§ 1. *Of Mineral Poisons.*

From this kingdom of nature is produced a great proportion of those substances which are now to occupy our attention. For the most part the poisonous articles of this description are of easy access, require little or no preparation previous to administering them; and many of them resemble substances that are either innocent or sanative, though of the most destructive nature, even when taken in minute quantity.

Let it be understood that I allude to poisoning by the introduction of the deleterious article into the stomach. Of poisoned glysters, and other mysterious methods upon record, there is no need to treat, at least until such events become known among us.

Minerals are subdivided into Metals, Acids, Alkalies, Earths, and combinations among these termed

Saline; and we have poisons in abundance belonging to each.

I shall discuss individual mineral poisons in this order; but at the same time shall observe that of Professor Orfila as to *generic* arrangement; considering them in respect to their effects, as Corrosive, Astringent, Acrid, &c.

To begin with the metals, the first I shall notice is

Arsenic.

This is one of the imperfect, or ignoble metals, and in its metallic state is not of much importance. As we seldom have to do with it in this form, little requires to be said; though it is of great consequence to be able to recognise it, for reasons that will presently appear.

Metallic Arsenic is of a bluish-grey colour, and when recently found or fractured, has a considerable degree of lustre, which it loses by exposure to the air; its structure is striated, and it is extremely brittle. It is of no use in the arts, and I am not aware that any one was ever poisoned by it; although some assert, that when given to animals it has produced deleterious effects.

Arsenic is extremely susceptible of oxidation, and it is in this state that we are accustomed to meet with it. It forms a black oxide by mere exposure to the air, and by the aid of the furnace it is converted into a white one; a process which is carried

on upon an extensive scale, and which furnishes that substance so abundant in commerce, commonly called *Arsenic*, but known in chemistry by the terms *White Oxide of Arsenic* and *Arsenious Acid.*

Arsenious Acid exists in the form of white masses, opaque on their exterior surface, but transparent and vitrified within. It is generally kept in powder, and then resembles in appearance refined sugar reduced to that state, for which it has repeatedly been fatally mistaken, and with which it has been often mingled for criminal purposes. It is soluble in about 80 parts of cold water, and about 15 at the boiling point, yielding a solution free from colour and smell, but intensely acrid to the taste, possessing in common with other acids the property of turning vegetable blues red.

This substance, if administered internally, in very small quantity, quickly extinguishes life; and the following are the symptoms that commonly succeed its introduction into the system. An austere taste in the mouth and fauces, accompanied with fetor of the breath, and frequently with ptialism; constriction of the pharynx and œsophagus; the teeth being set on edge; hiccup and nausea, accompanied with vomiting, for the most part of a brown coloured substance, and not unfrequently of blood. With these are joined great anxiety, heat about the præcordia, and syncope; inflammation of the mouth, fauces, and œsophagus; painful irritability of the stomach, rendering it unable to retain

the blandest liquid. The alvine discharge is of a black colour, and intolerably fœtid. The state of the pulse is not always the same. In general it is frequent, small, and irregular, though sometimes slow and unequal. The heart palpitates; unquenchable thirst comes on; and the body becomes pungently hot, though sometimes an icy coldness takes place. In the mean time the urine becomes scanty, red, and even bloody; an alteration takes place in the countenance; a livid circle forms round the eyes; the whole body swells, is affected with itching, and becomes covered with livid spots, or what appears to be a miliary eruption. These formidable symptoms are aggravated by great loss of strength, and of feeling, particularly in the extremities; while delirium and convulsions, often accompanied by an intolerable priapism, falling off of the hair, and detachment of the epidermis, are followed up by death. In many instances of poisoning by Arsenic, we may find but a few of the foregoing symptoms, and perhaps we can scarcely expect to encounter them all in any particular case; but they have all been observed to be consequent to the administration of this deadly preparation. The number and violence of the symptoms must of course depend, among other causes, upon the quantity of the poison swallowed, the nature and amount of remedies administered, and the peculiarity of the person's constitution.

On opening the bodies of those who have died in this manner, inflammation is generally discovered,

in the course of the mouth, fauces, œsophagus, stomach, and intestines, in which there may be gangrenous spots, sloughs, or, in the last, even perforations. The villous coat of the stomach is found as it were in a state of solution, being reduced to a substance resembling paste in consistence, of a reddish brown colour.

From experiments made by Mr. Brodie on the deleterious effects of the Arsenious Acid, when introduced into the stomachs of living animals, it has been concluded that the inflammation of this organ is in general slight; becoming more intense in proportion to the delay that takes place between the ingestion of the poison and the supervention of death; and that when the inflammation does take place in this viscus, it appears to be confined, for the most part, to the mucous membrane, which is found of a vermilion colour, and softened into the pulp described; being easily scraped from the muscular coat, which preserves its proper texture. Sallin, on the contrary, considers it as a peculiarity of Arsenic distinctive from Corrosive Sublimate, that it inflames *all* the coats of the stomach, and perforates them, which the sublimate does not*; but it will appear that, occasionally, both have this effect. Mr. Brodie remarks, that ulceration and sloughing in the stomach takes place in those in-

* Recueil periodique de la Societé de Medicine de Paris, tom. VII.

stances only where the animal does not die for some time *.

Mr. Brodie further states that in whatever way this poison be administered, whether externally or internally, it begins its course by entering the circulation; that it exerts its action on the nervous system, the organs of circulation, and the alimentary canal; that death is the immediate result of the suspension of the functions of the heart and brain, and that in the majority of cases of poisoning by Arsenic, the inflammation of the stomach and intestines ought not to be considered as the cause of death, though capable of destroying life, where it has time to develope itself. Nor did he ever see any appearance of inflammation in the pharynx and œsophagus of those who died from Arsenic, it being confined in all cases to the stomach and intestines †. The appearance of inflammation in these parts, however, is distinctly asserted by other authorities; and we must conclude that the phenomena produced by Arsenic, when acting on the organic system, are not always the same. Foderé and others corroborate the statement of Mr. Brodie as to the inflam-

* See reference to Dr. Yelloly's paper on vascularity in the stomach after violent death, quoted when speaking of the separation of the villous coat of the intestines, as an effect of corrosive poisons. The reader may also compare what has already been said on this subject with the remarks on discolorations, under the article *Opium*.

† Philos. Transactions for 1812.

mation in the stomach and intestines not being indispensible to cause death, where Arsenic is administered.

Arsenious Acid, *externally* applied, has produced deleterious and even fatal effects. It has been used in Surgery as an application to ulcerated parts, and is known to have an escharotic effect on the sound surface. On account of this property it is boldly employed in Veterinary Surgery ; but so many accounts of its pernicious and even deadly action on the human system are on record, that too much caution cannot be inculcated. Where it does exert a poisonous influence, through external application, the symptoms and the morbid appearances produced, do not differ in character from those already detailed.

Arsenious Acid can scarcely ever be taken or administered, but through design, or from mere ignorance. It does not enter into the composition of our ordinary utensils, nor am I aware that it is used for the adulteration of any article of food. It is kept however in the shops of the druggists in the form of powder ; and though great caution is professed in its disposal, it is perfectly superfluous to enumerate the many ways and pretences by which a quantity sufficient for the execution of the most deadly purpose may easily be obtained. Given to an extremely small amount, it will produce a fatal effect ; and any person of reputable appear-

ance may obtain a much larger quantity under the pretext of destroying vermin.

The history of poisoning by this article will teach us that it has been administered by others either in food or in medicines, and, when taken for the purpose of suicide, that little or no preparation has been employed.

As the vehicles in which it may be conveyed into the system are almost as numerous as those articles we are in the daily habit of consuming, it is requisite that some of the most effectual tests should here be enumerated, and a short account presented of the appearances produced by these, when applied to substances containing Arsenious Acid.

The sensible properties of Arsenious Acid in the solid, and pulverised form, have been already described. If a portion of this white powder be laid on burning coals, or red-hot iron, it readily volatilizes, and sends forth a dense white smoke, diffusing a strong smell, resembling the well known odour of garlic. If a clean bright plate of copper be exposed to this smoke, it will be coloured white, by the volatilized acid settling upon it. A little attention to the difference in appearance will prevent us from confounding this with the silvery discoloration produced by mercurial vapours; and although it has been objected, with regard to the garlic-smell, that it is yielded by other substances, and is therefore fallacious as a test; probably we are warranted

in ascribing the fallaciousness to inaccuracy on the part of observers, rather than real resemblance in other substances. Dr. Paris has ascertained that the alliaceous smell is confined to Metallic Arsenic in a state of vapour and will not be produced unless the Arsenious Acid be deprived of its oxygen by the presence of some other body, which may have a greater affinity for this principle. Such being the case with ignited charcoal, and certain other substances, these readily separate the oxygen, and leave the Arsenic to yield this characteristic odour*. It has been observed, however, that this smell is always connected with the dense white smoke; and that though several other substances yield either the one or the other, Arsenic alone produces both †.

If, to a simple aqueous solution of Arsenious Acid, lime water be added, Arsenite of Lime is precipitated of a beautiful *white* colour. A small quantity of Nitrate of Silver in solution will produce a precipitate of a *yellow* colour, growing black on exposure to light. It consists of Arsenious Acid, and Oxide of Silver. This is considered a very delicate test, a single drop of the solution of the Nitrate being sufficient to produce the characteristic appearance, and taking effect in a highly diluted Arsenious solution. The same effect is produced by placing a piece of Lunar Caustic in the liquor for a few

* Pharmacologia. Arsenici Oxydum.

† See the valuable notes to the French translation of Metzger's Principles of Legal Medicine, by Ballard.

seconds *. A *flaky-green* precipitate is produced by a solution of Sulphate of Copper, a portion of Sub Carb. of Potass being first poured in.

But of all the tests for the detection of Arsenious Acid in this manner, the Sulphate of Ammoniacal Copper is declared to be the nicest. It produces a *green* precipitate; and, according to Orfila, it will detect Arsenious Acid in a solution of which it forms but the $\frac{1}{110.000}$ part of the weight. The test, however, must not be too highly concentrated. Mr. Brande gives sulphuretted Hydrogen as the most conclusive test, the addition of which produces a *yellow* precipitate.

Even should these tests produce their respective precipitates strictly answering to the foregoing description, they are but a preliminary step in the detection of the presence of Arsenic. Many circumstances may occur, however, to frustrate our expectations as to the colour and copiousness of the precipitates. The water in which the Arsenious Acid has been dissolved may contain substances capable of affecting the experiment in these respects; and appearances similar to those we wish to obtain, are sometimes produced from other combinations. Dr. Paris gives some remarks on other solutions from which the Nitrate of Silver will separate a yellow precipitate †.

* The practitioner will do well to consult and bear in mind the statements of Dr. Paris on the detection of Arsenic. It is impossible to do full justice to so important a subject, among the many topics that call for attention in this limited work.

† Pharmacologia, ut supra.

Orfila states that he separately evaporated mixtures of Arsenious Acid with tea, coffee, wine, albumen, gelatine, broth, and milk; from all of which he obtained productions that, when boiled in distilled water, furnished a fluid in which the presence of Arsenious Acid might be detected by one or other of the following tests—Sulphate of Ammoniacal Copper, Sulphuretted Hydrogen, Nitrate of Silver and Lime-water; but the colours of these did not follow the rules laid down with respect to the solution of Arsenious Acid.

From all of them, however, when evaporated to dryness, and calcined with potass and charcoal, Metallic Arsenic was obtained; and it is to procure *this* that our labours must be directed. These precipitates are therefore to be dried; which may be done by evaporation, or on a filter, and submitted to the action of heat, in the way prescribed. If Arsenic be present, it will then be detected by the alliaceous smell, and dense white smoke; or a portion of the dried precipitates being mixed with potass and charcoal in a glass tube, and exposed to the strong heat of a lamp, *Metallic* Arsenic will be obtained, adhering to the sides of the tube. This may then be subjected to ignition; and the proof will thus be (in a manner) two-fold.

A few words are necessary with respect to the more common vehicles in which Arsenic may be presumed to be administered. If the acid, even in large proportion, be dissolved in tea, no disturbance or change of colour will be perceptible; but it will

be detected by the addition of Sulphuretted Hydrogen. In like manner coffee remains undisturbed; but the presence of the acid will be manifested by the tests already mentioned. According to Orfila, however, the precipitate produced by lime-water is in this instance *yellow*, though in the aqueous solution it is *white*. Wine does not betray the admixture of Arsenious Acid, until a test be applied; and according to the same author, the best in this case is Sulphuretted Hydrogen.

Albumen, gelatine, broth, and milk, are not disturbed by the presence of Arsenious Acid; and the tests will in general produce nearly the same appearances as those belonging to the aqueous solution *.

* Since the standard work of Professor Orfila was given to the world, we have been favoured with a memoir by the same author "*on a new process, whereby most of the mineral poisons, in their admixture with coloured liquids, may be detected,*" in the Nouveau Journal de Medicine. The agent in removing the difficulties caused by the colouring matter of various substances, as wine, coffee, &c. is the oxy-muriatic acid, or chlorine, dissolved in water. It does not destroy, but changes the colour to a shade that causes no impediment; and at the same time decomposes but few of the mineral poisons. Thus, if *White Oxide of Arsenic*, (the substance under consideration,) be dissolved in red wine, chlorine should be added in quantity sufficient to communicate a yellow colour. A *reddish yellow* precipitate will form, which when filtered will yield a *white* precipitate with lime-water, &c.; the precipitates, after the saturation by chlorine, obtained from coloured vehicles, yielding in water the same colours, with the usual tests, as in original aqueous solutions.

I now proceed to the strict application of these observations to the purpose in view. I pass over the consideration of the remedies, or antidotes in this, as I shall do in other instances, because they belong to the practice of physic, or the application of medical science to the curative art, on the professional reader's previous knowledge of which I must necessarily reckon.

Supposing, then, that Arsenic has been swallowed, and that our attention is chiefly, if not exclusively to be directed to the alimentary canal, there are three circumstances taken notice of by Orfila, that greatly facilitate the detection of this poison. 1st. The impossibility of effecting its decomposition by alimentary substances, whether animal or vegetable, at the ordinary temperature ;—2d. the multiplicity of means furnished by chemistry for its detection ;—and 3d. the facility with which Metallic Arsenic can be obtained.

What then is the duty of a medical practitioner when called upon to verify the suspicion that Arsenic has been swallowed ? By being a little minute on this occasion, repetition will be avoided hereafter ; and the directions now to be given with regard to Arsenic will serve as matter of reference in treating of other mineral poisons.

In the first place, let it be supposed that the person who has taken the poison is alive. In this case the verification of the suspicion as to the fact of his being poisoned is of no *immediate* import-

ance, further than as it may lead to the proper means for recovery; that being the primary object for which the practitioner is called in. But, even in this state of affairs, we must provide for the satisfaction of judiciary investigation; for such will be instituted, if an attempt to poison be laid to the charge of any one, even though the attempt should not succeed. Due attention to this point is, happily, so far from being incompatible with the discharge of our other duties, that what forwards the one view of the matter assists the other. At the same time a *partial* investigation may lead us to the proper means of cure, which in the present state of knowledge would not be deemed sufficient to convict a person of the crime of poisoning.

In attending to the symptoms under which we may find the patient labouring, (the peculiarities of which, as excited by particular poisons, it is our duty to bear in mind,) and in obtaining with all possible readiness such a history of the case as we may be able to collect, the great probability is that our surmises will not be very erroneous as to the sort of poison that has been taken. We must instantly endeavour to procure the remainder of the deleterious article, if any. Should it be a solution, a little of it is to be diluted (if possible with distilled water) and tried with such of the tests already mentioned, as we may have access to. Although our conclusions will necessarily depend upon chemical operations, it is not to be supposed that we are to go

to a case of this nature furnished with a proper laboratory; as furnaces, crucibles, retorts, &c. nor is this necessary. Some of the tests we may easily obtain, as Lime-water, or Lunar Caustic. We must take care, however, not to expend the whole of the substance by experiments on the spot, where time and circumstances may not admit of our making them with the attention and accuracy that leisure and proper means will afford afterwards. If the solid poison be discovered, a small portion may be thrown upon ignited coal, or red hot iron.

If the person has vomited, we ought to preserve the matter ejected from the stomach. Indeed, if all the poison has been swallowed, or, what will be the same to us, if we cannot obtain the remains of it, this will be the next best way for us to secure a knowledge of the truth. We shall often find portions of the poison unchanged. The fluid part of the substance rejected should be filtered, and the tests applied as to any other solution. The solid matter may be partly dissolved in distilled water, filtered and tried in the same manner; or dried and submitted to the test of heat; to which indeed the precipitates themselves obtained in the other steps of the experiment should ultimately be referred; for this is the only sure method; and when the metal is obtained from these substances, the evidence amounts to a degree of demonstration that nothing can impugn.

If we succeed in obtaining either the remains of

the supposed poison, or the rejected contents of the stomach, or both, we must take care to secure them from interference, until we have an opportunity of subjecting them to careful and deliberate examination. If possible they should be immediately deposited where no one but ourselves, or at least those in whom implicit confidence may be placed, can have access to them ; and no time should be unnecessarily suffered to elapse, before that examination be instituted, from the result of which we may safely give our opinion. In all instances it will be advisable to obtain the presence of professional men, in order that the accuracy of our procedure may be corroborated.

Symptoms, and the successful employment of acknowledged antidotes, will strengthen our persuasion as to the fact of the poison having been administered ; and where we can neither obtain the remainder of the poison, nor any substance rejected by the stomach, our opinion must be in a great measure formed from these. If the person recovers, at least from the immediate effects of the poison, the accused would have the benefit of any difficulty in our coming to a positive conclusion.

If the individual, however, be dead, we may expect to form a more accurate decision.

I need not animadvert upon the great fallacy that must have formerly been attached to conclusions drawn in such cases by medical men. It was the custom to consider certain external appearances in

dead bodies as proof of poison having been the cause of death, and *vice versa* *.

It was not always judged necessary to open the bodies of those said to have been destroyed in this manner. Or if this was done, unless the poisonous substance was detected unchanged, so that it might be known by its sensible qualities; or some destruction of parts, otherwise inexplicable, was discovered, the mystery of the case was but increased by the dissection.

Although we are not to overlook the external appearances of the body, and while it may be our duty to take particular notice of such as may seem to be unusual, the interior research is the grand consideration. This we cannot perform with too much care and scrupulosity. We should recollect that the life of a fellow citizen depends upon our proceedings, and that the reputation and fortune of several individuals may be also affected thereby.

I will not go so far as to say that nothing short of actually finding the metal, should be considered satisfactory evidence that the person has been poisoned by Arsenic; for it may happen that the whole quantity swallowed has been rejected; or the most accurate chemical investigation may not be able to detect a small portion of it secluded in some

* A notable instance of this occurred in the case of Ogilvie, who was tried and condemned for poisoning his brother (and other crimes) at Edinburgh, 1765.

part of the intestinal canal; but this I have no hesitation in declaring, that the evidence of the practitioner should be rejected as inconclusive, if he has not performed his search in such a manner as I am about to describe; and that in the majority of instances, where individuals have perished by Arsenic, such an examination will be satisfactory.

The trunk of the body is to be carefully laid open from the top of the thorax to the cavity of the pelvis, taking every precaution to wound no part of the alimentary canal. This being done, let the whole of the intestines be removed; which is to be accomplished by careful separation from their attachments; one ligature being securely placed on the upper part of the œsophagus, a second on the lower part of the intestinum rectum, and a third on the vessels that pass between the duodenum and the liver, whereby every possible precaution will be taken to guard the contents from escape. If we discover preternatural perforations in the stomach or elsewhere, ligatures (even if practicable) might be improper; we must endeavour to avoid the loss of substance through them, by attending to the position in which they are maintained during the process of dissection, and clean spunges may be applied, partly to prevent, as much as possible, the fluid from spilling, and also to absorb and preserve what portion of it does make its way through.

While this is going on, a large earthen vessel, of

a capacity sufficient to receive the viscera, should be prepared—perfectly clean and dry—to which the whole intestinal canal is to be transferred.

Other vessels of the same kind, though not necessarily of equal dimensions, are also to be got ready. The canal being laid open throughout its whole extent, the fluid contents are to be placed in one vessel, and the solid in another. The intestines are then to be washed in distilled water, and the product of this is also to be carefully set apart. These precautionary steps being taken, we proceed to search accurately for lesions of structure, and morbid appearances; and whatever may be discovered in this way should be correctly noted down. Eschars, gangrenous inflamed and perforated spots, Orfila recommends to be removed with a portion of the parts around them, and placed in alcohol.

The preliminary preparations for a chemical examination having been arranged, we now proceed to analyse the various substances obtained. In the first place we must search for solid particles of the arsenious acid, and if we find any, let them be tried in the various ways already described. If our search for them be unavailing, our attention must then be directed to the contents of the alimentary canal in general; and it will be a convenient rule to keep those of the stomach separate from the rest.

Our author directs that the solid part of the contents should be boiled in ten or twelve times its

weight of distilled water, for one hour, renewing the water as fast as it flies off in vapour. This liquor is to be cooled, and decanted from the residue before the tests be applied. But, as the degree of solubility of arsenious acid in water at the boiling point is stated by Orfila himself to be as one part to fifteen of water, I should think that the success of the experiment would be better insured, were the quantity of water greater than here recommended, even although the proportion of Arsenic contained in the mass to be boiled, should be very small.

The tests being applied, should they produce precipitates according to the description already given, these are to be dried, and proceeded with in the established manner of obtaining Metallic Arsenic.

If the liquor, however, should offer no indications of poison in this way, we are not to rest satisfied. Orfila then directs that the mass should be *exhausted* by water, treated with caustic potass, and nitric acid gradually added, until it assumes a clear yellow colour. The excess of acid being then saturated with potass, if there be any arsenious acid present, it will combine with the potass, forming an arsenite thereof. The most delicate tests * should now be

* These are understood to be lime-water, acetate of copper, and muriate of cobalt. If chlorine be employed to remove the effect of colouring matter, the first of these will give a *white* precipitate; the second a *blue*, varying in shade according to the quantity of chlorine employed—and the last a *rose-coloured* precipitate.

applied to the liquor; and if the precipitates give cause to suspect the presence of arsenious acid, let the hydro-sulphuret of ammonia and a few drops of nitric acid be applied. A yellow sulphuret of arsenic should thus be obtained, which being first dried on a filter, then mixed with equal parts of potass and charcoal, and exposed to heat in a glass tube, will coat the sides of the tube with metallic arsenic. By breaking the glass thus coated, (if the metal cannot be well taken off) and exposing the fragments to ignition, the characteristic vapour and odour of Arsenic will be developed.

Sulphurets and hydro-sulphurets, though censured by some authors, have been recommended, and are generally esteemed as antidotes, in cases of poisoning by Arsenic. Where these have been administered, the poison becomes transformed into a yellow sulphuret of Arsenic. Orfila recommends the following process to be observed in such a case. Let the fluid contents of the stomach deposit all the yellow matter insoluble in water. Let this be dried on a filter, and a portion of the residue placed on burning charcoal. A smell of sulphureous acid will arise. Let another portion of the (dried) residue, finely powdered, be washed with an equal bulk of the potass of commerce, be again dried, and exposed to heat in a glass tube. Metallic Arsenic will be speedily obtained by sublimation, and sulphate of potass will be formed at the bottom.

But we have not yet exhausted the whole of our

means of detection. The judgment of the practitioner, with regard to the success of the processes already detailed, will enable him to decide whether or not he should proceed to do what remains to be explained. It will be recollected that it was enjoined to preserve the portions cut from the intestines in Alcohol. If all our experiments on their contents fail, we are to take these portions themselves, and after drying them, combine them with potass and charcoal, and subject them to heat, with a view to obtain Metallic Arsenic by sublimation.

After this detail concerning the Arsenious Acid, or the White Oxide of Arsenic, which is intended as an example of what (*mutatis mutandis*) is to be done in other cases; and after stating that there can be no variation in the mode of proceeding in cases of poisoning by other preparations of Arsenic, but what the professional information of the practitioner will readily point out, nothing remains on the subject of Arsenic, but to enumerate the principal combinations of this metal, which have acted or may act as poisons.

I have already mentioned that Metallic Arsenic is extremely apt to combine with Oxygen, and that by exposure to the air of the atmosphere, it forms an oxide of a black, or rather of a *blackish-grey* colour, though sometimes completely black. It is dull, without lustre, and extremely friable. Fatal effects may arise from this article, especially among chil-

dren, as it enters into the composition of the common fly-powder, and by mistake, or careless exposure, may produce all the terrible consequences of the White Oxide.

A preparation well known in the Pharmaceutical department, under the name of the Arsenical Solution, or Fowler's Solution of Arsenic, is formed from a combination of Arsenic Acid and Potass. This remedy and this salt have all the poisonous properties of Arsenious Acid, when given imprudently. When the preparation is dried and placed on burning coals, the arsenical vapour and smell are produced, and a residue of potass, more or less carbonated, is left. The tests for Arsenious Acid are applicable to this solution, both in the liquid and the igneous manner.

The yellow Sulphuret of Arsenic, called in the language of commerce, *Orpiment*, and the red sulphuret, termed *Realgar*, if taken into the system, (which can hardly occur but by mistake) produce the same deleterious effects. Arsenical preparations, in powder, ointment, plaster, lotion, &c. externally applied, are recorded as having produced unpleasant and even fatal consequences. If such a case should occur, I presume it can only be referable to ignorant or imprudent tampering with remedies for some complaint; and we cannot suppose that there would be any such mystery about a case of this nature as in one of purposed poisoning. Such deleterious

preparations are to be tried in the same manner as the substance, already treated of.

An antiseptic property has been ascribed to Arsenic, and the consequent fact has been advanced by respectable authorities, that the bodies of those killed by it resist putrefaction longer than others *.

Mercury.

I avail myself of the general acquaintance with the metallic characters of this substance, to pass them over.

In its metallic state it has no action on the living system, but what may depend on its mechanical properties; and of Metallic Mercury, or Quicksilver, Forensic Medicine can scarcely be required to take account.

There are certain combinations of this metal, however, which are of the highest importance to the

* If the reader wishes to know what has been done in judiciary investigations, concerning poisoning by Arsenic, the following are a few remarkable cases, which may be easily consulted.

That of *Ogilvie*, already quoted.

That of *Miss Blandy*, tried at Oxford, 1752.

The notorious affair of *Eliza Fenning*, in 1815.

The remarkable story of the demoiselle *Menbielle*, quoted by the French writers on Med. Jurisprudence, originally inserted in the Journal de Medicine, Vol. LXX. for 1787, by *Laborde*.

Others (among whom are Metzger and Roux) have cited cases of poisoning by the external use of Arsenic.

physician, as they exert a powerful influence on the living organized system, are of indispensible utility in the practice of the healing art, and produce, when administered in undue quantity, deleterious and fatal effects. I pass therefore to these—and the first form in which I shall consider Mercury as a poison is in combination with Muriatic Acid.

Mercury exists, chemically united with Muriatic Acid, at two degrees of oxidation, one of which forms a convenient and invaluable remedy in medical practice, and which may be given liberally with advantage. The other, though also employed in the cure of diseases, is in small quantity a poison of the Corrosive class—equally virulent as the Arsenious Acid. Every body knows the danger of meddling with *Corrosive Sublimate,* the common name of this formidable preparation.

The *Oxymuriate of Mercury,* for so in chemical language this metallic salt is called, is the mercurial poison of which I shall first treat. It is a combination of Mercury at the maximum degree of oxidation with Muriatic Acid. The Sub-muriate, or Muriate at the minimum of oxidation forms the mild preparation, still known by the term *Calomel.* I shall not discuss the accuracy of the terminology; but from the similarity of the sound of Sublimate and Submuriate, and the relationship that must exist between the ideas of two Muriates of the same basis, it is perhaps wonderful that mistakes have not been more numerous. Fortunately the sensible

characters of the two preparations differ a good deal from each other; and in the hands of a person acquainted with their respective appearances, no mistake can well occur but through unpardonable carelessness.

The minor Muriate of Mercury, or, (as it may be more convenient to call it) *Calomel,* is kept in the shops in a palpable powder, of a yellowish, or rather cream colour; and is of considerable weight, insipid to the taste, and insoluble in water. The Oxymuriate (Corrosive Sublimate*) of Mercury is commonly kept in masses of a crystalline form and semi-transparent colour, whiter than Calomel, and when reduced to powder, different also in weight. It is very soluble in water, requiring not more than two parts at the boiling point, and 20 parts at 60° of Fahrenheit. Its taste is acrid and disagreeable, so much so, that it has been asserted that a person could not swallow enough of it in a fluid form, to produce fatal effects, from the repugnancy of the taste alone. Unfortunately we can refer to too many horrible proofs of the contrary.

Every preparation of Mercury, when introduced into the system, produces a powerful *specific* effect. This must not be altogether overlooked here, though

* Both these preparations are obtained by sublimation; but I decline the detail of processes that are not of direct import to the subject under consideration. It is sufficient for the present purpose, to take a knowledge of this branch of science for granted.

we need only keep in mind the most remarkable appearance belonging to that effect, viz. the impulse given to the salivary glands, (in common with other secreting organs,) but either more peculiarly exercised upon them, or there at least more distinctly manifested. An increased flow of saliva takes place; the gums become tender, or even sore; a metallic taste is perceived in the mouth; and the breath becomes intolerably offensive. If the mercurial medicine has been given too rapidly, or in some constitutions from a very small quantity, more violent effects than these take place; the soft parts swell, the teeth loosen, and even fall out; deglutition and speech are impeded; the patient becomes loathsome to himself and those around him; saliva flows copiously and continually from the mouth; and sometimes parts of the tongue, fauces, &c. come away. Many effects have been charged to the Syphilitic malady, which were more fairly attributable to the improper use of the remedy; and persons have often been destroyed during the progress, and by the very means of recovery from that disorder.

These effects are readily produced by Corrosive Sublimate. It is a useful preparation in certain cases both internally and externally; but when we reflect that we cannot prudently commence its internal use with a larger dose than one sixth of a grain, and even that repeated at considerable intervals, while the augmentation we may venture to make

must be exceedingly trifling, its virulence must be supposed very considerable.

Having made this short allusion to the specific action of Corrosive Sublimate, when given in minute quantity, let us now consider it as an Escharotic or Corrosive poison, when administered to the extent, for example, of two or three grains.

The following summary of the symptoms is selected from the best sources and authorities; and if the account should be found to resemble that given by abler writers, it will be a fair argument for its authenticity.

The introduction of Corrosive Sublimate into the stomach, produces excruciating pain in that region, severe vomiting, frequently of blood; redness and swelling of the countenance, a sparkling appearance in the eyes, accompanied by contraction of the pupils; dryness of the lips, swelling and painful tenderness of the abdomen, increased on pressure. The pulse is generally quick, small, and hard; breathing difficult; surface of the body hot; and convulsive motion of the muscles is excited, accompanied by cramps in the limbs. Along with violent purging, suppression of urine takes place: and with all these there is often (more especially where the sublimate has been taken in the solid form) severe and disgusting ptialism. The solution creates also a styptic and metallic taste in the mouth, with a sensation of stricture about the fauces, and burning heat in the throat, extending to the region of

the stomach and intestines. All the symptoms now enumerated are frequently combined with anxiety, and cold sweats.

Such are the immediate consequences of this article, when given to a certain amount. In small and repeated doses, (a method of poisoning that has often been resorted to) it induces the specific symptoms of mercurial action, already described; and the miserable sufferer either sinks under the aggravation of these, or if he recovers from them, becomes the victim of fatal disorders, of which the foundation has been in this manner laid. Similar effects will be produced by the *external* application of Corrosive Sublimate.

As a Corrosive poison it destroys the texture of the stomach, more readily and extensively when administered in solution; and also the small intestines, when it finds its way into them.

Mr. Brodie considers that the action of this poison on the stomach is, by sympathy, extended to the heart and the brain, by which the state of the pulse and the convulsions are accounted for. The lungs, however, do not appear to be affected, the blood of the heart preserving its scarlet colour*. The sympathy between the brain and the stomach is so intimate, that whatever acts violently on the latter organ, must powerfully affect the functions of the former, whence again an impulse will readily be conveyed to the heart.

* Philos. Trans. 1812.

The following are some of the tests most to be relied on for the detection of this poison under various circumstances. The aqueous solution of Oxymuriate of Mercury is transparent, without colour or smell. When applied to vegetable colours, it changes them as acids do. If to this fluid a saturated solution of Carbonate of Potass be added, a *deep brick-coloured* sediment is produced, consisting of Carbonate of Mercury at the maximum degree of oxidation, while there remains in the liquor a Muriate of Potass. The Sub-carbonate of Potass produces a *clear brick-coloured* precipitate, composed of Carbonate and Oxide of Mercury.

Lime-water gives a precipitate of a *deep yellow* colour, which, by the quantity of the test being increased, becomes red, and consists of Oxide of Mercury retaining a little Muriatic Acid. By the continued addition of lime-water, a precipitate of a fine *yellow* colour is obtained, consisting of an Oxide at the maximum degree.

Ammonia produces a *white* precipitate, composed of Muriatic Acid, Ammonia, and Oxide of Mercury, forming a true triple insoluble salt.

All the foregoing precipitates, if rubbed on a bright plate of copper, render it white and silvery.

A watery solution of Corrosive Sublimate made at a high degree of temperature, on being allowed to cool, deposits crystals of a slender, compressed, and tetraëdic form. If these be pounded in a glass mortar, and exposed to ignition, volatilization takes

place, a dense white smoke is evolved, and a pungent smell—but not resembling that of garlic, the characteristic of Arsenic. This smoke will tarnish a clean plate of copper, and on the tarnished part being rubbed, a silvery appearance will be produced, characteristic of Quicksilver; and if a portion of these crystals be exposed to heat with charcoal, in the form of a paste, the product will be Quicksilver, Carbonic Acid, Muriatic Acid, and Oxygen; in other words, we shall obtain Metallic Mercury.

A concentrated solution of Corrosive Sublimate produces no change on milk; but if to milk containing one part of this substance in fourteen, the syrup of violets be added, the colour is changed to a *pale blue.* Pure potass will turn it to a *blackish grey;* and a plate of copper dipped in it then undergoes the same changes as with the Sublimate.

Ordinary soup, if limpid, becomes slightly turbid when it contains a small quantity of this salt in solution; but as soup is frequently turbid of itself, the change might not be perceptible. The tests already mentioned will produce the effects as in an aqueous solution; but here we cannot draw any inference from the colour of precipitates.

The impediment thrown in the way of detection from the colouring matter of wine, will be removed by the addition of Chlorine.

When called to a case of poisoning by Corrosive Sublimate, the preliminary steps to be taken are precisely those laid down with regard to Arsenic.

The only variation that is to be observed arises from the difference of chemical affinities on the part of this particular substance, and the consequent necessity of selecting the appropriate means of detection. We are to examine the body in the very same manner, and under the same precautions.

If we obtain part of an aqueous solution of Corrosive Sublimate, a little of it may be taken up in a clean quill, or glass tube, and dropped on Litmus paper, when a red colour will be produced, or if dropped on a clean plate of copper, and rubbed upon it, the silvery lustre will be communicated. The alkaline tests also should be used; some of them being perhaps easily and readily obtained.

If there are any remains of the poisonous substance in a solid form, we are to attend to its appearance, and submit it to the process of reduction by heat, and of solution in water, with the subsequent precipitation by tests; making the proper use of the various precipitates, drying and calcining them, in order to obtain Metallic Mercury.

If we cannot procure any remains of the poison, our attention must be the more carefully directed to the matter vomited; and where we can obtain both, the production of Metallic Mercury from each, will make out the case in the strongest possible manner. Vomiting is a very general occurrence in poisoning by Corrosive Sublimate. The fluid part of the substance rejected, being filtered, we are to apply the tests to the product of this operation; and the solid

parts being well macerated in distilled water, we are to treat them in the same manner; and it is recommended by Orfila, where we do not obtain the precipitates in the way described; where they do not correspond in colour, or are altogether withheld, to mix the fluid with Caustic Potass (in solution) and evaporate in a capsule of porcelain to dryness*; after which, detaching the residue, it should be heated to redness in a small glass retort with a balloon adapted to it. If Metallic Mercury be then obtained in the neck of the retort, the experiment will be satisfactory. This is a process, which cannot be entered upon during the immediate emergency of the case, but we must observe the precautions necessary to insure its future success.

It is of importance to keep in mind, that many substances of an alimentary nature may reduce this salt to a muriate of the minimum degree of oxidation. In this case our attention will be more successfully turned to the solid matter, reducing it with flux in the common way, in order to obtain Metallic Mercury.

If the person be dead, we are not to neglect the remains of the poison swallowed, or the substance rejected from the stomach, if either can be obtained. The manner of opening the body, and securing the contents of the alimentary canal, has been already

* The application of Chlorine is to be made in corresponding cases of colouring matter, as with preparations of Arsenic.

described *. These precautions being taken, our first care must be to search for undecomposed portions of the Sublimate, and should any be found, the use to be made of them need not be repeated. If none be detected, we must turn our attention at once to the mass of contents, separating the fluid from the solid, and proceeding with each in the proper manner.

Lastly, we are to have recourse to the injured portions of the intestinal canal itself. Orfila observes that this canal acts, like all other animal substances, on the Sublimate; forming, by the disengagement of Muriatic Acid, a Muriate of Mercury at the minimum degree of combination, which unites with the texture of the parts—a union that takes place more readily, if the stomach be void of aliment.

People have been poisoned by the external application of Corrosive Sublimate, in the shapes of lotion, ointment, plaster, &c. but we can scarcely suppose that there would be mystery in such a case; a portion of the deleterious substance would be easily obtainable.

I am not aware that there is any occult method by which Corrosive Sublimate may be accidentally administered, in the ordinary economy of life. But as it is known to enter into the composition of several empirical remedies, it has in this way given rise

* See the instructions on this part of the process, under the head of *Arsenic*, page 96.

to judiciary investigation. It would also seem to have formed the basis of some celebrated preparations that were formerly used on a large scale, for the purpose of secret poisoning, on which I shall hereafter hazard a few observations.

There are other preparations of Mercury, which, if introduced into the system, would be also poisonous, and much after the same manner. The red Nitric Oxide, commonly termed *red precipitate,* so much used in surgical applications, is a dangerous article if swallowed ; but as it can hardly be supposed to be taken this way in the common course of events, it requires no particular detail. The colour of this substance, its insolubility in water, and other peculiarities, seem to guard mankind sufficiently against mistake, and render it very difficult of concealment.

Vermilion, which is a Sulphuret of Mercury, and much used in the arts, has been detected as a poisonous ingredient in cheese *.

The Nitrates and Sulphates of Mercury are also noxious. They require no separate consideration : the preceding remarks, if applied under those variations that every practitioner's knowledge of chemistry will explain, are relevant to all preparations of Mercury, when they come under observation as poisons.

It has been matter of investigation, and I appre-

* Accum on Culinary Poisons. The story is curious.

hend is yet matter of doubt among medical practitioners, whether the specific effects of Mercury, as produced in the mouth, are ever renewed after having once ceased, without the administration of the mineral being repeated. My own experience does not enable me to solve this problem. I can merely say, that I recollect no instance among an extensive number of cases of mercurial action, in which such an occurrence took place *. It has, however, been asserted as a fact; and Dr. Male quotes an instance that occurred in a patient of his own †.

Dr. Hamilton, Professor of Midwifery in the University of Edinburgh, related a case in his Lectures of a married lady, who had been under the necessity of going through a course of Mercury, as the price of her husband's imprudence, under the care of the late Mr. Bennet. This gentleman, from motives of delicacy, did not enquire very minutely into particulars; but, according to the rule of the day, gave his patient a sore mouth. Four months afterwards she miscarried, and salivation again came on. It was removed for a week, at the end of which it returned, and harassed her for about a twelvemonth. This is the most satisfactory case I have met with; though not perfectly so.

* The reader will find some statements on this point in the report of the trial of Miss Butterfield for poisoning Mr. Scawen, anno 1775.

† Elements of Forensic Medicine.

Copper.

The next metallic poisons to be considered, are certain preparations of Copper.

The properties of this useful metal are universally known. It is so extensively employed for utensils, particularly in the culinary department, that if it possesses deleterious properties, our lives may be said to be continually in danger.

And this is the fact: for although copper be not dangerous of itself, it is so prone to combine with Carbonic Acid, and to be acted upon by the acetic acid contained in numerous articles of food prepared in copper vessels, that not only do we run great *risk* of being poisoned, but it requires much care and precaution to prevent such an occurrence.

Verdigris is as familiar to us as copper itself. It is that green rust, which it is so difficult to keep from articles constructed of this metal.

By the common term *Verdigris,* however, two salts of copper are denoted, between which it is necessary to distinguish. The natural Verdigris is the green oxide, which forms spontaneously upon copper and brass, possessing poisonous properties in a very eminent degree. It is not soluble in water, but dissolves readily in Ammonia, and, by the assistance of heat, in oily and acidulous substances; hence the danger of preparing certain articles of food and medicines in copper vessels where this rust has been allowed to form; a danger which is

increased by these preparations remaining to cool in the vessels *.

Verdigris more generally, however, is a combination of copper with acetic acid—readily formed in various ways, without the institution of any process for the purpose. It is generated, for instance, by allowing liquors that contain this acid to pass through brass pipes; as may be exemplified by drawing cyder through a cock of this description.

The Verdigris of Commerce consists of masses of

* Proust, (Journal de Physique, 1806) has given some statements on the poison of copper, which are of very high importance. Neither this metal, nor lead, in the metallic state, can be considered injurious, since Patrin saw a person swallow more than a drachm of copper for rheumatism, and Rouelle used to shew in his lectures a lock of hair, green as verdigris, which he himself had cut from the head of an aged founder. On the innocence of lead, an illustration has been drawn from the impunity with which we swallow shot in eating game, although the lead in that state is alloyed with Arsenic.

With regard to vessels, both copper and leaden, it appears from experiments made by Proust, that if tinned at all, though ever so badly, the superior facility with which the tin is acted upon by acids, compared to either of the other metals, is a perfect safeguard. Nor does it appear that boiling even vinegar, or acid fruits in copper vessels is dangerous, unless done slowly, or they are allowed to cool in them. The *contingent* dangers of this sort of cookery, however, should never be incurred.

A more detailed account of these facts is given in the second Volume of a work, entitled "Retrospect of Philosophical, Mechanical, Chemical, and Agricultural Discoveries, &c. Lond. 1806."

minute crystals of a bluish-green colour, silvery, and of a silk-like appearance. It is composed of the acetate and subacetate of copper, partly in a metallic, and partly in an oxidized state. There are, generally, extraneous substances in it also. When exposed to heat, like other metallic salts, it yields metallic copper.

I am not prepared with an instance in which Verdigris has been *given* for the purpose of taking away life. I believe that cases have occurred where it has been voluntarily taken for that purpose; but the instances in which it has, from accident or inattention, produced mischievous consequences, are innumerable. The following is a summary of the symptoms induced by its ingestion into the system.

An acrid, styptic, coppery taste in the mouth; a dry and parched tongue; a sense of strangulation in the throat; vomiting; coppery eructations and continual spitting; head-ache to a violent degree; pains in the bowels; frequent calls to alvine evacuations, which are often black and bloody, accompanied with tenesmus; great general debility; cramps, pain and tremor in the limbs. The pulse is frequent and irregular, small and hard. There are also syncope, heat of skin, and ardent thirst; along with oppressed respiration, anxiety about the præcordia; scantiness of urine; and cold sweats, ushering in the fatal termination.

Dissections have discovered (where death has been speedy) inflammation and gangrene in the mucous membrane of the stomach and intestines. The inflammation has been found extending to all the coats, productive of sloughs, easily detached, and leaving perforations. Inflammation has likewise been noticed in the brain *; and it has been remarked, that the green colour of this salt tinges all the fluids contained in the primæ viæ †. The salts of copper are poisons of the Corrosive class.

If Sulphuric Acid be poured on Verdigris, a decomposition takes place, accompanied by effervescence, or fumes with a vinegar smell are given out.

It is partly soluble in boiling water, such solution containing Acetate of Copper, while there remains a brown residue, consisting of the other matters that were mixed up with the Verdigris. This solution reddens litmus paper, has a strong styptic taste, and is of a greenish blue colour. It is decomposed by Sulphuretted Hydrogen, by which a Sulphuret of Copper is produced. If a piece of clean iron be dipped in this solution, it will be coated with metallic copper, and appear as if transmuted into that metal—the blue colour changing first to green and then to red.

Sub-carbonate of Potass precipitates the Verdigris

* Male. Elements of For. Med. p. 61.

† Notes to Metzger's Principles of Judiciary Medicine. In alluding to this very excellent work, I quote from the French translation by Ballard.

of a *pale-blue* colour. Ammonia separates it of a colour, at first, rather *deep blue;* but by adding an excess of alkali, the precipitate is again dissolved, and a liquid of a *fine blue* colour is formed, consisting of Acetate of Ammoniacal Copper. This is a very delicate test of the presence of Acetate of Copper.

Acetate of Copper in solution, added to tea, produces a precipitate of a *reddish yellow* colour. From wine a *black* precipitate is produced by the Hydro-sulphurets *. A bluish precipitate is obtained, if the solution be tried with albumen; but gelatine and broth produce no change of appearance. This salt, in considerable quantity, will coagulate milk, and when the coagulum is washed, it will display a green colour.

From all these products, when dried and exposed to heat, Metallic Copper is to be obtained.

On the application of these details to the detection of poison by Verdigris, there is no occasion to be particular. The general rule of procedure already exemplified is applicable here. In trying the poisonous substance with boiling distilled water, we are to remember that *part* only will be dissolved. We may perhaps obtain part of the poisonous substance swallowed, by having recourse to the copper

* Chlorine, if added in sufficient quantity here, turns the mixture of a yellow or greenish colour. A process which facilitates the verification of the presence of the salt by the test given above.

utensils. If in pouring Sulphuric Acid upon this, we find no vinegar fumes, (which will be the case where it is the natural Verdigris,—*Carbonate* of Copper), Orfila recommends that it should be dissolved in concentrated Acetic Acid at the ordinary temperature, by which the *Acetate* will be formed, with those more striking properties peculiar to it. We must guard against being puzzled by variations in colour. An aqueous solution of Verdigris, free from mixture, is of a blue colour; but it may vary considerably through combination with different substances. The matter vomited, and that found in the stomach, are coloured by this salt; but in different ways, according to the nature of the substances. We must not attach too much importance to the mere circumstance of colour. It will presently be shewn that another poisonous substance causes green vomiting—not to mention the natural colour of the bile—and the frequency of green vomiting where poison is out of the question.

We shall scarcely in any case of this nature (from the variety of fallacious circumstances) be warranted to pronounce that copper poison has been swallowed, until we have actually obtained the metal.

With regard to the injured portions of the alimentary canal, (the import of which need not be repeated,) Orfila has observed that the metal will be obtained with greater readiness where the mucous

membrane of the stomach is of a bluish colour, and firm consistence, strongly adhering to the other coats of the viscus.

Silver.

Silver, in its metallic state, does not exert any destructive influence on the living body. It may be introduced into the vascular system, applied to morbid parts, or taken into the digestive canal, without producing any evil but what may arise from its mechanical form and influence, and which the hard parts of certain articles of food used in a similar manner would also occasion—as bones, &c.

But there is a substance, of which this metal is the basis, of the most corrosive description. Combined with nitric acid, silver forms a salt, which *par excellence* has received the name of Caustic,—with whose destructive effects, even when slightly handled, no person likely to cast his eye over these pages will require to be made acquainted. If, therefore, a substance so very escharotic should be introduced into the living stomach, we must suppose all the mischief, of which the most virulent corrosive poison is capable, to be rapidly produced. I do not know that any instance is on record of this article having been either given, or taken as a poison ; and indeed its supreme activity in destroying organized matter, would present peculiar obstacles to the fulfilment of any such intention.

A case is mentioned in the work of Metzger, already quoted, where a piece of Lunar Caustic was accidentally dropped into the throat of a person while applying it to an ulcer. In this instance the person was saved by drinking abundantly of milk.

As this salt, however, has been recommended for internal use in the cure of certain diseases, and a source of danger is thereby opened, through rashness or ignorance in the administration of such a remedy, it becomes us to be on our guard, and not to be confounded, should such an occurrence fall under our notice. The difficulty of recognising this article would not be great. With the means of relief the student is made acquainted elsewhere. For detection, simple ignition would probably suffice—for the Nitrate of Silver, thrown on burning charcoal, increases combustion, swells, and decomposes, emitting the well known fumes of nitrous acid, and leaving the metal on the charcoal in all its characteristic lustre.

Antimony.

There are certain preparations of this metal, which, though in common use for medical purposes, require great care in the administration; as an excess in point of quantity has often produced distressing consequences. Indeed, an ancient prejudice against the use of this mineral prevails still with some practitioners, who will on no account employ it. The Tartrite of Antimony, commonly known

by the term *Tartar Emetic* and the Antimonial Wine, are the most common preparations, and those from which danger is most to be apprehended.

Those who will take the trouble to consult Orfila will find an account of some cases of poisoning by antimonial preparations, from which it appears that their poisonous action requires them to be ranked among the Corrosives.

Tartrite of Antimony, when retained in solution, may be detected by the addition of the Hydro-sulphurets, which produce a brownish-red precipitate. Sulphuric Acid produces a white sediment, as also do the alkalies; and all these, as well as the preparations of Antimony in general, when exposed to heat with charcoal, readily yield Metallic Antimony; which may be known by its whitish colour, mingled with a shade of bluish-grey; its metallic lustre, which it retains when exposed to the air; its foliated texture; moderate hardness; extreme brittleness, and facility of being reduced to powder; its specific gravity, &c.

Zinc.

Another preparation from an inferior metal claims our notice, being employed for various purposes in medical practice. I allude to the Sulphate of Zinc; or as it is vulgarly named, *White Vitriol;* a salt of much use where speedy vomiting is required, and consequently a great aux-

iliary in the successful treatment of some of those cases under review. The dose admissible, and indeed proper, where Sulphate of Zinc is administered, to procure vomiting, is considerable; but notwithstanding this, there appears good ground for ranking it among the substances of a deleterious nature. Metzger* has an allusion to a woman, who accidentally ate a trifling quantity of a cake, into which White Vitriol had been introduced for the purpose of shortening the days of an old man. The woman died; but the intended victim escaped, after severe vomiting. An account of the appearances in the body *post mortem* would have been very acceptable.

But it is impossible to extend our observations in this account of the detection of poisons to every article which may by some untoward and unusual event come in contact with the human system. To the list of *Corrosive* poisons of the metallic kind I forbear to add any thing further. There are preparations of Tin—for instance, the Muriate, and an Oxide, called *putty powder*, used in certain manufactures—which have been known to exert a poisonous influence on the living system, though they scarcely can be taken into account as substances, to the dangerous influence of which human life is easily exposed †.

* Ut supra. † Orfila, Vol. I.

Lead.

This is the last metallic poison, of which I shall take particular notice; and it is one of the very highest importance, not only from the deleterious action it exerts on the living system; but from the extreme frequency of its introduction. The action of lead is different from that of the substances hitherto considered. One, and the principal effect produced by it, is constriction in the alimentary canal, and hence it has been termed an *Astringent* poison. But there is no doubt that the preparations of this metal will also produce inflammation of those organs. The circumstance, however, of constriction affords ground for distinction; and if we consider the effects of Astringent poisons, it is a real peculiarity.

Preparations of lead are probably seldom used for the express purpose of destroying life; though they are much employed with other nefarious intentions; and not unfrequently produce fatal effects. In the arts it is a metal of extensive employment; and some of those in which it is used are of themselves criminal. The adulteration of certain liquors by lead, particularly wine, is in fact a science, to the due knowledge of which a favoured few only can attain *.

* See Accum on Culinary Poisons, and Beckman's History of Inventions—a work that illustrates several Medico-forensic topics.

We are exposed in various other ways, however, to the deleterious influence of lead. From the frequency with which water, and other substances of greater activity with regard to this metal, are retained in vessels, or conducted through pipes made of it, we are almost constantly in some degree of danger; and were it not that the symptoms for the most part produced have a particular character, with which we are tolerably acquainted, while the facility of exposure to this poison is now pretty well understood, we might in many cases be baffled in our search for the cause, or source, of the poison.

Lead is very readily oxidized. It is converted into powder of a dull grey colour by mere exposure to the air, which powder is an oxide of the metal. By exposing it to a high degree of heat, under certain management, it passes from a grey to a yellow, and then to a red oxide, commonly known by the name of *Minium*, or *red lead*—a substance extensively used in the arts. Another result of heat, applied in a particular manner during the process of oxygenation, is the production of *Litharge*. The oxides of lead are all reducible by exposure to heat with charcoal.

Almost all the acids combine with the oxides of lead; and it is in this state that it exerts its pernicious influence on the living system—metallic lead being supposed innocent, except as far as its mechanical properties may render it injurious. A Carbonate of Lead is formed by the absorption of

Carbonic Acid Gas from the atmosphere, and an oxide is readily formed from water, uniting also with the Carbonic Acid of the air.

The Salt of Lead, however, which more particularlarly claims our attention, is that formed by combination with Acetic Acid; a substance used very extensively in *surgical* practice. The Acetate of Lead, which is formed by exposure of the Carbonate, or white Lead, to the action of boiling vinegar, is obtained in flat parallelopipedal crystals, of a shining cream colour, considerable weight, and a styptic, though at the same time sweet taste, whence it has obtained the vulgar name, *Sugar of Lead.*

Though it has been remarked that lead is employed externally for curative purposes, even exposure to its external influence is productive of much mischief. There are certain occupations in which lead is much used, very unfavourable to health, and which not unfrequently shorten the days of those who carry them on. The particular train of consequences thereby induced has furnished nosologists with the name of a particular disorder. *Colica Pictonum,* the painter's colic, was so called from painters, whose business requires them to handle preparations of lead, being supposed particularly liable to it, though they have by no means been its only victims.

The usual course of the Colica Pictonum is marked by the following symptoms. Vague pains

in the abdomen, accompanied with costiveness; frequent vomitings; paleness; emaciation; uneasiness about the head; affections of the imagination and disturbance of the reasoning faculty. As the pain in the abdomen augments, pressure seems to afford temporary relief, which is the reverse of what takes place under the former poisons. A contraction becomes perceptible about the navel, and occasionally about other parts of the abdomen, affecting even the Sphincter Ani, while the bowels remain, as it were, closed up. The urine becomes suppressed, or at least retained. Sweet eructations take place in the mouth; convulsions, paralysis, and blindness frequently supervene, and the patient occasionally dies in excruciating torture.

There is little satisfaction in the accounts given of the dissections of those who have died in this manner. Indeed, authors are at variance as to the real appearances *post mortem*, from which it is to be concluded that they are not always the same. Constriction in the alimentary canal, and for the most part in the colon, seems however to be the common characteristic derangement; and this constriction has been found in the large intestines, where the others have been quite healthy. Foderé remarks that the stomach and intestines exhibit a slight degree of inflammation, though in certain parts the structure is acted upon, and even sphacelated. He observes that the mesentery and its glands; the lacteal and lymphatic vessels, are in-

flamed and obstructed, and the thoracic duct almost obliterated; the liver, spleen, pancreas and lungs often inflamed, tumefied and purulent; and the heart even shrivelled *.

In a note to Fourcroy's translation of Rammazzini on the diseases of artisans, he says that dissections have shewn the intestines to be full of air, parched, and slightly altered in colour. In the interior of the larger were found dry dark-coloured excrementitious matter, formed into small balls. All the viscera were in their natural state; the bile thick and black.

Where the dose of poison is considerable, and the consequences direct and speedy, the symptoms are still more severe. We may expect some of those produced by the Corrosive poisons—as the parched state of the mouth; sensation of stricture in the throat; anxiety; syncope; vomiting, &c.—but even these are for the most part succeeded by the peculiar effects already noted, in which the abdomen is more particularly concerned. Orfila relates some experiments made with preparations of lead upon animals. In the stomachs of some killed in this way, a thick ash-coloured membranous lining has been found, separating easily in fragments—the mucous coat lying under it, appearing from the similarity of colour to have partaken of the action. The same

* Med. Legale IV. § 921.

appearance had been traced along the intestinal canal.

I shall now enumerate the efficient tests for the detection of those preparations of lead with which we shall most frequently have to do – and first of the Acetate, or Sugar of Lead

If Sulphuric Acid be poured upon this salt, it is immediately decomposed, and fumes of vinegar are disengaged.

With common spring water it forms a turbid solution, or mixture, a white precipitate being thrown down by the Sulphates and Carbonates contained in this sort of water; but with distilled water, pure Sugar of Lead forms a limpid solution, when filtered; and if to this solution Sulphuric Acid be added, we shall obtain a white precipitate, consisting of Sulphate of Lead.

Sulphuretted Hydrogen blackens the solution, and throws down a black sulphuret; the same takes place on the addition of the Hydro-Sulphurets.

The Sub Carbonate of Soda throws down a white Protoxide of Lead, combined with Carbonic Acid. It is a delicate test, and will detect the presence of a very minute portion of the metal. Ammonia throws down a white Protoxide also, which, when dried, becomes of a yellow colour. Muriatic Acid and the Muriates produce a grumous Muriate of Lead. Albumen produces a white precipitate — gelatine does not. Broth decomposes it, and separates white

flakes; which, when dried on a filter, appear like glue. Acetate of Lead coagulates milk, and copiously precipitates human bile, the residuum consisting of Oxide of Lead and animal matter, which yields Metallic Lead by calcination.

Minium, or red lead, is of a beautiful colour, and considerable weight. When exposed in a crucible to a degree of heat above a brown red, it passes into the state of yellow Protoxide. It is decomposed by Nitric Acid diluted with its weight of water; and passes to a mahogany-coloured Oxide, remaining at the bottom of the vessel, and a Nitrate, which is soluble; and in which, when filtered, Sulphuric and Muriatic Acids, and the Hydro Sulphurets, produce the same appearances as those just noticed respecting the Acetate. One would imagine that the colour of this preparation would render it difficult to be made use of as a poison. This, however, has been the case *.

Litharge is partly soluble in wine, and has frequently been employed to cure wines that were spoilt. Its presence may be detected by the alkalis, in like manner with that of the acetate. But the best plan to detect the presence of lead in wines, is first to distil off the alcohol, and then try the residue by the proper tests. Metallic lead is thus easily obtained †.

* Accum on Culinary Poisons.

† In the works quoted at page 125, there is a good deal of instruction given on this subject.

There is no necessity for dwelling upon what is our duty in a case of alleged or suspected poisoning by lead. The instructions exemplified, when considering other metallic poisons, (due attention being always had to peculiar tests and their specific results) are still applicable here; and the great proof will be the production of the metal by calcination.

I pass over certain metallic preparations, as of Bismuth, Gold, &c. because they are not of much note in a practical point of view. They have been noticed by Orfila and other writers. The presence of metals, in combination with other substances, is often a point of great consequence in the arts, and in certain branches of scientific research—the modes of detecting them are to be found in books of chemistry. It must, of course, be admitted, that however important it may be for the satisfaction of justice, to find the metallic base of the poison, occasions must occur in which we shall be baffled. In such cases, I apprehend we must carry our researches as far as we possibly can, and, when giving evidence, attach no more weight to imperfect results than they are entitled to. Something must depend upon the judgment of the practitioner, perhaps, in all cases—where demonstration is wanting, judgment is particularly necessary; but let him ever be on his guard against substituting imagination.

Acids.

The next mineral poisons to be considered are the Concentrated Acids.

These are corrosive poisons of the most active kind; and, in whatever way we meddle with them, they require the greatest caution. They rapidly destroy the texture of animal and vegetable substances, whether living or not.

Those known in vulgar language as *Oil of Vitriol*, *Aquafortis*, and *Spirit of Salt*, or, in the nomenclature of modern chemistry, as the *Sulphuric*, *Nitric* and *Muriatic* Acids, are the most powerful and important.

The destructive character—or in other words, the poisonous properties of these bodies, are nearly alike.

It is true that, in exerting their destructive influence on the animal fibre, they are characterized by some of their peculiarities; but the results are of the same kind and extent, and are accompanied with similar tokens of suffering; while the means of relief do not materially differ. Notwithstanding the apparent impossibility of enduring the passage of any quantity of these ardent substances down the throat, they have been administered for the purpose of taking away life; and have even been resorted to as the means of suicide!

As there are certain chemical properties, however, peculiar to each of these acids, it is necessary,

with a view to accurate detection, to keep them in mind.

Sulphuric Acid is a combination of Sulphur and Oxygen, colourless when pure, of an oily consistence, and free from smell. It possesses all the properties of acids in the highest degree, and blackens and reduces to a pulp animal and vegetable substances exposed to its action.

Taken into the stomach, it produces the most dreadful sensations. Excruciating pain—nausea and excessive vomiting—the matter ejected from the stomach being often very black, from the destruction of the fibre, or red from the mixture of blood, giving extreme pain, as it passes through the mouth, from its highly styptic quality, and causing effervescence if it falls on the hearth or pavement, or is applied to calcareous substances. Tenderness and pain occur in the abdomen, accompanied either with costiveness, or bloody stools; there is universal uneasiness, general restlessness, and dejection; difficulty of respiration; quick, small, and irregular pulse; convulsive startings in the countenance; and, (what is peculiarly observable in these cases,) conservation of the intellectual faculties. While all this is going on, the destruction of the soft parts about the mouth, as well as the fetor emanating from them, will be palpable to the observation of the by-stander.

The tests by which this substance may be de-

tected, are so well known, and so easily obtained, that they require no particular description here. If called to such a case, the suspected substance, if heated with Metallic Mercury, will disengage sulphureous Acid Gas, known by its brimstone smell. Carbonate of Lime being applied to another portion, until saturated, effervescence ceases, and Sulphate of Lime is formed; a portion of which being dissolved in boiling distilled water, then filtered, and tried with Muriate of Barytes, Sulphate of Barytes will be formed, insoluble in water and in the Nitric Acid.

In the internal parts of the body, over which this destructive substance may have passed, we shall be at no loss to account for the effects left in its progress. Black pulpy sloughs are to be expected, emitting the offensive smell that is produced by destruction of the animal fibre.

Orfila mentions a composition of this Acid with Indigo, made use of in dyeing, which he cites as being frequently employed to take away life*.

Nitric Acid. This substance, not more destructive than the foregoing, nor differing essentially in its *effects*, possesses certain peculiarities that require more detailed consideration. Instances of death, caused by swallowing *Aqua-fortis*, have been more frequent than from the *Oil of Vitriol.* Orfila indeed asserts that it has been more generally used for the

* Toxicology, article *Sulph. Acid.*

purpose of suicide, *than any of the mineral poisons.* Whether observations made on this subject in our country will corroborate the statement or not; there is no doubt that Nitric Acid, being a substance much used by artisans, affords facilities for this purpose that other poisonous articles do not.

When pure, it is colourless; of less specific gravity than Sulphuric Acid; but it may be termed equally caustic and corrosive, destroying organized matter—forming a solution, however, of a *yellow* colour, a tinge of which it communicates to the skin and other parts of animals, when it comes in contact with them.

According to the observations of Tartra*, immediately on swallowing this acid, a burning heat is felt in the mouth, œsophagus, and stomach; accompanied by an acute pain, disengagement of gas, and abundant eructations, retchings, hiccup—increasing pain in the throat and epigastric region. To these succeed vomitings, quickly repeated, either of liquid, or of solid matter, effervescing if it falls on any calcareous substance; the peculiar taste and smell of the acid being perceptible. To these supervene tumefaction of the abdomen, tension and pain on the slightest touch; a sensation of cold on the surface, while the limbs are sometimes of an icy coldness. The pulse is small, hard, frequent, and

* This author has written a treatise expressly on poisoning by Nitric Acid; in which fifty-six cases are given; twenty-five of which were never before recorded.

occasionally tremulous. Anxiety, constant agitation, contortions, excessive thirst, and a painful sensation, every time the patient swallows the smallest quantity of drink, accompany these. The degree of pain varies, being sometimes excruciating, while at others it amounts only to gripes. There frequently occurs also a peculiar state of calmness, which our author accounts for either as the result of moral constraint, (presuming of course upon the resolute state of mind in a determined suicide) or of the high degree of internal disorganization, which gives an illusory appearance of remission of symptoms—an occurrence well understood where mortification in those parts supervenes to active inflammation. The catalogue of symptoms is completed by tenesmus and obstinate constipation, a desire but no power of voiding urine; alteration of countenance; the interior of the mouth and fauces becoming of a dull white colour; the surface of the tongue very white, or of an orange hue; and, where the patient survives under these symptoms for three or four days, the mucous membrane detaches partially in the pharynx, and impedes respiration and deglutition. Yellow spots about the lips, chin, fingers, and other parts have their particular signification. Tartra concludes that the pain is increased in the inverse ratio of the quantity of acid swallowed; as a small portion injures the branches of the nerves in part only, and greatly irritates them; while by a large quantity, their texture is quickly destroyed

altogether, and along with it their sensibility. This idea, and that of the remission of pain, seem mutually illustrative of each other—this last being a fatal harbinger.

Orfila observes that when persons die shortly after swallowing this acid, the following appearances will be found on dissection.

An orange coloured mark about the edge of the lips, the part discoloured being easily detached: the internal membrane of the mouth either white, or of a citron colour; the teeth generally loose, and tinged with yellow; the mucous membrane of the fauces and pharynx inflamed; a coating of yellow on the internal surface of the œsophagus, greasy to the touch, and apparently formed of concrete albumen; inflammation of the stomach, more or less extensive, particularly about the pylorus and commencement of the duodenum; the coats of these viscera marked with sloughs, and plexus of vessels apparently multiplied and dilated with black coagulated blood. The coats themselves appear as if worn thin, and are readily lacerated. The interior surface of the viscera is covered with a green-yellow substance of the consistence of paste; while the folds of the stomach are of a brown colour and mucilaginous consistence. The pylorus is much contracted; the coats of the continuation of the duodenum, and of the jejunum are spotted with yellow matter, inclining to green; these appearances becoming more and more faint, as the distance from

the stomach increases. He describes the peritoneum as being thickened, and of a dirty red colour, covered with albuminous concretions, uniting the viscera together by numerous adhesions. The stomach is sometimes greatly distended, though when perforated, it is reduced to very small bulk, and a copious effusion of yellow flaky matter takes place into the cavity of the abdomen. Traces of inflammation, more or less considerable, extend to the other viscera of the abdominal cavity, and even to those of the thorax *.

Potass, Soda and *Barytes* form combinations with this acid, of very powerfully destructive properties. When these nitrates are evaporated, dried, and placed on burning charcoal, they explode, producing light, and accelerating heat. If mixed with sulphur, and thrown into a red hot crucible, they suddenly inflame, and exhibit a very vivid combustion. If Sulphuric Acid be poured upon a Nitrate in a solid form, Nitric Acid is evolved in white vapours.

United with vinegar, the Nitric Acid produces no visible effect, and loses none of its properties. We may therefore consider this as a medium, in which it might be administered for criminal purposes. If such a suspicion exists, let the mixture be saturated with pure potass, and evaporated to dryness; the product being then treated with highly

* Toxicology, Vol. 1. page 352.

concentrated alcohol, (a menstruum that easily dissolves the Acetate of Potass and some other principles of the vinegar, while it does not act on the Nitrate of Potass, which forms part of the residue) Sulphuric Acid may be added to one portion of it, and another may be thrown on burning charcoal.

If Nitric Acid be added to Albumen, a white precipitate is immediately formed, which after a time becomes yellow. The presence of the Acid may here be detected by means of Potass dissolved in Alcohol. If this yellow mass be well washed, dried upon a filter, and boiled with a solution of pure Potass, the liquor will at once assume a rich red colour, and will furnish by evaporation a brown red mass, composed of animal matter, Nitrate of Potass, and the excess of the Alkali employed. This mass, heated with concentrated Alcohol, in a few minutes yields the animal matter and the Potass, a portion of the Nitrate of Potass remaining; and it is of importance to keep in mind that all animal matters with which Nitric Acid combines, act in the same manner.

Nitric Acid does not disturb solution of Gelatine. It coagulates milk, (producing yellow curds,) and also fluid blood. Added to bile, an abundant precipitate of yellow matter takes place, which, by the continued addition of Acid, becomes green, and if Acid be still added, of a brick-red.

Our duty, when called to investigate a case of poisoning by Nitric Acid, requires little explanation.

If we obtain any of the substance swallowed, we may scrape a portion of the first piece of copper that comes to hand into it; vapours of an orange colour and of a peculiar odour will be disengaged, and we shall have a blue Nitrate of Copper. Part of the fluid should also be saturated with Potass, evaporated to dryness, and the residue tried with fire, and Sulphuric Acid, as already shewn. If the Acid has been administered in wine, vinegar, tea, or any other common vehicle, an alkali (Potass for instance) should first be added, for the purpose of forming a nitrate, and part should then be boiled with copper filings, in order to disengage Nitrous Acid—readily recognizable in the form of gas.

The matter vomited also claims our attention—more exclusively if we can obtain no remains of what was swallowed; we should also give due attention to *the symptoms and history of the case:* and here I would observe that, although little comparative stress may appear to have been laid upon these in the foregoing details, they are of more or less importance in every case of poisoning, and must never be overlooked. In making use of the rejected contents of the stomach, we cannot rely much upon the circumstance of colour. Let the fluid part be passed through fine linen, and the proper tests be then applied for the detection of the Acid. If it be combined with albumen, or other animal matter, we may not perhaps find the Acid in the portion strained. We must then look for it

in the solid parts; and a portion of them, being put into a glass phial, is to be boiled for three quarters of an hour in a solution of pure Potass. The liquor thus treated will be of a reddish colour, and must be filtered and evaporated in a capsule of Porcelain. The mass thus obtained will consist nearly of Nitrate of Potass.

Mutatis mutandis,—these observations apply also to the examination of the body itself *post mortem*.

Muriatic Acid (I had almost said) has never come under observation as a poison, though from its known properties, there can be little doubt as to the consequences of introducing it into the system. It may be taken by mistake, and even by design, as well as other dangerous substances to which people have access; but the rarity of instances of this nature almost warrants us to pass them over. Orfila, however, records a marked and fatal instance of a person who was made to swallow about an ounce and a half of this Acid, in the Hotel Dieu, in a mistake for whey. To this work I must refer the reader for a satisfactory summary of what should be done in a similar instance; and also for information respecting the effects of some other Mineral Acids; fatal no doubt in their action when applied to the animal œconomy, but of which effects I presume there is no knowledge beyond that obtained from experiments on animals.

Alkalis.

Three substances have been long known in chemistry by the above term; and they have been classed together from certain common properties; although in their origin they belong to different kingdoms of nature. They are *Soda*, of the mineral kingdom; *Potass*, a product obtained from vegetables; and *Ammonia*, chiefly procured from animal substances. The arrangement, however, is very artificial; and the diffusion of these articles in every variety of combination through substances belonging to all the divisions of nature, makes it difficult to arrange them correctly.

Soda is rarely obtained pure; and in commerce and the ordinary œconomy of life, is unknown in that state. It commonly exists in the form of a Carbonate, or Sub-carbonate, and, as such, is not peculiarly injurious to the living animal œconomy. Of its more ordinary combinations with the Sulphuric and Muriatic Acids, it would be superfluous to speak.

Potass exists with difficulty in the pure state; for, exposed to the atmospheric air, it deliquesces, attracting moisture and Carbonic Acid. When deprived of this Acid, it is solid, of a white colour, and exceedingly caustic. *Lapis infernalis*, a preparation of Potass, known under the terms *Potassa fusa* and *Kali purum*, is a substance of caustic qualities, resembling those of the Nitrate of Silver.

It has never been administered as a poison; and its effects as such can be described only from the analogy of experiments. Some of the combinations of Potass have been used as poisons—of which I shall speak under the head of Neutral Salts.

Ammonia. — Cases of poisoning by this well known substance are recorded*; and as fluid Ammonia is an article in very common use, we may suppose that such an accident is not unlikely to occur. That it could be administered for the purpose of taking away life, or a sufficient quantity for that purpose be spontaneously swallowed, we cannot suppose, from the involuntary opposition which its acute pungency would excite. It is often given to the amount of a few drops highly diluted; and here, perhaps, ignorance or inattention, aided by insensibility on the part of the subject, might be the cause of alarming consequences. On the authority of Orfila and others, it would appear that Ammonia must be ranked, as to its effects, among the *Corrosive* poisons.

But there are two earthy substances which have been denominated Alkaline, from partaking of certain properties that characterize the Alkalis, which have some claim upon our attention. I mean *Lime,* and *Barytes.*

Lime, as it appears from experiments made upon animals, would, if introduced into the stomach,

* Orfila I. 378.

occasion death, *via* inflammation, but not acting so rapidly, or producing such extensive mischief as the Corrosive poisons. Lime in combination with Carbonic Acid is not to be ranked among poisons.

Barytes is an earthy substance, possessing certain properties resembling those of Lime; but is known, as well as several of its compounds, to be a most virulent poison, probably of the Corrosive class. We are not, however, acquainted with any case of poisoning by it, except those of experiment; and it is sufficient at present to enumerate it among the substances of the mineral kingdom, that *may* give occasion for investigation in the course of events.

Neutral Salts.

A class of mineral substances, composed of Acids and Alkalis, has obtained the name of Neutral Salts; and there is among them one which, if taken to a certain amount, is productive of serious and fatal consequences. It is the *Nitrate of Potass*, well known by the common term *Nitre*.

Nitrate of Potass is an article not only very common in the shops, and much used for various purposes; but liable to be mistaken for other substances. In its crystallized form, it has very frequently been used instead of the Sulphate of Soda; and when reduced to powder, it still more nearly resembles the Sulphate of Magnesia, or common Epsom Salt.

Orfila relates cases where persons have been car-

ried off by an ounce and a half of this substance, even where proper remedies were administered. I have seen instances in which an equal quantity, at least, produced no immediate uneasiness, nor opposed any difficulty in the way of relief; which, however, was promptly afforded.

It is arranged by Orfila among the Acrid poisons, and seems to have produced in the cases recorded by him a very high degree of inflammation in the stomach.

For the detection of this Salt, there is no instruction required, in addition to what has already been laid down on the subject of Nitric Acid.

Phosphorus is a substance highly destructive of the animal fibre; and if taken into the stomach, must be considered an Escharotic poison of the most virulent kind. The remarks as to the employment of Lunar Caustic in this way, are applicable here*.

Diamond, Enamel and Glass in powder, have (especially the first) been considered famous poisons. There are many mysterious tales on record in the history of secret poisoning, of the dire effects of these; but there is good reason to discountenance the belief of any injurious properties residing in them, beyond those connected with their mechanical irritation, or the consequences of their indigestibility.

* In Hooper's Medical Dictionary, cases of poisoning by Phosphorus are alluded to, under that article.

§ 2. *Vegetable Poisons.*

The vegetable kingdom of nature contains more individual poisons than all the rest together, and yet in point of importance in this respect, it falls short of the mineral kingdom. The difference arises from the comparative rarity with which cases of poisoning occur from vegetables; such events when they do happen, being for the most part connected with accident. Unless we go back to the tragic days of the ancients, in which poisonous drugs and deadly infusions appear to have been, as it were, articles of domestic œconomy, authentic cases of the wilful administration of vegetable poisons are not very numerous. There is also a difficulty in the way of suicides who would resort to vegetable poison. It is not so easy for a person unknown to procure a sufficient quantity for the purpose of self-destruction; and some of the articles require the trouble and delay of preparation, which, where a few grains of soluble mineral powder are employed, will not be necessary. The taste, colour, and other sensible qualities belonging to vegetables, being difficult to remove or conceal, also throw an obstacle in the way of criminal attempts on the life of others; and history warrants the conclusion, that the most of those who have died by vegetable poison, were, at the time, aware of the circumstance.

These sensible qualities too, afford the principal

means of detection; the tests so much insisted on with regard to mineral substances being almost inapplicable to the vegetable kingdom. Indeed, the utmost conclusion to which chemical processes will lead us in the investigation of substances with which plants may be in combination, is, that vegetable matter is present; or, could we go farther, and detect the precise elementary principle or principles of this vegetable matter, we must still rest satisfied with discovering them in a sort of generic state; as different plants, of very opposite effects on the animal œconomy, may possess some of the same principles.

The known elementary, or component principles of vegetables are few; and although the substances which act upon them are numerous, the new combinations into which they pass are not many. There are combinations of vegetable principles with other substances, both mineral and animal, which though we may detect, we cannot imitate, while we can actually produce by art many mineral substances that are found in nature.

We can make factitious oxides of metals in great variety; and we can separate again the oxygen from the metal; but when we have procured a tincture, or an infusion, an extract, or a gum resin, we cannot thence produce the poppy, the foxglove, or the laurel, or whatever plant may form the basis. Here organization opposes a barrier to our creative progress.

We must look to other circumstances therefore to

guide our researches in cases of poisoning by vegetables, and if these are rightly attended to, perhaps there may, in the majority of such cases, be not only less trouble, but even less ambiguity in the research. It is to be understood, however, that cases do, and will in all probability continue to occur, that will prevent the most accurate and experienced investigation from coming to a decisive conclusion.

A medical practitioner should be conversant with the external appearance and sensible qualities of every article of the Materia Medica, and particularly of the vegetables recognized by practical authorities as belonging to this department. He should not only know a plant in the stages of its growth, and its various parts, while they preserve their natural organized appearance, but even after they have passed through the hands of the Pharmacopolist, and are transformed to powder, tincture, extract, &c. as far as they possess criteria of distinction. Who would not blush at being unable by the circumstance of smell alone to distinguish between Laudanum and tincture of Digitalis; the extract of Cinchona and that of Opium? The illustration is capable of extension. The practitioner, who may be called to the aid of the coroner, should be acquainted with other peculiarities that characterize known poisons, than their effects on the animal system; as their appearance, colour, odour, and, if practicable and consistent with personal safety, their taste. This

remark I hold peculiarly applicable to plants. He should know the haunts of those that are indigenous, especially in the neighbourhood of his own residence; he should be no stranger to their flowers, leaves, stalks, and roots. If to this it be objected, that such acquaintance requires a share of attention incompatible with the claims of the other and more frequent calls on his professional exertions, and that people forget what they are not in the frequent habit of seeing, the answer is easy. These things must be studied some time or other; and if it be even conceded that they may afterwards be forgotten; who will not admit, that between sitting down *to refresh the memory* and to learn *de novo*, there can be no comparison in point of task? A book, or notes of reference, are more worthy of confidence than the best of memories; and if one merely knows where to find ready information, he knows a great deal. This the man who has even forgotten much, may be able to do with ease and rapidity; but he who has never learnt, will be miserably perplexed.

If, with the attention now enjoined, we keep in mind the following considerations, the difficulties in the way of deciding what vegetable poison has been taken, will lose some of their apparent magnitude.

1. The sensible properties of vegetables are not so readily destroyed, or in other words, vegetable preparations do not so readily form combinations in the alimentary canal, as minerals. This statement will be illustrated in the sequel.

2. There is a peculiarity in the character of symptoms induced by vegetable poisons, which though not met with in every case, is worthy of attention. The ancients judged by the symptoms only; and while there has been good reason to suppose that many instances of death have been placed to the account of poison which belonged to disease, it is unquestionably true that in cases of this sort, both general symptoms of suffering, and certain external appearances in the bodies of those poisoned, have been noticed by acute and accurate observers. To symptoms, however, it is proper in all cases to pay attention, even with a view to form an opinion as to the nature of the substance swallowed, although from the greater certainty of other tests in *mineral* poisons, I thought it less necessary when treating of them, to dwell upon the import of symptoms.

3. Cases of vegetable poisoning are said to be more susceptible of relief. Dr. Male observes that they are simpler in their effects. This arises from their remaining so long unchanged in the intestinal canal, and from their not acting chemically, and destroying organic texture, otherwise than through the medium of the inflammatory process, for which effect a certain space of time is necessary. It is evident that this peculiarity affords not only facility in the relief of suffering, but also for the purpose of detection; as where a person's life is saved by evacuating the contents of the stomach, we may be enabled to recognize the presence of the deleterious

article; while the same cause that simplifies its action on the living animal œconomy may favour its detection in the body after death.

4. I have already alluded to the difficulty of poisoning by vegetables without some trouble; and the hint that vegetable poisons must generally be given in medicinal preparations, on account of their strong sensible qualities, will have its use in helping to detection, although this of all modes of poisoning may be considered the most cunning.

Finally. It must be kept in mind, that although plants in general are endowed with the same qualities in all their parts, yet some portions of the same individual plant may be wholesome, and others noxious, or certain parts more vigorous than others; while many plants are poisonous in one state of existence or preparation, and not so in another.

In considering vegetable poisons individually, the most concise and perhaps the most convenient method will be to observe their toxicological arrangement, as was done in treating of the mineral poisons. I do not propose even to *enumerate* all the articles of this division that are known to act as poisons. I shall confine myself to such as come in the way of people in this country, or of those whose habits of life in other places are regulated according to the customs established among us.

There are three deadly *products* of the vegetable kingdom, viz. the Oxalic and Prussic Acids, and pure or Caustic Potass.

Of the last of these I have already sufficiently spoken. The second will fall to be considered when treating of the poisonous plant, which seems to depend upon it for the deleterious qualities, by which it is distinguished, viz. the *Lauro-Cerasus*—and therefore it may be most regular to begin the enumeration of vegetable poisons with the Oxalic Acid, as it is the only Corrosive poison of the vegetable kingdom, with the exception of Potass.

Oxalic Acid in common language is called Acid of Sugar. Of late it has crept into considerable use as an article of œconomy, and fatal accidents have been the consequence. It is kept in the form of small white crystals; and has been mistaken both for Epsom salt and for sugar. It is possessed of the acid properties in a very high degree, being extremely pungent to the taste, turning vegetable blues red, and disengaging Carbonic acid gas from calcareous earths. It is very soluble in water, readily precipitating Lime-water, and forming an Oxalate of Lime, soluble in Nitric Acid. Its affinity for lime is extremely powerful.

From the symptoms induced in those instances on record, where this deadly poison has been swallowed, we are warranted to conclude that it belongs to the Corrosive class. Inspections *post mortem* have shewn destruction of the coats of the stomach, in the same way as by other substances that act in this manner.

For detection, we must rely principally upon the readiness with which it combines with lime; and we shall in all probability be aided by obtaining some remains of the saline matter, and proving its acid properties; as also by tracing the history of the event, and learning from what source the poison has been obtained *.

There are no *plants* which are understood to exert the action of Corrosive or Escharotic poisons; and the character of Astringent poisons has been confined to the preparations of Lead alone. I pass therefore to the class of *Acrid Poisons,* which abounds with individuals of the vegetable kingdom.

Most of the articles of this class, which I shall have occasion to mention, belong to the list of *Medicamenta;* and poisonous effects induced by them have almost always been the consequence of ignorance or imprudence. All that need be done here is to notice the individual plant, relate what symptoms have been occasioned by the abuse of it, and thence deduce the means of detection.

The first I shall mention is *Hellebore.* Three plants, known under this name, have been received into medical practice. The first, or White Hellebore, the *Veratrum Album* of Botanists, the second

* The Medical journals, and other periodical publications have given many instances of poisoning by this article.

the black, or *Helleborus Niger*, and the third, or Stinking Hellebore, *Helleborus Fœtidus*. They have all been productive of mischief.

The *White Hellebore* is by Orfila said to be the Hellebore of the ancients. It is indigenous in Germany and Switzerland. The powder of the dried root has long been famed as an excellent sternutatory, and has been administered internally in maniacal cases; though when given in but small quantity, it has acted so violently as to induce convulsions and even death. It has an extremely nauseous, bitter, and acrid taste.

The *Fœtid Hellebore* is a native of England, growing in shady places. It flowers during the months of March and April. The leaves have been employed as a vermifuge; but in several instances, it is recorded that they have proved fatal. They have also an acrid nauseous taste, and a disagreeable smell, when fresh.

The *Black Hellebore*, however, is perhaps the most dangerous, as it grows in many of our gardens. The long fibres that are sent out from the roots are used in medicine, in the form of both tincture and extract. It is a powerful purgative. The taste resembles that of the preceding species; and it has likewise a nauseous smell.

Cases of the fatal use of these plants are not many. The experiments detailed by Professor Orfila, as made upon animals, shew how the human œconomy would be affected, if these poisons were

introduced into it; but at the same time we can hardly suppose that, with the exception of young children, a sufficient quantity of either to produce death, could inadvertently be swallowed; and for the purposes of criminal design they are articles not likely to be employed.

There is little occasion to apprehend fatal effects from the use of these plants in their natural state. It is with their pharmaceutical preparations that we may expect to have to do; and it is therefore of great consequence to be acquainted with the appearance, taste, odour, and therapeutic effects of these—a knowledge that every medical practitioner acquires so fully elsewhere, that to enter upon particular description is quite superfluous.

Colocynth and *Gamboge*. We are practically acquainted with these two substances, as officinal preparations only. The extract of the Bitter Apple, (the *Cucumis Colocynthis*) and, more rarely, the powder, are the forms in which we may expect to recognize the first; and the gum obtained from the *Stalagmitis Cambogioides*, is used in the art of drawing as well as in medicine. They both are strong drastic purgatives; and we can scarcely suppose them to act fatally, but when administered as Cathartics with temerity or ignorance. Colocynth (in officinal shape) has a very strong disagreeable odour, readily recognizable and distinguishable from other substances by those who are acquainted with it. Its taste is particularly nauseous and disagree-

able. Its deleterious action is referable to violent stimulus of the alimentary canal, inducing inflammation and its consequences. In this way both accident and imprudence have given rise to examples of its fatal effects. Orfila remarks that where it has acted fatally, the stomach and rectum have exhibited marks of inflammation, while the intermediate intestines have remained in their natural state; and he accounts for it by the rapidity with which this, and other poisons, that cause the same appearances, pass through this part of the canal; whereas they remain for some time in the stomach and rectum *.

The quantity required for fatal purposes, the nauseous taste, and other impediments to clandestine administration, discourage the idea of criminally employing this article. A case will be mentioned afterwards, in which it was taken for the purpose of procuring abortion.

Gamboge we know in Pharmacy as a gum-resin only. It is also a purgative, and can only be understood to act mischievously on the principle just applied to Colocynth. In respect to some of its properties, it is less distinctly marked. The taste and smell are so slight, as hardly to be taken into account. The circumstance of colour is the most prominent characteristic; and from experiments that have been made on animals, for the purpose

* Toxicology II. page 21, note.

of ascertaining the precise mode of its deleterious action on the living œconomy, this property seems to be maintained under the changes induced by passing through the alimentary canal; while inflammatory action on the coats of the stomach and intestines has been discovered on dissection: but how little reliance is to be placed on the mere circumstance of colour in the contents of these viscera, need not be repeated; nor is it necessary to say that *Gamboge* resembles in appearance substances that exist *naturally* in the primæ viæ, or may be introduced as articles of food. But as a poison it is hardly necessary to treat of it, so little chance is there of its ever coming under our observation in that character.

Scilla Maritima. I mention this medical plant, pharmaceutically known in this country by its root only, because accidents of a fatal nature have resulted from its improper use; and because it is unwarrantable to administer it but in very minute quantity. It acts, when given in an overdose, very powerfully on the stomach and intestines, producing violent vomiting, purging, hæmorrhage, inflammation, and death.

Colchicum Autumnale, or Meadow Saffron, long known to Physicians, is still used by the regular faculty as a diuretic and expectorant. Of late, however, it has been considered as an active, if not the characteristic, component, in several popular or empirical remedies, especially for the gout. It is

the subject of experiment in various complaints at present; and deleterious effects are recorded as having followed the use of remedies supposed to contain Colchicum, even when employed for the relief and cure of diseases with apparent success. In this way therefore it may be considered as an article of a poisonous nature, to which persons have easy access, and one which, as it procures relief from present suffering, there is great temptation to meddle with. This of itself would warrant its notice here; and as it grows in our fields, and has been fatal to animals, it is necessary to record it as an article, against which we should be on our guard. It would appear that its deleterious properties vary in point of strength, according to the season of the year, and that while at certain times it produces great disorder in the system, it may at others be swallowed to a pretty considerable extent without inconvenience.

A person near Tetbury in 1814, lost seven young cattle out of eighteen, by putting them into a pasture abounding with this plant. On opening their bodies, the report says their food was found clogged together in a crude and undigested mass, incapable of passing through the proper ducts *.

Aconitum Napellus, the Monk's Hood, is a well known plant, met with in many gardens. All the parts of it are poisonous, producing the symptoms characteristic of acrid poisons.

* Annual Register for 1814.

It is used in medicine, chiefly in the form of an inspissated juice, and occasionally the dried leaves themselves reduced to powder. Its taste is acrid, hot, and disagreeable, and upon chewing the *fresh* plant in the mouth, the deleterious effects are locally produced. The tongue swells, and becomes painful; but these symptoms are not caused by the *dried* plant. Mistakes have occurred with regard to this vegetable. Several allusions to fatal accidents are quoted by Orfila.

I shall leave the subject of acrid vegetable poisons, by merely recording the names of a few plants of common occurrence, and highly deleterious properties, referring the reader to works on Botany for their distinctive characters, and to writers on poisons, for what further information they may wish concerning them. In their effects on the human system, their shades of difference are not very well defined, and in the mode of detection the rule is so vague, and founded on so slippery a basis, viz. that of sensible properties, and the power of discerning these—that verbal details must at best be unsatisfactory and inadequate.

The *Œnanthe Crocata,* or Hemlock Dropwort, is particularly mentioned by Orfila, and several instances have occurred of its being fatally mistaken for Parsley. *Arum Maculatum,* or Wake Robin, is also very acrid, and though it has been used officinally, it has an acrid effect even on the hands, if much meddled with. Orfila quotes a fatal instance

of eating the leaves by mistake. The *Ranunculus Acer*, the common Butter Cup, so abundant on every grass plot, is an acrid poison, and so are several other species of Ranunculi.

But these, and many other vegetables known to possess similar deleterious powers, when applied to the living animal system, do not, as a class of poisons, amount to equal importance with those that are to follow. Their fatal effects can hardly be contemplated as occurring, except through accident, in the manner I have already endeavoured to explain; and where this is the fact, no unusual mystery will hang over the case—the patient not dying *instantly* will, in all probability, be able to give some account of the occurrence; and at once lead the practitioner to correct conclusions.

In most cases of poisonous vegetables gathered fresh, we may, upon learning the history of the event, come at once to the right conclusion, by examining the place whence the noxious article has been taken, and finding more of the same sort growing there.

Vegetable Poisons of the Narcotic Class.

With the exception of Azotic Gas, all the narcotic poisons enumerated by the author, whose toxicological classification I have adopted, belong to the vegetable kingdom: and while in number they come

far short of those just adverted to, they are of much greater importance, as they are more frequently met with, and are more capable of being connected with criminal design.

A general enumeration of the symptoms produced by narcotic poisons, has been already given; and I pass to those individual poisons of the class that more especially demand consideration.

The first I shall notice is *Opium*. This is a drug, which has been long known. It is one with whose *deleterious* properties at least, every body is sufficiently familiar; and one that has often been the agent for destroying life. In the various ways of homicide, suicide, and accident, it has, times without number, been the cause of death; and it is much to be feared that the frequency of the event has been rather increased than diminished of late.

Opium is the inspissated juice of the *Papaver Somniferum*, or common White Poppy; obtained by incisions in the head of the plant when it has reached a certain degree of maturity. In the state in which we generally meet with it, the description of Orfila is perfectly characteristic. "It is heavy, "compact, homogeneous, soft, and of a reddish brown "colour, with the outside slightly shining, opaque, "plastic, somewhat capable of adhering to the "fingers: its fracture presents a greenish or black-"ish tinge; its smell is strongly virulent and nau-

"seous; its taste acrid, bitter, and hot." To which may be added, that in the preparations commonly used, the qualities of taste and odour remain unchanged, and almost in full force. I decline going into the pharmaceutical history of Opium, it being of more consequence to advert to its action on the animal œconomy.

When Opium is administered in very small quantity, it is for the most part productive of stimulating effects; and if the quantity be increased, these are superseded or followed by others of an opposite nature, commonly called Narcotic or Sedative, the best example of which is the Somniferous state; in excessive quantity these are increased, to insensibility, coma, obscurity of pulse, soft breathing, incapability of being roused by stimuli, and death. But the quantity requisite to produce either or all of these consequences, must be considered *relative* merely. In no two cases can we be sure of a similar result from the employment of the same quantity. Peculiarities of constitution; the resistance of disease, and the habit of using this drug, produce a wonderful variety in its power and efficacy. In some individuals it fails to induce drowsiness, and instead of the ease that has been looked for, it aggravates watchfulness and disturbs both mind and body. Mania and some other complaints seem to be proof against any ill effects that a large quantity of Opium, in the usual sense of the expression,

should produce *. As to Opium eaters and Laudanum drinkers, we cannot assign any boundary to their extravagance, under temporary impunity; though in the end they suffer severely.

There has been much controversy among medical writers, not only about the mode in which Opium acts in moderate quantity, or in other words, medicinally, on the living animal system; but even when used as a poison. Orfila has concluded that when employed in strong doses, it should neither be ranked among Narcotics nor Stimulants, as it then exerts a *peculiar* action, which cannot be designated by any of the terms at present employed in the Materia Medica. To enter on the investigation here is neither practicable nor necessary. Every medical practitioner knows well, what quantity of Opium either in a solid or a liquid form will be necessary to produce the intended effect in ordinary cases; and as to peculiarities or exceptions to the general rule, it is not from them that we should argue.

Although the instances in which Opium has proved fatal to human life, have been very numerous, the accounts we have of the appearances *post mortem*, are by no means so satisfactory as could be

* In the History of the Royal Academy of Sciences for 1703, a case is given, where a woman, weary of a long dropsical complaint under which her husband had suffered, gave him fifteen or twenty grains of opium, which produced such copious evacuation by sweat and urine, that he recovered.

wished. Even those cases related by Orfila are defective in this respect. From experiments made upon animals which had swallowed fatal doses of Opium, the morbid appearances after death have been the following. No very marked alteration in the alimentary canal, though in one instance a whitish coat was found upon the mucous membrane of the stomach. The lungs, (as well as in others that were killed by introducing Opium by wounds on the surface) were marked by livid spots, and distended with blood. The appearance of the blood in the left ventricle of the heart was generally black and coagulated, though not uniformly so; and the superior portion of the pia mater appeared in one instance as if injected.

In the human subject, marks of inflammation have been found in the stomach; and discolorations, that by superficial observation might be construed into such. A man who was in a state of convalescence from a recent disorder, took a cathartic by order of his medical attendant, and soon afterwards suddenly died. It was supposed that he had been poisoned through some mistake of the apothecary. The body was opened, and the œsophagus and stomach were not only red, but here and there livid; in other words, apparently in a state of gangrene. At first these appearances were considered satisfactory evidence that the deceased had in reality been poisoned. The character of the Apothecary, however, was unimpeachable; and the Physician,

(who reports the case,) from further examination, became convinced that the person had died of his former complaint, in a state of insidious convalescence. It was at length ascertained that the deceased had been in the habit of using a strong infusion of the red poppy. A similar preparation was made and administered to a dog, and upon opening his body, a few days afterwards, the œsophagus and stomach presented the same appearances in respect of colour, which repeated washings were not able to remove *.

A case is recorded in the sixth vol. of the Transactions of the College of Physicians, of a woman who died by laudanum. In this instance the cellular tissue of the pia mater was found to contain water; and the stomach was stained of a red colour, deepest on the edges of the rugæ,—evidently from the Tincture of Cardamon that had been thrown in during unavailing attempts to preserve life. The *general* redness of the mucous membrane was produced by effusions of blood into the cellular tissue †.

On the detection of Opium, I can add little to what has been said generally on obtaining the remains of poisonous ingesta, observing the symptoms, examining the matter vomited, &c. or where

* Journal de Medicine, tom. VII.

† A case of poisoning by Opium is given in the foreign department of the London Medical Repository for Nov. 1820. Two drachms of solid Opium had been swallowed, and on dissection a general congestion of blood was found in the internal organs.

none of these aids are available, by learning, if possible, the history of the case. In fatal instances, we must dissect cautiously, and examine attentively the stomach and intestines, as well as their contents. It has been easy, for the most part, to distinguish the presence of Opium, whether solid or fluid. Its smell is peculiar and strong; and it is needless to say that with this we must be familiar.

The different preparations of this drug require no separate notice; unless respecting the Black Drop, a solution of Opium in vinegar, or malic acid. It is a medicine much recommended on account of its exemption from the bad effects of other preparations of Opium, given as an anodyne, and being of intense strength. As it appears, from very good authority, that the baneful action of Opium is more active when combined with acids, the superior advantages of this preparation may perhaps be questioned.

The next Narcotic poison I shall mention is the *Lauro-cerasus*, a very common plant, and one which merits particular attention. The ideas connected with *Laurel leaves*, form a remarkable contrast with those that are called up by the bare allusion to *Laurel water*, a term now of nearly equal import with that of Arsenic itself.

The poisonous properties of this plant seem to be particularly developed in the simple distilled water, and in the essential oil. From an early pe-

riod of the last century, the attention of medical practitioners had been directed to the deleterious properties of this plant; and a very tolerable account of the practical effects are given in a paper by Dr. Alston, published in the Philosophical Transactions of the Royal Society for 1731. We are there informed that the plant in its botanical character is not noxious. The leaves and fruit having both been tried, no ill consequences resulted from the use of the former, either boiled in milk, or steeped in spirits; on the contrary, they communicated an agreeable and rich flavour. Dr. Langrish also, who soon afterwards made a course of experiments on the Laurel, remarks that it had been a custom from time immemorial to boil a Laurel leaf in pap for infants that were troubled with wind, and that the good effects were proved to nurses by long experience. To this day leaves of Laurel garnish certain dishes at table; nor are we taught to be apprehensive of the consequences; although, as it yields so intense a poison, the propriety of the practice is more than questionable.

The leaves of this plant possess a very agreeable flavour, and it is to this seductive quality that most of the deplorable effects which have taken place are to be charged. A case is on record*, where a woman drank five spoonfuls of the distilled water, to prove her faith in it as an excellent cordial, and to

* Philos. Transact. anno 1731.

disprove an allegation that a person had died after taking a smaller quantity. The consequence was speedy death.

The aqua Lauro-cerasi is possessed of considerable medical properties; but from the fatal effects to which the officinal preparation of it gave rise, it was early expunged from the London Pharmacopœia, and till lately, if prepared, the purpose was liable to suspicion.

These properties, both medicinal and deleterious, have been ascertained to depend on the *Hydrocyanic* or *Prussic Acid,* which is contained in considerable proportion in the distilled water of the Laurel, and which has lately been introduced to the acquaintance of the medical world as a powerful article of cure in pulmonary complaints. How far it will preserve its reputation, remains to be seen.

It has been erroneously considered fatal, even when used externally *.

* The story of the death of Professor Scharinger from pouring Prussic acid on his naked arm, quoted by Orfila in an ambiguous manner, is unfounded. The Professor had been making experiments with the essential oil of Peach leaves, along with other persons who were in no way injured. In fact, he was seized with apoplexy while sitting in a coffee-house in the evening. The particulars are contained in a letter, inserted in the fourth volume of the London Medical Repository.

Some persons have, by way of experiment, taken the Prussic acid internally, without fatal consequences, but not altogether with impunity.

As it seems pretty well established that the poisonous properties of Laurel water depend upon this principle, we should perhaps make that the primary object of investigation; the distilled water of the Lauro-cerasus therefore may amount to little more than a diluted preparation of Prussic Acid.

Experiments have been made upon animals with this deleterious article in various ways. It has been given by deglutition, injected *per anum*, introduced into the circulating system, and conveyed into the lungs, mixed with atmospheric air. In all these forms it has produced the most violent convulsions, succeeded by stupor and death. Those who wish for the details, will find a good account of them in Orfila, as also the appearances exhibited on dissection*.

If a case of poisoning of this nature should occur, the detection will be more or less easy, according to our previous acquaintance with the properties of the poison.

The Prussic Acid, when concentrated, is a transparent colourless fluid, remarkable for its agreeable

* There are also two cases recorded in the London Medical Journal for 1790—viz. of a man and a woman, who by mistake swallowed two small spoonfuls, which occasioned instant death. The dissections are given with unusual minuteness. An allusion is here made to an observation of STRABO, that the *Lauro-cerasus produces a mode of death similar to that of epilepsy*; an observation well founded, and of the last importance to be kept in mind by the medical evidence.

smell, resembling that of the bay leaf, the blossom of the peach, and the bitter almond. Its taste (a questionable criterion) is acrid and stimulating. In its concentrated form, it is spontaneously crystallized, if poured even upon paper. But in this state we are not very likely to meet with it; and it will perhaps be more expedient if I recur to its existence in Laurel water, infusion of bitter almonds, &c.

In this form there is a remarkable instance on record of its attracting the attention of justice. It occurred in this country, in the year 1781, when a gentleman was tried, condemned and executed for poisoning a relation by Laurel water. The case is the well-known one of Captain Donellan, the details of whose trial are not more important from the elucidation of the effects of this poison, than from the strange display of professional testimony to which it gave occasion, and which proves beyond possibility of denial, the necessity of more attention being paid by medical practitioners to questions of this nature, than has even *since* that time been the custom *.

* Dr. Male, in a note to page 65 of the second edition of his Elements states, in so many words, that *it was neither proved that the deceased was poisoned, nor that any poison had existed.* Equally dissatisfied, perhaps, with the manner in which the professional testimony was given, the evidence of the eminent individual, upon which he seems to found this opinion, (as detailed in the fullest report upon record of this remarkable trial) has not led me to draw the same conclusion.

The only other poison of this class which I shall especially notice is the *Hyosciamus*, commonly termed Henbane. There are two varieties of this plant, the black and the white, both partaking of deleterious properties; but the latter is not so powerful as the former. The *Hyosciamus Niger* is a decided Narcotic, well known and extensively employed as such in the practice of physic. It has the reputation of producing that relief which is commonly sought from Opium, without the risk of those unpleasant consequences that frequently result from the employment of the latter. It may at all events be given with safety in a larger dose; and, as an anodyne, in a comparatively considerable quantity, without producing any perceptible effects whatever. The pharmaceutical preparations made use of are similar to those of Opium, extract and tincture.

Experiments have been made on animals with this substance; and the bodies of those killed thereby have been inspected. The appearances have not differed greatly from those discovered on dissecting such as had died by Opium.

Death has been repeatedly caused in the human subject by the imprudent use of Henbane. The root has been mistaken for parsnips, and it would appear that the taste is sweet and agreeable. In many instances, however, it has been taken without fatal effects, though not without alarming symptoms. It is to be presumed that a case of poisoning by Henbane will be but a rare occurrence, and it is

hardly to be supposed, from the known history of poisoning, that any peculiar mystery would envelope such an event.

Narcotico-Acrid Poisons.

All the poisons of this class are furnished by the vegetable kingdom. They are very numerous, and many are of the most formidable description; but as not a few are either the produce of countries extremely remote, or are never met with under the usual circumstances of civil œconomy, I shall notice but a very few individuals, by way of exemplification.

The action of this class consists, as the name imports, of a combination of the symptoms of the former and of that preceding. The merit of the title has been ascribed to Plenck. The association seems to be well founded; and is of considerable practical convenience, notwithstanding the objections urged by Orfila.

To this class belong those terrible individuals of the vegetable world, (happily strangers, except by report, in these climates) about which so many wondrous histories are on record. The *Upas* of Java—the *Ticunas* of America—and some others whose properties are not so satisfactorily ascertained. In this country we are exposed to the influence of several; of which I may quote the numerous indi-

viduals of the *Fungi* or Mushroom tribe ; the deadly *Nightshade, Hemlock*, the *Foxglove, Thorn Apple, Rue, Tobacco*, &c. It will be sufficient to confine ourselves to a few remarks upon these.

The *Atropa belladonna,* or deadly Nightshade, is a plant too familiar to require description, and too common for the safety of ignorant persons and children, whom the beautiful appearance of the berries has frequently tempted to a fatal indulgence. The whole of the plant however is poisonous.

The symptoms produced by it are sickness, anxiety, delirium, and coma ; attended with discolorations on the surface of the body, sweating, convulsive indications, and, occasionally, tenesmus. In the bodies of those that have been carried off, inflammation and ulcers have been found in the stomach, with lividity about the lungs and even the heart.

Although the effects of the berries are rapid enough, they do not seem to undergo a complete change in the stomach very readily. In a case recorded in the volume of the History of the French Academy, just alluded to, and which is quoted by Orfila, the berries of the belladonna, crushed (of course by mastication), and some seeds were discovered in the stomach.

Hemlock is the well-known name of two dangerous plants of the same family, viz. the *Umbelliferæ;*

though one seems to possess a poisonous property in a higher degree than the other. There is some confusion among authors as to the precise names belonging to these plants in Botany.

Conium Maculatum is the usual term, however, for the common Hemlock, which is used in medicine, and which is the milder plant of the two. It grows about our fields, hedges, and shady places; but always on land. *Cicuta* is a term also by which it is known, and which has led to frequent confusion between it and the *Cicuta Virosa* of Linnæus, a plant that is more virulent, and which grows with its roots immersed in water.

Hemlock was recognized as containing both a narcotic and an acrid principle many years ago; and as a poison, it has been known even from a remote period. In pharmacy we meet with the inspissated juice, which is much used in practice. The peculiar offensive smell of this plant and its preparations, which has been compared to that of a cat's urine, may help to discriminate between it and other articles that apparently resemble it in some of its properties.

It is to be presumed that Hemlock will hardly ever occur as a poison, except through mistake or ignorance. The fresh plant has frequently caused tragic events, and the officinal preparations are of course liable to misapplication. An account is quoted by Orfila, from a French Medical Journal, of a soldier who died in consequence of eating broth

in which Hemlock had been cooked. In a number of similar instances, it will be found that the mischief has been caused by ignorance in the selection of vegetables to enrich culinary preparations.

This observation almost naturally leads us to consider the mistakes that have arisen from the improper selection of Fungi or Mushrooms. That delicate and agreeable kind, in such request at our tables, is closely imitated in appearance by many possessed of deadly properties; and though marks by which to discriminate them are tolerably certain, and pretty generally known, we have abundant records of sickness and death from partaking of poisonous Champignons gathered for wholesome—even by those who were conversant with them. The poisonous effects too may reach us through other channels of culinary œconomy, and thus an event, which at one time may be palpably resolvable into its true cause, may at another be involved in mystery.

To enter at length upon the consideration of poisonous Mushrooms, would occupy a larger space than the limits of this work will allow, or than the view of the subject of poisoning which I profess to take, requires. For the purpose of detection, little more can possibly be wanted than a knowledge of the characters of wholesome and deleterious plants of this tribe. Such knowledge is better obtained by actual examination than it could possibly be by

written instructions. It has not unfrequently occurred that a large quantity of Mushrooms, considered wholesome, having been gathered and eaten, unpleasant circumstances have ensued from the undiscovered admixture of a very small proportion of a noxious kind.

Datura Stramonium, or the Thorn Apple, has repeatedly produced deleterious effects, and has even proved fatal. In Vol. V. of the Edinburgh Medical and Philosophical Commentaries, two cases are given by Dr. Fowler; and others are mentioned by Orfila.

I decline the specific consideration of other vegetable poisons belonging to this class. Since the publication of the excellent and copious work of Professor Orfila, of which I have almost unavoidably been led to make such use in the article of poisons, there has been but little occasion to take the subject under separate consideration. To it I refer the practitioner for information respecting many poisonous substances which I have passed over in silence, and for instruction respecting those circumstances connected with poisoning, that my business does not require me to introduce *.

* Since the above was put to press, I have received Orfila's lectures on poisons, (being part of his course of Medical Jurisprudence) in which he has somewhat altered his classification, without (in my humble opinion) improving it. The work is

There is a piece of information, however, given under the head of Camphor, that has been noticed with respect to other substances. Several poisonous articles, and among others Opium, have been considered more virulent in their effects when given by glyster, than when administered by the mouth. Orfila records the case of a person to whom Camphor had been administered in this way, and who quickly experienced not only considerable effects on his nervous system, but perceived the peculiar taste of Camphor in his throat. A similar instance is recorded in the Transactions of the French Academy, of a girl, to whom, in a state of debility, a glyster of Camphor and brandy was administered. She instantly had the taste of the brandy in her mouth, and became quite intoxicated. It would seem pretty well established also that Sir Thomas Overbury, whose singular case is alluded to in all the annals of the reign of James I. was at last carried off by a glyster containing Corrosive Sublimate, and which, according to the testimony of one of the evidences, produced *sixty stools, and a vomit.* In this instance, however, it is to be remarked, that the victim had been, for some time before, made to swallow poison in almost every article of food.

The vegetable kingdom of nature furnishes none of the last or *Septic* class of Poisons.

particularly valuable, on account of the plates of poisonous plants, seven of which give correct coloured representations of the Champignons.

§ 3. *Animal Poisons.*

Though this kingdom of nature abounds with objects destructive to human life, it affords but slender materials for consideration in a Medico-legal point of view. As the source of some of the most deplorable calamities that distress the human frame, it is to the practitioner an important field for study. It yields the principal means of our subsistence, accustomed as we are (more especially in this country) to feed profusely upon animal matter; and in every department of social œconomy, we are led to such intimacy with animals, that it behoves us to be well apprised of the danger of such intercourse, as well as of the means of avoiding or remedying that danger, when exposed to it. Besides, we are, from accidental circumstances, frequently assailed with casualties from animals, that cannot possibly belong to the establishments and appurtenances of our œconomy. Finally, the animal kingdom contributes to the stock of our remedies against disease; and in this way, in common with many substances already spoken of, we are exposed to the mischiefs of mistake and imprudence.

The consideration of animal poisons to the full extent which the subject admits, and indeed, (for the purposes of the healing art,) requires, would be an undertaking of considerable magnitude. It is ne-

cessary to be acquainted not only with the noxious influence which animated beings, and animal matter exert on animal life, but with the intricate variety of causes that produce these effects. The species of noxious animals, the times and circumstances under which their evil influence is ordinarily exerted—the organs in which the injurious properties of certain animals reside—and the changes, or peculiarities that render some individuals proper for food, and others of the same tribe hurtful; or by which the same animal, wholesome at one time, becomes dangerous at another; or one part of the same may be nutritious while another is poisonous—all these considerations, together with many others intimately connected with them, indicate a wide and interesting field for research.

The little that has been said is perhaps sufficient to shew the impossibility of attempting such a view of the subject here. It does not come within my plan to make the attempt. It can rarely indeed happen, that a person dies from the contact of animal matter, (whether by the attack of venomous, or morbid, or ferocious animals, or by partaking of unwholesome animal food) without a clue to the real history of the case being readily afforded; and it must be an event of much rarer occurrence, that a person is cut off in any of these ways by criminal design either on his own part or that of others. Such events, however, are not to be considered impossible. Not only are they within the bounds of that credibility which a knowledge of human affairs

must necessarily warrant, but, if we can rely upon what is recorded, such events have repeatedly taken place.

There are a few individual poisons of the animal kingdom that are connected with the ordinary affairs of life, and which require some attention. One in particular, admitted into the Materia Medica, and of considerable utility in the cure of several disorders, possesses powers of a very dangerous description, and is often, when moderately and even judiciously employed as a remedy, productive of inconvenience. It has been ranged among the Escharotic poisons—I mean the *Spanish Fly*.

This insect, known scientifically by the different names of *Cantharis*, *Melöe* and *Lytta Vesicatoria*, is familar in its external aspect to every person. In its entire state it is of an oblong body, nearly cylindrical, with two wings very conspicuous, forming an insect of considerable dimensions, and of a very brilliant appearance, the predominant hue being green.

Cantharides are imported into this country in the entire state, and are thus kept in the shops of the Apothecaries; but they are reduced to powder, before employed in the Pharmaceutical department; and whether in plaster, ointment, or tincture, their properties are the same—in the latter form only are they employed for internal use.

When reduced to powder, they exhibit a greenish colour, tinged with grey, abounding with points of

the brilliant hue that characterizes the insect when whole. This powder has a disagreeable acrid smell, if thrown on burning coals; and the usual phenomena attending the destruction of animal matter in this way, are produced; while the decomposition that is effected by the concentrated acids, furnishes some peculiarities of colour. It is sufficient to direct our attention to the tincture, which is perhaps the only way in which Cantharides can be employed for sinister purposes without immediate suspicion and discovery.

The tincture of Cantharides, prepared in the usual way—by macerating bruised flies in alcohol, consists of a spirituous solution of *some* of the constituent principles only of the insect. Certain others, not soluble in alcohol, have been detected in it; but all the vesicatory parts seem to yield to this menstruum. The tincture, when filtered, resembles in appearance several other tinctures, having a paler or deeper tinge of red, in proportion to the strength of the alcohol and the length of time employed in the preparation. The following is Orfila's account of the appearances produced by certain tests.

"The spirituous tincture of Cantharides (of the "shops) furnishes with water a white milky preci- "pitate, which is soluble in an excess of this fluid; "the solution, however, preserves a white tinge "slightly inclining to opal. The infusion of "tournesol slightly reddens it, and produces in it a "precipitate of a clear rose colour. The Prussiate "of Potass causes it to pass to a canary yellow,

" renders it turbid, and throws down in a few mo-
" ments, a white, and as it were, earthy precipitate,
" slightly inclining to yellow. The Hydro-sulphurets
" of Potass, Soda, and Ammonia precipitate the tinc-
" ture of Cantharides in great clots of a clear yellow
" colour. The solution of Sub-carbonate of Potass
" causes it to pass to a yellow; and produces in it
" in the course of a few seconds, a pulverulent pre-
" cipitate of a beautiful white colour. The Sul-
" phuric and Muriatic Acids, poured upon the tinc-
" ture of Cantharides, render it suddenly turbid,
" and cause it to pass to a canary yellow colour;
" the precipitate, when collected, is of a greenish
" yellow, and appears under the form of excessively
" small scales. The Nitric Acid causes in it a
" yellow precipitate, and at the end of twenty
" hours, there is observed to appear upon the sur-
" face of the fluid a reddish oily matter, the smell of
" which resembles that of fat treated by Nitric
" Acid. The infusion of tea produces in it a gru-
" mous precipitate in very great abundance, and of
" a yellowish white colour *."

The action of Cantharides, when applied to the living body, is highly stimulant, causing inflammation, which terminates according to the structure of the parts in which it may occur. When applied to the skin, the effect known by the term *blistering* ensues, if the application be continued for a sufficient length of time. This inflammation frequently goes on to suppuration. In other parts of the body,

* Toxicology, Vol. 1. p. 425.

however, gangrene has been occasioned by the application of Cantharides.

They have a strong influence upon the urinary organs. Suppression of the urinary secretion is by no means a rare occurrence under the ordinary application of a blister. Taken internally, the tincture of Cantharides is considered a useful remedy in some disorders of these organs. It requires, however, great caution in the management, as excess in the dose will lead to inconvenient and serious consequences.

From an unhappy and mistaken notion that this drug possesses stimulant powers of a peculiar nature, unprincipled persons have administered it with an unwarrantable intention; and some have foolishly resorted to it, of their own accord, for the same purpose. The consequences have in many instances been speedily fatal; and even where matters have not arrived at such a termination, the unfortunate individual has been rendered miserable for the remainder of his existence, or has undergone the most excruciating torments, followed up by terrible consequences, from the very circumstance of success in producing the intended effect.

Notwithstanding the discredit connected with such cases, they call for an exercise of duty on the part of the medical man. Persons poisoned by Cantharides, we must suppose either to have taken them for a purpose that may render it desirable to conceal the fact; or to have swallowed them inconsciously, through the mischievous interference of

others, whose interest it must be to keep secret an event that excites such attention. It is therefore necessary that we should be aware of the circumstances likely to facilitate detection in such a case.

Cantharides cannot be swallowed in substance, without consciousness on the part of the person who takes them. Professor Orfila gives the case of a young lady, who took about eight grains of the powder *: and Foderé records that of a female, who finding herself pregnant from illicit intercourse, swallowed half an ounce of the powder of Cantharides, together with an ounce of Epsom salt, in order to procure abortion. In this she succeeded, but under the most excruciating torments, which ended in the forfeit of her own life †. The taste, however, is so acrid, that in this way the subject must be *aware* that he has swallowed something unusual—and should it be administered in the form of a medicine, the detection would perhaps be rendered still more easy.

The following quotation from Foderé will sum up what remains to be said respecting Cantharides as a poison.

" Poisoning by Cantharides is especially charac-
" terized by their tendency to the urinary passages
" and organs of generation, where they produce an
" obstinate and very painful priapism. Besides
" scalding and priapism, they cause frightful colics,
" active inflammation of the stomach and intestines,

* Toxicology, Vol. I. p. 434.

† Medecine Legale, Tom. IV. § 1036.

" accompanied by erosion, delirium and violent " fever, under which the patient rapidly sinks, if " the dose of the poison has been considerable. " But if he does not perish at first, it ultimately ends " in marasmus and slow fever.

" As the powder of Cantharides always preserves " its green colour and lustre, and also for a long " time that acrid and nauseous odour which charac- " terizes it; it being also impossible to reduce it to " an extremely fine degree of pulverization, it is " easily detected among the substance vomited or " passed by stool, as well as in the folds of the " intestines, when the person has been carried off " quickly. In other cases the poison may have had " time to be withdrawn, and the *traces* of its action " only are to be found in the dead body *."

In the list of Acrid poisons prefixed to Orfila's work, we find mussels and other kinds of shell fish; but they are not again mentioned until the author comes to the last class of poisons, viz. the Septic. It is not of much importance to notice them at all here, for they can hardly be employed for criminal purposes. The fact, that certain kinds of shell fish, and mussels in particular, are occasionally deleterious, is sufficiently known to furnish the right clue, if investigation should be required. Various causes of this noxious quality in mussels have been assigned, none of which seem to be satisfactorily ascertained. If what Dr. Beune has alleged be

* Medecine Legale IV. § 891.

true, namely, that the spawn of the *Stella marina*, (an insect, which sometimes lodges in the mussel,) is so *caustic*, that when applied externally to the skin, itching and painful swellings are occasioned, perhaps there is as much reason to subscribe to his opinion as to any other *.

Of the *Septic Poisons*, all the articles enumerated, excepting a gaseous production, belong to the animal kingdom. They resolve themselves into the bites of venomous and rabid animals; the stings of insects; inoculation from the fluids of animals that have laboured under disease; and the ingestion of putrid animal substances.

The two former I shall pass over entirely. People are frequently killed by the bite of serpents, vipers, and rattle-snakes; but these are events so purely accidental, that though they prove fatal by exciting morbid action, they are no more allied to Medico-legal inquiry, than the case would be if the person were torn to pieces by wild beasts. If this remark does not exactly apply to Hydrophobia, it is because that deplorable event calls still less for judicial enquiry, except as a question of Medical Police. The story of Cleopatra and the asp is too much of an exception to a general course of facts, to require systematic consideration.

On the stings of insects there is nothing to be said, further than that they have often proved fatal; and it

* Memoires de l'Academie Imperiale à Bruxelles. 1778.

would occupy the space required for more important purposes, to enumerate even the various individuals that are capable of producing this effect. Where it happens it is always notorious enough.

If a person be found dead in a lone place, and has perished from such a cause, the question will be no sooner put than it will be satisfactorily answered: the bite of venomous animals generally leaves sufficient indications; and though it may happen that the body is not discovered until these have become confounded with the marks of decomposition, from the putrefactive process, we are not on that account to surmise any thing beyond what may be warranted by *probable* occurrences.

With the consequences of inoculation every medical practitioner is sufficiently familiar; and many who have handled the scalpel in the dissection of dead bodies, can speak of the symptoms from personal experience. There have been numerous instances of loss to our profession, through ardour in anatomical pursuits; and a certain train of symptoms often follows an accidental scratch, where there has been no reason to apprehend danger from the supposed previous state of the subject.

The Septic poisons, such as they have been designated in this general manner, are considered less dangerous, when taken into the alimentary canal, than when introduced into the circulating system. The poisonous secretion of serpents, &c. has been swallowed with impunity. The fourth kind of Septic

poisons, is an exception to this rule; viz. *Putrid* animal matter ingested into the alimentary canal. I confine myself to matter known to be in the putrid state. There are animals, as some kinds of fish, which, when perfectly fresh, produce very disagreeable symptoms; but these I pass over *.

"Corrupted meat, fish, and eggs," says Foderé, "are certainly poisonous to mankind, if through inadvertence, necessity, or extreme hunger, they are "swallowed. The vomiting, the fœtid rejections, and "the syncope, which manifest themselves as soon as "we have this horrible food in the stomach, point out "the danger we run, and the remedies that should be "applied †." He relates that several people during the siege of Mantua, who were shut up in the town, from eating the flesh of horses half putrid, were seized with dry gangrene of the extremities, and with scurvy. On the other hand, the fact is undeniable, that not only is it considered a luxury to eat certain kinds of animal food, under a high degree of decomposition, or very near approach thereto, but it has never been considered unwholesome;—on

* I am not aware that any account of the poisonous properties of the bear's liver has been transferred to medical works. The observation is recorded by Captain Scoresby. In commending the flesh of this animal as wholesome and agreeable food, he states that the liver is hurtful and even deleterious. Sailors who had inadvertently eaten of it, were almost always sick afterwards, and some actually died; while in others, the skin [cuticle] has peeled off their bodies. Account of the Arctic Regions, by W. Scoresby, Jun. Vol. I. p. 519.

† Med. Legale IV. § 835.

the contrary this description of food is more digestible than that of animals not long killed.

A case was tried at the assizes for the county of Somerset in 1819, respecting the point now under discussion. A cow having died of disease was thrown into the river Yeo, and several cattle that afterwards drank of the water died of a similar complaint. An action was brought against the owner of the cow that caused the nuisance, to recover the value of the other animals. In this the plaintiff was unsuccessful, the jury finding for the defendant. A medical gentleman who was examined on the occasion, gave it as his opinion that animal matter in a state of putrefaction will not communicate contagion—that the effluvia thrown off by contagious diseases are perfectly distinct from those produced by putrefaction; and he concluded, from the facts above alluded to, that highly putrid animal matter may be taken into the stomach with impunity.

Foderé admits that the rule is not absolute, and conceives that a certain degree of putrefaction only is hurtful, while the tendency to it is not. Although there may be stomachs capable of receiving even putridity itself without disorder, the practice is one much *safer* "in the breach than in the observance." I have no doubt that in the majority of cases, water in which animal matter has been macerated would be mischievous enough if taken into the stomach, and that meat in a state of downright putridity, if it did not act upon the body in

any other way would so affect the sensibility of most people as to produce all the consequences of real disorder *.

There is a horrible kind of death which seems to have escaped the notice of authors in general, and which I mention here because it has more relation to the observations just made than to any other topic that may fall to be discussed in the prosecution of this work. At the same time I am willing to allow the propriety of its classification among the poisons to be called in question. It is, however, a manner of death *directly* caused by the action of animals of the insect tribe. I allude to cases in which individuals (in the terms of a verdict given by a coroner's jury) have been "*eaten to death by maggots.*"

An apparent approach to this is perhaps familiar to every surgeon who has practised in warm climates, and has there been in the habit of seeing suppurating wounds and ulcers. The larvæ of the domestic fly frequently breed in these situations, and cases are recorded where they have *burrowed* deeper. Dr. Lempriere in his observations on the diseases of the army in Jamaica gives one of a lady in whose nose the ova of these insects had been deposited. The maggots finding their way through

* In Crantz's History of Greenland we are informed that in 1819, thirty-two persons died at Kangek, a missionary station, soon after eating the putrid brains of a Walrus.

the cribriform plate of the ethmoid bone into the brain, occasioned her death *.

Worms are not unfrequently extracted from the healthy body. The catastrophe however to which I now allude is of the most repugnant nature; the extreme of what we are familiar with to a less extent.

In the month of July 1809, a man was found near Finglas in Ireland, lying under the wall of a lime kiln, at an early hour in the evening, with his face on the ground, apparently dead. On turning him on his back to ascertain the real state of the case, it was discovered that he was yet alive, but under such appalling circumstances as make it a disgusting task to enter even on the description. On removing his coat, the whole surface of his body appeared to be a moving mass of worms. His face was considerably injured, as from a fall, or bruises; his eyes were dissolved, and their cavities, as well as those of the ears, nose, and mouth, were filled with a white living mass, from which such innumerable quantities of maggots were continually pouring out, that the scull seemed to be filled with nothing else. After some time he recovered strength enough to walk, and regained recollection and voice sufficient to tell who he was, where he lived, and how he had been brought into that situation. It

* See also Synopsis of Cutaneous Diseases by Dr. Bateman, article Prurigo.

appeared that as he was returning home upon a car the evening before, having drunk to excess, he fell off, and remained in a state of insensibility until he was discovered. He could neither account for the wounds in his head nor for his being so far from the road; but it appeared probable that he had received the contusion from the fall, and had insensibly crawled to the place where he lay.

It was conjectured that the state of the atmosphere (as to humidity and temperature) had brought on a solution of the solids in the bruised parts, already disposed to putrescency, and now in close contact with the moist earth. In these the eggs of innumerable insects being deposited, their generation proceeded with rapidity under circumstances so favorable.

Every attention was paid to the unfortunate individual; he was removed to shelter, the parts destroyed were washed with spirits and vinegar, and the loathsome objects removed, as far as was possible. Cordials were poured down his throat, but he swallowed with difficulty; and in a very short time spasms took place which prevented him from swallowing altogether. The putrescence advanced; in a short time he became insensible; and about noon the following day he died, in a state of total *putrisolution.*

In July 1812 an inquest was taken at Osbournby near Folkingham, Lincoln, on the body of a pauper, who had been in the habit of begging round the

country, and depositing what provisions he received, beyond the quantity necessary for present use, under his shirt, next to his skin! With a considerable portion of bread and *meat* stored in this manner, it was supposed that he had laid himself down to sleep—that the meat by the joint heat of the weather and of the man's body had become putrid and had been struck by flies (fly-blown,) and that the maggots consequently produced had not only fed upon the putrid meat, but had attacked the living substance of the unhappy man himself. When found, the quantity of *large maggots* was so enormous as to convince those who examined the body that the vital parts were invaded by them. It was on this occasion that the extraordinary terms quoted above were employed for the verdict *.

With these cases I shall conclude the details on Poisoning. They require no comment—every practitioner will make the proper use of them, in case of need. I pass over the division, observed by some authors, of *Gaseous Poisons*. What requires to be said of these substances, as destructive of human life, has been given under another head †.

With regard to the manner in which the subject of poisoning has been treated, I confess it to be defective, but in a great measure necessarily so. Exemplification, more than formal instruction, has

* These accounts are to be found in the most authentic periodicals of the time.

† See Asphyxia.

been my object; and the limits of this volume could not admit of more.

§ 4. *Occult Poisoning.*

When entering on the consideration of poisoning, I hinted that it is understood to have been a practice carried on in a systematic manner. The subject of secret poisoning is one of great curiosity, and would form an interesting topic of medical history. It can scarcely be admitted, however, among the practical discussions of the present day; for we can hardly believe in the existence of so execrable a science as that of shortening a person's life without suspicion, and to any given period. That there are substances, not commonly known, which if introduced into the system will infallibly destroy life, and that perhaps without exciting suspicion as to the administration of *poison,* must be allowed, but that these admit of such exquisite management, as tales of former times and of other countries pretend, I trust there is every reason to doubt.

In Italy, and in France until a very recent period, a great character seldom expired, but his death was considered to have been unfairly brought about; and if we may credit accounts which there seems little reason to doubt, there was no want of real occurrences of this kind, to give colour to such sur-

mises. The history of the Aqua Toffania, so called from the iniquitous female who gained her living by the manufacture and dispensation of this deadly poison, is considered authentic; and, though authors are not agreed as to the basis of the preparation, it seems well established that it seldom missed it's aim. Perhaps this arose from the circumstances under which it was administered; the person who took it not suspecting that he had swallowed poison, or, if he did, remedies coming too late to be of service. It is said of this article that it could be so regulated as to operate within a certain time*. Although secret poisoning was a practice of very ancient date, it perhaps never was known to prevail so much as during the seventeenth century. It was during that period that the *Aqua Toffania* and the *pulvis successionis*, with the various poisons of Brinvilliers and her accomplice seem almost to have thinned society. In 1659 it was observed at Rome that many young married women became widows, and that many husbands died who were known to have become disagreeable to their wives. Confession revealed to the clergy the knowledge of many persons who had been concerned in this crime. The government became alarmed, and, by a stratagem, discovered a club of young married women, under the presidency of an old female who pretended to the gift of prophecy, and had frequently foretold the

* Beckman's History of Inventions.

death of individuals—a prophecy that she no doubt took care should be accomplished *. Twenty years afterwards, upon the detection of the Marquise de Brinvilliers, a court was established in Paris for the express purpose of investigating such matters, and was designated *Chambre de Poisons*, or *Chambre Ardente* †.

There appears good reason to suppose that the Aqua Toffania was a solution of either Arsenic or Oxymuriate of mercury. According to the declaration of the Emperor Charles VI. to his physician Garelli, it was a solution of Crystallized Arsenic in Aqua Cymbalariæ ‡. If so, there can be no mystery connected with it; but it is asserted that it never betrayed itself by any particular action on the human body—a property incompatible with the known activity of Arsenical poisons. The *pulvis successionis* has been supposed to have been a preparation of Lead. We know that Lead will induce

* Beckman's History of Inventions. Vol. I.

† Ut supra.

‡ Gerarde considers the Cymbalaria to be the Pennywort, of which he describes two varieties, the wall-pennywort and the water. He blames the "ignorant apothecaries" for using the latter instead of the former, as extremely dangerous, and known to be destructive of animal life. Vide Herbal *in loco*. Mr. Gray, in his supplement to the Pharmacopœias, identifies it with the *ivy-leaved toad-flax*, the *Antirrhinum Cymbalaria* of Linnæus. He ascribes to the *Marsh Pennywort*, the *Hydrocotyle vulgaris*, aperitive properties, without any allusion to deleterious qualities.

a train of symptoms ending in death, the real cause of which may sometimes be overlooked. Others have described it as a preparation of Opium and Cantharides, and the Aqua Toffania has also been conjectured to be a preparation of the same articles: the fact seems to have been, that these adepts possessed more than one article of a deadly nature, and this indeed must have been necessary to avoid detection.

It was attempted to introduce this diabolical practice into this country about the time of James the First. But the detection, and consequent severity of the law, in the case of Sir Thomas Overbury, for whose torments and murder four persons were brought to the scaffold*, must have exerted a discouraging influence on the trade. Previous to this period, however, attempts had been made to take off persons in extraordinary ways. King John is said to have been poisoned in a wassail bowl, contaminated by matter extracted from a living toad; but this legend proves no more than that people had notions about secret poisoning. The story of anointing Queen Elizabeth's saddle and the Earl of Essex's chair, is sufficiently authenticated, but it would

* Two others, viz. the Earl and Countess of Somerset were likewise convicted, but pardoned. The trial of Sir T. Monson on the same charge, was not proceeded in, for reasons that do not clearly appear. Forman, the pretended conjuror, who was also concerned, died a natural death, in time to escape the gallows.

appear that the *artists* in this instance did not understand their business *.

Equally curious, and perhaps of more real importance, are some of the unusual methods by which poison is said to have been administered. If I have not spoken particularly of poisoned wounds, or the poisoning of weapons, it is not because there is any doubt of the existence of such a practice—the many experiments that have been made on animals with a view of ascertaining the powers and effects of poisonous substances, and the accidents that take place with regard to venomous reptiles, at once establish the practicability of the usage. It is not however one that we are likely to meet with, in the course of our experience among civilized nations. We read of many dexterous though unintelligible methods of Occult Poisoning, such as that of Parasapis, who poisoned one side of a knife, and ate with the other uninjured—of a woman who poisoned the figs on a tree which her husband was in the habit of gathering himself †—of *perfumed* boots, costing a prince his life—of poisoned gloves, tapers, &c.; and if we may credit Schenckius, in the literal sense of his account, in a certain other way sufficiently

* See the whole account in Miss Aikin's Memoirs of the Court of Queen Elizabeth, as well as a curious minute of council on the subject of precautions in behalf of her majesty.

† See Sir F. (afterwards Lord) Bacon's Speech at the bar on the trial of Lord Somerset, just alluded to.

fraught with deleterious and even fatal consequences, without making it an article of Toxicology *.

Upon the whole I presume it may be safely concluded, that as far as criminal practices are concerned, we have no reason to render our lives miserable from the dread of Occult Poisoning. Instances may, and probably do now and then occur, in which persons are cut off by deleterious agency, without knowledge of the fact; but I am persuaded that such events are either the consequence of ignorance or of inattention, or arise from accidents to which human affairs are unavoidably subject.

Having mentioned the name of Brinvilliers, a short account of this celebrated affair may throw some light on the subject of secret poisoning.

The Marquise de Brinvilliers, a French woman of rank, formed an intimacy with the Chevalier de Sainte Croix, who had been taught the art of compounding poisonous ingredients by an Italian, with whom he had associated during a temporary imprisonment. On his liberation, he imparted the knowledge he had acquired to his paramour; and they carried it into practice upon an extensive scale. She poisoned her two brothers through the medium

* Ladislas, or Lancelot, surnamed the Victorious and the Liberal, who succeeded to the contested throne of Naples in 1386, died at the age of thirty-eight in great pain. He is said to have been poisoned by the daughter of a physician, of whom he was passionately fond, and that *per concubitum*.

of a dish at table. She also prepared poisoned biscuits, to try the strength of which she distributed them herself to the poor at the Hotel Dieu. Her own maid was likewise the subject of her experiments. To her father she gave poisoned broth, which brought on symptoms characteristic of those induced by corrosive sublimate. Her brothers lingered during several months under much suffering, so that repeated doses must have been administered.

Sainte Croix having accidentally fallen a victim to his own infernal art, the whole affair was detected. On searching the premises where the poisonous articles were prepared, packets of corrosive sublimate were found—one of these, says the account from which I quote, weighed seventy six pounds! Sealed papers addressed to different individuals were discovered containing poison, and phials of clear liquid, at the bottom of which were sediments consisting of poisonous ingredients of various kinds.

Madame de Brinvilliers was consequently apprehended, convicted, and executed; and a manuscript in her own hand-writing was discovered, in which a most horrible detail of her crimes was recorded. Among others she confessed that she had suffered herself to be debauched at the age of seven—that she had wilfully set fire to a house—that she had committed all the crimes of which she was accused, besides many others of which she had never been suspected*.

* Causes Celebres, par Gayot de Pittaval.

CHAPTER II.

Suffocation.

This term embraces here a greater latitude of signification than is appropriated to it in its common acceptation. It is properly applicable to every variety of death from impeded respiration; and it will be seen that suffocation is the *ratio moriendi* in cases of *noxious inhalation, drowning, hanging, strangling,* and *smothering.*

Before entering, however, on the particular consideration of these varieties, it will be convenient to introduce a few observations applicable to them all.

1. Whatever may be the remote or exciting cause of Suffocation, death is immediately produced by impeded circulation of the blood; either when the person is exposed to another *ærial* medium than that of the respirable atmosphere, inducing noxious inhalation; or to a *denser* medium, which cannot be admitted by the organs of respiration; or where the person remains in the respirable medium, while mechanical impediments prevent its admission to the lungs. The first implies exposure to noxious gases, the second submersion in water, and the last all violent compressions of the trachea, &c. or closing the passages to the lungs.

2. Respiration prevented, in whatever way, very soon occasions death.

3. Respiration being interrupted, the passage of

the blood through the lungs is impeded, and consequently its transmission from the right to the left side of the heart, by which (as it yet continues to return to the heart from all parts of the system,) it is accumulated in the cavities of the right side, and as they are inadequate to the reception of the whole, the congestion extends to the neighbouring veins, the cavæ, the jugulars, and their ramifications, while the cavities of the left side of the heart, &c. are emptied.

4. It is clearly deducible, from this derangement in the course of the circulation of the blood, that the lungs, (where the damming up of the current takes place) must become turgid, and that if there is any part of their vascular system weaker than the rest, rupture and effusions may take place—that the vessels of the brain, whose distance from the centre of circulation is not great, will partake of the congestion, and that pressure on that organ, together with extravasations will also be induced: therefore apoplexy becomes an attendant on Suffocation.

Lastly—This *ratio moriendi* explains the principal morbid appearances to be looked for in the bodies of those who die by suffocation. Accordingly we find the lungs of a deep blue colour, with blood extravasated in the air vessels—the right auricle and ventricle of the heart replete with dark-coloured blood, and their immediate communications in the *venous* system, also more or less gorged;

darkness in the countenance, and lividity about the surface of the breast and other parts of the body; with turgescence and even rupture of the vessels of the brain. Such are a few general facts, which will be useful if kept in mind when we are considering the different varieties of suffocation, or are called to give an opinion in a case of death from that cause.

§ 1 *Noxious Inhalation.*

There are various gases now familiarly known to men of science, not only in their natural and chemical characters, but in their various effects upon the living organized body. Our present business is with their action on the organs of respiration. There is no one of them that can continue to be respired singly without derangement of the vital functions, and that would not in a very short time prove fatal. Hence they might, with propriety, be considered as poisons; and in fact they are treated of by many authors under that department of Forensic Medicine. I have already given a reason for passing over the poisons of the Gaseous kingdom; and in this place I purpose to treat but of one particular Gas; for as far as my researches have extended, it is the only one which persons have been exposed to through criminal interference, or under the imputation of such interference—I allude to the

Carbonic Acid. To kill a person by any other species of Gas would require a process of philosophical preparation and administration totally incompatible with our ideas of a criminal act.

Without stopping to enquire whence the Carbonic Acid Gas that is expelled by the lungs is derived, I shall take advantage of the notoriety of the fact, and merely observe that it is accumulated to a dangerous degree wherever a number of people are crowded together without the renewal of the atmospheric air; or, in other words, where there is no ventilation.

When Calcutta was surrendered to Shujah Dowla, June 20, 1756, one hundred and forty-six of our countrymen were thrust into the black hole, a place only eighteen feet by fourteen, where they remained from eight in the evening till the following morning; at which time twenty only were alive. The place had only two apertures through which air could be admitted, and these were barricadoed with iron bars *.

This was a case that came not within the reach of Forensic inquiry. It's counterpart however occurred a few years before in our own metropolis. In the month of July, 1742, twenty persons were

* The best account of this affair is in a Pamphlet first published in 1758, entitled "A Genuine Narrative of the deplorable deaths of the English Gentlemen and others who were suffocated in the black-hole in Fort William, &c. by J. Z. Holwell." Mr. Holwell was the chief of the party.

crammed into a part of St. Martin's round-house called the *hole*, during the night, several of whom died. The surgeons on that occasion gave it as their opinion, that when the doors and windows were shut, the place could not support twenty persons for three hours without danger of their lives. A trial took place at the Old Bailey in consequence, but the result I have searched for in vain. Death has repeatedly occurred by inhaling Carbonic Acid Gas through accident or imprudence.

Should such an investigation call for the evidence of professional men, they may expect to be examined as to the nature of the Gas, the usual causes of its accumulation, and perhaps respecting particular circumstances that rendered it impossible to avoid the accumulation in the instance in question. For information on these points I must refer to sources well known to all; and have but to remark, that in forming an opinion as to the cause of death in such instances, the history of the case will for the most part be satisfactory *.

§ 2. *Drowning.*

People are sometimes taken dead out of the water, under circumstances of great doubt, not only whether they were drowned by accident or design,

* See page 49.

by their own act or the criminal interference of others, but whether they were alive, or already dead, when submersed. Between these two latter cases it is more particularly our province to discriminate.

The truth (supposing of course that moral evidence of the fact is not to be had) can only be ascertained by a proper examination of the body; and our attention must of necessity be directed to two chief objects—the discovery of the usual marks of death by submersion in water; or such indications as may prove it to have been caused in some other way.

Many erroneous opinions have prevailed, even on the part of Physicians, as to the phenomena of death by drowning—some of which exist to this day among ignorant members of the profession. It was stoutly argued, not many years ago, that drowned persons died through being filled with water—that both the intestinal canal and the lungs were charged therewith—nay, statements have been given of instances in which this was found to be the case upon dissection! This notion gave rise, among other evils, to the preposterous and often fatal practice of suspending those taken out of the water by the heels; a practice not yet, perhaps, universally exploded.

Without recapitulating the arguments that have been brought against these notions, or reciting the experiments that have been made to establish their

fallacy, I shall shortly enumerate the ordinary appearances to be expected in the bodies of those who have really been drowned.

Externally, even after remaining for a short period only in the water, there will be cold, *general* paleness, though about the face there may occasionally be even a deeper hue than natural; the eyes frequently staring, and a frothy appearance about the mouth and nostrils.

On opening the body we shall find in the circulating system those appearances described as characteristic of death by *suffocation.* The blood collected about the right side of the heart, and in the adjoining vessels; congestions in the head, and perhaps extravasations, together with lividity of the lungs. On opening these, we may expect, for the most part, to discover a small quantity of water, very frothy, and probably coloured with blood. This is a phenomenon which authors seem by no means to have uniformly met with, or at least not always to have observed *.

Where water, however, does not pass in, we must consider it as a contingent event, and certainly not

* Plouquet—(Commentarius Medicus in processus Criminales, &c.—)admits the possibility of finding froth in the lungs in all cases of death by suffocation. Belloc declares that in cases where persons were unquestionably drowned, he has not met with it. He considers its presence or absence to depend upon the circumstance of the person inspiring or expiring when he falls into the water—either of which he thinks may be the case.

as the essential cause of death: and where found in its natural fluid state, which, in small quantity, has been occasionally discovered, we must conclude that it had passed in after death—for during life the epiglottis would resist the entrance of any beyond a very trifling portion, and the efforts to expire would cause it to mix with the air remaining in the lungs.

It is generally understood that the last act of every dying animal is *expiration,* though it can be no more than an attempt, under this particular mode of death. Of course this unavailing effort will occasion a counter impulse on the part of the external and denser fluid, which will press more powerfully on the epiglottis, in proportion to the height of its column; so that the deeper the water in which the person is drowned, (provided he sinks at once) there will be less facility afforded to the entrance of the fluid.

The presence of the frothy mucus, must be considered strong presumptive evidence that the deceased was drowned; though its absence may not be conclusive that he was dead before submersion.

As to water being introduced into the stomach, there need be no embarrassment. If found there, it is purely accidental, and may be introduced during the struggles of the person drowning. To consider it the cause of death, is absurd; and as it has sometimes been met with and sometimes not, it is possible that some of those persons found in

fresh water may have swallowed a portion previous to submersion *.

Nearly a hundred years ago, Senac drew a very intelligible illustration of the *ratio moriendi* in drowning, from the method of then using the torture at Paris, under which the subject occasionally died. The mouth being forcibly kept open with a wedge, and the nostrils closed, a great quantity of water was poured into the person's throat; by which the irritation of the trachea, in resisting the access of the unsuitable fluid, while respiration was prevented, caused faintings, convulsions, violent agi-

* The notable trial, (which took place at Hertford in 1699,) of Spencer Cowper, Esq. and others, for the alleged murder of Sarah Stout, by first strangling and then throwing her into a mill-stream, though it elicited opinions to which later experience prohibits assent, is highly instructive, and worthy the perusal of every medical man. With regard to the ingress of water, the medical faculty was marshalled as follows.

Drs. Coatsworth, Nailor, Burnet, and Woodhouse gave it as their opinions, that water is taken into the lungs and stomach. On the other hand, Drs. Sloane, Garth, and Morley rebutted the notion that this was necessary to, or the cause of, death in drowning. Dr. Crell also quoted from Ambrose Paré, (the earliest French writer on Medical Jurisprudence) that the certain sign of a person's being drowned was an appearance of froth about the mouth and nostrils; which was the case in this instance.

The professional men who opened the body were of opinion that she had not been drowned, because they found no water in her. See Cobbet's State Trials, Vol. XIII. for a detailed account of this singular case.

tation of the respiratory organs, rupture of the pulmonary vessels, spitting of blood, and death; but *very little water entered either into the lungs or the stomach* of these unfortunate people; in whom the usual lesions of parts, as in death by submersion, were found upon dissection *.

A good deal of discussion has also been maintained respecting the buoyancy of human bodies in the water; and facts have been adduced on this point of a very discrepant nature. On the trial just quoted, a sailor swore that in engagements at sea he had observed the bodies of the killed, when thrown overboard, continue to float; and others have declared that they always sink. The usage in funerals at sea of affixing weights to bodies consigned to the deep, has been urged for the fact of all *dead* bodies floating when thrown into the water; but the intention is to prevent them from rising afterwards.

The truth is that a person, whether dead or alive, when first thrown into the water, will sink, unless buoyed up by external aid; but after the process of putrefaction has occasioned the evolution of a sufficient portion of gaseous matter, to render the body specifically lighter than the water, it will rise to the surface; which is a phenomenon familiar enough to vulgar observation. If, however, from particular circumstances, the cavities of the body

* Histoire de l'Academie Royale des Sciences, 1725.

should be previously replete with air, it may be supposed that it will float at first. There may be some truth in the opinion, that the bodies of persons strangled will float more readily than others; and that deep water is more favourable for this than shallow—salt water than fresh, &c. but these and other adventitious circumstances are by no means of eminent importance *.

Where a body is found in the water, it may often be of the highest importance to ascertain how long it has lain there. There is no method by which this can be accurately done, except that of circumstantial calculation, which is not the province of the medical practitioner. It is of importance, however, to recollect, that the animal body, by lying under water, becomes converted into a fatty substance, termed adipocire, which in appearance resembles spermaceti; and although water in any situation will produce this change, running water has been found to do it more rapidly. In general, it takes

* The tragic story of Caracciolo, Admiral of the Neapolitan Navy, who was hanged by sentence of a court martial, affords an illustration on this point of a remarkable nature. The body was committed to the deep in the usual manner; and thirteen days afterwards, while the King was walking on the deck of Lord Nelson's ship, he suddenly exclaimed, with a yell of horror—"*Vien! Viene!*" The Admiral's corpse, breast-high, was seen floating towards the ship; the shot that had been attached to the feet for the purpose of sinking it, not being sufficiently heavy. See the story at large in the New Monthly Magazine for January, 1821.

from four to six weeks to effect this transformation *.

From what has been said, it will be seen that great difficulty need not occur in declaring whether a person has been submersed while alive, or thrown into the water after death. There is one case that might possibly happen—that of a person first dying by apoplexy, and then being thrown into water: but as there can hardly be imagined any motive that could lead to an event of this nature, it requires no consideration; and even if it should occur, I am inclined to think that there would still be some negative appearances about the organs of respiration, from which the truth might be elicited. Authors have laid stress upon a fluid state of the blood in those who have been drowned. This, if discovered, may have its use as a corroborative, but no farther, as we have been taught that the same appearance takes place in the bodies of those killed by lightning, and by certain poisons. Where dirt, sand, &c. are found under the nails, or any substance likely to have been grasped in the water is discovered in the hand, it will be a strong inducement to believe that the person died under water.

If the person has been thrown in after life was

* See an account of the discovery and experiments in this matter by Dr. Gibbs. Philosophical Transactions for 1794 and 5.

A very remarkable application of the fact is given in Dr. Male's Elements of Forensic Medicine, p. 192, 2d edit.

extinct, we must suppose (in a criminal case) that he has been killed by other means. When there are wounds, or bruises, careful examination will lead us to estimate their proper or probable degree of importance. We must ascertain their extent—in what organs they are situated, and what lesion they have caused. These, together with the want of appearances characteristic of bodies that have perished in the water, will enable us to give a proper opinion. It is necessary, however, to be apprised that in drowning, a person may receive very serious injuries, by coming in contact with hard and sharp bodies when falling, or even under water. A few years ago, a man who had leaped from each of the then three bridges into the Thames with impunity, undertook to repeat the exploit for a wager. Having jumped from London bridge, he sunk, and was drowned. When the body was found, it appeared that he had gone down with the arms in the horizontal instead of the perpendicular position, in consequence of which both of them were dislocated by the fall upon the water.

If a person has been first poisoned, and then thrown into the water, we may expect on opening the body to find such appearances as are detailed under the head of Poisons. If he has been previously strangled, a very ready means of detection (in combination with absence of the characteristic traces of drowning) will be furnished by marks and other appearances, of which I shall shortly speak.

Not so certain are the means of discriminating between the event of a person having been forced into the water by others, and that of having thrown himself in. There are situations in which there can be no clue to the truth, but the evidence of witnesses—such as when a person is suddenly thrown from a ship or out of a boat. In other cases, incidental circumstances may clear up the subject—as the marks of footsteps, &c. about the margin of the water; substances being found grasped in the hands of the deceased, that have been evidently laid hold of while making resistance*, &c. On the other hand, persons have been taken from the water under such circumstances that the act of suicide could hardly be questioned; to which more particular allusion will be made in the following section.

Except in the case of children, who have frequently been drowned under circumstances peculiarly and manifestly accidental, it must be difficult from physical appearances to come to a conclusion with respect to drowned persons in general, whether their death is the result of accident or design. The history of the individual, the nature of the place, and other particulars, must sway the decision, where

* In the case of Mr. Taylor, twenty years of age, who was murdered at Hornsey, in December, 1818, marks of footsteps, deep in the ground, were discovered near the New River, and on taking out the body, the hands were found clenched, and contained grass, which he had grasped from the side of the water.

more positive proofs are wanting; and upon these it is impossible here to enlarge.

It may be a question how long a person must be in the water before life be extinguished. This it may be difficult to decide; for some people, through swimming, or from adventitious circumstances, may remain much longer alive than others; but if the question relates to being *under* the water, we must admit but a very short time indeed; though where the object is the expediency of applying the means of resuscitation, a far longer period must be taken into account, than is necessary for the posthumous establishment of the fact that the person was drowned. Extraordinary stories are recorded on this subject, few of which would now be credited *.

§ 3. *Of Hanging.*

Though this is a very common mode of violent death, it is seldom that we hear of it as an act of homicide. The majority of cases in which we are called to assist investigation, belong to *suicide.* As, however, persons have been murdered even in this way, it ought to be noticed here.

* P. Zacchias, and other early writers, are full of staggering accounts. The reasonable conclusion is, that they did not themselves believe all that they thought it their business to record.

Hanging implies the suspension of a person by means of a cord or other ligature round the neck; whereby the usual circumstances of suffocation are induced, accompanied by some that are peculiar to this mode of taking away life.

These are, for the most part, a discoloration and impression upon the neck, made by the cord; lividity of the upper part of the body; distortion of countenance; swelling and projection of the eyes, while sometimes they are suffused with blood; the tongue is occasionally wounded by the convulsive motion of the jaws, and frequently thrust out of the mouth*. Sometimes the cartilages of the larynx are fractured; and the same occasionally occurs among the vertebræ of the neck, where the luxation is generally between the atlas and dentoides. This luxation chiefly takes place in heavy persons, or where they may have fallen from a height upon the end of the rope, or where attempts have been made to hasten death by increasing the weight of the body. So violent also is this sort of death, that fœces, urine, and semen, are often expelled. These, and whatever other marks may indicate death, by Hanging, there have been ample opportunities of

* This mark of hanging is said to be very fallacious, and to be produced only when the rope presses under the cricoid cartilage; when it presses above the thyroid gland the tongue will, on the contrary, be pushed back, owing to the compression of the Os Hyoides.

verifying in the bodies of criminals who have undergone the sentence of the law.

Some authors, (and among others Plouquet*,) consider pressure on the brain as the *ratio moriendi* in this sort of death. Death by suffocation, in whatever way, may be accompanied by apoplexy, as a remote link in the chain of phenomena.

Two questions call for solution here—1st. Was the person alive when suspended, or hung up after death? 2d. Did he hang himself, or was he hung by others?

First. Was the person suspended while yet alive, or had he been previously killed in some other way, and then placed in this situation to avert suspicion?

We may consider the appearance of the characteristic marks in the body, unattended with other derangements, as conclusive with regard to the prior part of the question. But perplexity may arise when these, or part of them, are found in combination with other signs of violent death. Where a body is found suspended, and none of the tokens of this species of death are discoverable, it may be safely assumed that the person was not alive when hung. We must then seek for a different cause of death. It may be poison—and this is to be sus-

* Præcipuæ hæc sanguinis accumulatio, et expansio systematis venosi obtinet in capite, tam externo quam interno, cum venæ jugulares impeditæ fuerint, &c. Commentarius, &c. sect. i. cap. 4. § 66.

pected where no marks of external violence are visible. What our duty is in such a case need not be repeated.

There may be wounds, or bruises; of the fatality of which we must judge from the circumstances already mentioned, in reference to bodies found in the water. It is, however, possible, that perplexity may arise here; for there have been instances where wounds have been inflicted while the person was actually suspended; and that even by his own hands. De Haen records the case of a suicide, who while hanging inflicted several wounds upon his face. These, however, we can hardly suppose to have been the real cause of death. In such a case, the extent of the wound, and the parts concerned, would point out the true cause of death. Wounds in the throat, to a certain extent, are not necessarily mortal.

Wounds may, in such cases, be accidental. Dr. Male supposes one in which a person by swinging himself off with violence, may break the rope, and wound himself by falling upon articles of furniture; yet afterwards hanging himself again *.

Where the person has been hanged alive, we may expect to find the discoloration caused by the rope, very distinct, and passing all round the neck, because the blood forced out of the vessels while yet

* Elements of Juridical Med. page 181.

in circulation, must be in greater quantity than it could be after circulation has ceased. Some discoloration, however, will take place even then, though to a less degree, and in an interrupted line. The perplexity most likely to arise will be in cases of homicide of this kind where the person is first strangled and then hung. Of strangling I shall presently speak; in the mean time it is necessary to observe, that if we discover two circles round the neck, the one lower and more discoloured than the other, with the marks of death by suffocation, such, perhaps, ought to be the conclusion. It will be strengthened by the absence of injury among the cervical vertebræ; but as some who have examined particularly into cases of this nature, deny that luxation takes place from mere suspension, without additional violence, and as we can hardly suppose a case of homicide by suspension, in which such violence will not be resorted to, the absence of luxation, combined with the *two* marks, will corroborate the conclusion that the deceased was first strangled and then hung.

Secondly. Is it a case of homicide or suicide? Was the person forcibly killed in this manner by others, or did he hang himself? Except in the instance of children, or of persons extremely feeble, such as the diseased, exhausted, or intoxicated, it is very difficult to hang an individual against his will, unless the situation be remote, and no in-

terruption likely to take place; or the assailants be numerous and powerful enough (as in the celebrated case of Porteus) to set all interference at defiance. Dexterity, dispatch, and apparatus of some kind, must be necessary in all cases. Let it be granted, however, that the thing has been done, and the body is afterwards discovered hanging, and quite dead. In addition to the intrinsic evidence from inspecting the state of the parts, the external circumstances must be taken into account. The character, situation, and previous state of mind, of the deceased; the place in which the body was found; and the attendant marks of robbery, together with other considerations, will assist the enquiries of justice. To these may be added the signs, or absence of signs, of scuffle and resistance; if in the open air, the state of the ground, and if in an apartment, that of the furniture, which may be supposed to be in confusion — (though cool and crafty murderers might be attentive to this circumstance)—and in all cases the state of the hands and dress of the deceased will probably indicate the fact of resistance—and *vice versa*.

People have been *accidentally* hung—for the most part through imprudence; as in the instance of the boy mentioned by Dr. Male *. This has frequently occurred among children, from ignorance of the danger of an amusement which, in remote

* Loco citato.

places, prevails among them, when the rare event of a public execution takes place. We can hardly ever suppose it to arise from *pure* accident; for people never have occasion to fasten one end of a rope round their necks, and the other to a fixed point, unless with some design. At the Canterbury Quarter Sessions, a man was sentenced to 14 days imprisonment, in January, 1820, for using improper correction, by suspending his children with a rope tied round their necks, and drawing the other end over a beam in the garret. Such an experiment might have proved fatal, and the case must then have gone hard with the imprudent father, however far his intention might have been from taking away their lives, or even doing them injury.

Attempts have been made to prevent criminals from paying the forfeit of their lives to justice, by securing them against the full effects of suspension. In what way this may have been done, I need not explain; but such attempts may be rendered completely abortive by the executive power, if suspicion be excited. Whether in any instance the project has actually succeeded, is perhaps scarcely to be ascertained. It is one, however, in which no professional man of character would chuse to be concerned. On the other hand, there seems good reason to believe that means have been successfully employed for the resuscitation of some who have apparently undergone the sentence of the law; but this is a point belonging rather to the curative art,

and more allied to criminal than legitimate deportment on the part of the medical practitioner.

§ 4. *Of Strangling.*

When this species of murder is performed by a ligature, the difference between it and the former consists only in the subject's not being suspended.

It has been a more common method of commiting murder than hanging; it may perhaps be admitted that it is a more violent kind of death, as greater force must be used in tightening the cord, than the mere weight of the body would afford. Hence the mark of the cord, or whatever ligature may be used, is in such cases extremely distinct.

Though the *ratio moriendi* in both cases may be considered the same, there are some differences, in point of lesion, which we may expect to meet with on examining the parts. The external aspect of the body will not be materially, nor is it necessarily different—the mark of the ligature of whatever nature it may be*, will generally form a complete *horizontal* circle of discoloration round the neck—the part of the neck at which this appearance will manifest itself may vary; but, if it be not at the upper

* It is of importance to keep in mind that other articles than ropes have been used for the purpose of strangling, as will be shewn.

part, there can be no question about hanging. The remark of Ambrose Paré as to hanging is applicable here. If the cord has been fixed after death, the mark will be of the same colour as that of the rest of the body, though it may happen that here and there a discoloration will appear. Still the difference will be manifest. The dislocation of the vertebræ is not to be expected, though there may be fracture of their processes, and in all probability injury to the cartilages of the larynx.

The same problems must be elucidated here as in those cases already discussed. Was the deceased really strangled, or was the rope fastened round his neck after he was dead? If a person has been first murdered in some other way, we can hardly suppose that assassins, (infatuated and bungling as, for the most part, they are in their attempts to embarrass investigation) would merely fasten a rope round the neck in order to make it appear that he had thus taken away his own life—it being the least likely mode of suicide; and if other violence, sufficient to cause death, had been previously used, the conclusion of the most ignorant and superficial observer must be, that no one could have strangled himself after having received such injuries. It is however possible that *after* a person has been strangled, injuries may be inflicted on the body, to conceal, or avert suspicion of the true manner in which he was killed. The remarkable case of Sir Edmundbury Godfrey, a Middlesex magistrate, who

was murdered in 1678, is a striking exemplification of this point. The manner of his death, as proved by accomplices, on the trial of Green, Berry, and Hill, was this. Having enticed him, under a false pretence, to a remote situation about Somerset-House, a man came behind him, twisted a handkerchief and threw it about his neck, when four of them threw him down and strangled him. Not entirely accomplishing their purpose in this way, the person who fixed the handkerchief twisted his neck round, using violence to the body with his knee. This took place on Saturday night. The body was concealed till the Wednesday night following, when about 12 o'clock it was carried away in a sedan-chair, and thrown into a ditch. They then passed his own sword through him, and laid his gloves and some other things on the bank, so as to excite belief that he had made away with himself. When the body was found, the end of the sword projected two hands-breadth beyond the back; but there was neither any blood about the place, nor did any follow when the sword was drawn out. The breast was discoloured and bruised, and the neck was so flexible that the chin could be turned from one shoulder to the other. His face during life had always been remarkably pale; but after death it became much suffused.

In 1688, a gentleman of the name of Stansfield was tried and found guilty at Edinburgh for the murder of his own father. Having strangled him,

he caused him to be thrown into water. The appearances about the body, however, were such, that both the faculty of physic and that of surgery gave it as their opinion that the deceased had been strangled and not drowned.

Frequent as such murders have been, instructive cases on record are few. The death of Dr. Clench, which took place in 1692, exhibits with what facility a person may be dispatched in this manner. He was strangled in a hackney-coach by two men, while driving about the streets of the city, without any knowledge of the transaction on the part of the coachman, who afterwards found him kneeling down, with his head on the seat, quite dead, and a handkerchief bound about his neck, in which was a piece of coal, placed just over the wind-pipe *.

Strangulation may be performed by the hand. The only difference here is that instead of a circle round the neck as in the case of the ligature, the discoloration will be partial; the bruises will be of an indistinct form, or the positive marks of fingers may be traced.

In the case of Sir John Dinely Goodere, who was murdered on board the Ruby ship of war in 1741, the surgeon's mate, who examined the body, swore that he found the marks of nails and fingers on the neck. This was fully corroborated; for another witness stated that, on looking into the

* State Trials, Vol. XII.

cabin while the murder was perpetrating, he had seen a hand on the neck of the deceased. An accomplice also confessed that they first strangled him with their hands, and then drew a rope tight about his neck *.

A very instructive, and what at first sight appears a very mysterious case, was tried in 1763 †. A man named Beddingfield was murdered, and the charge was laid against his wife and a man-servant. Both medical and other witnesses deposed to marks resembling those of fingers about the neck; but they

* State Trials; and also "Genuine Memoirs of the Life of Sir John Dinely Goodere, Bart." &c. by Samuel Foote.

† "Genuine Trial of Margery Beddingfield, and Richard Ringe, for petty treason and murder. Lond. 1763." The trial took place at Bury St. Edmunds, March 24th. It displays much incapacity on the part of the professional witnesses; and from the perusal of the trial (as recorded) one could hardly give his assent to the verdict that was returned. It is fairly to be presumed, however, that the report which I have seen is deficient, and that more conclusive circumstances were laid before the jury, than appear in that account. It is to be regretted that evidence, and especially that of professional men, is so frequently, I had almost said generally, recorded incorrectly, or at least imperfectly, and that the details of many interesting trials do not come to the knowledge of those to whom they might be of great importance. If it were possible to obtain access to the notes of learned judges, what an invaluable acquisition of practical knowledge might be gained to the important science of Forensic Medicine!

each gave a different account of the number: one surgeon said a thumb and *three* fingers, the other a thumb and *four* fingers; and another evidence who also saw the marks at the inquest, spoke of *two* only, "which looked as if the blood was set in the skin."

The defence was, that the deceased had fallen out of bed, and was found lying on the floor on his face with one hand round his neck.

If what has been said on death from internal morbid causes be referred to, it will appear admissible that a person in a fit, or in a state of extreme intoxication, falling accidentally, may get into such a helpless posture that his own hand, or some other hard body pressing on his throat would occasion death; or this may occur from other causes, while pressure on the neck, leaving marks, may be merely adventitious. The most unsatisfactory part of the case arose from the cavities of the body not having been inspected, a circumstance of itself enough to baffle the enquiries of justice. The prisoners were both found guilty, condemned, and executed; and there might have been room for unpleasant reflections, had not the man, after condemnation, confessed that he did strangle Beddingfield, having seized him with his left hand by the throat, when asleep, and that though the deceased struggled violently, and made some noise, he soon accomplished his purpose.

On opening the bodies of those who have been taken off by manual strangulation, the usual ap-

pearances of this kind of death may not seem so conclusive as in other cases ; from the circumstance, perhaps, of the person making continued resistance, and the functions of respiration and circulation going on in some measure for a longer period than where interrupted at once, as in the instance of drowning ; or the effectual application of a cord. In the case of a woman who had been strangled *per manum* by two men, Littre found the tympanum of the left ear lacerated, whence flowed about an ounce of blood * ; the vessels of the brain were unusually turgid, red blood was extravasated in the ventricles, and also on the base of the cranium—the lungs were distended and their membrane vascular. Not more than an ounce of blood however was contained in the right ventricle of the heart, and it was fluid and *frothy,* like that of the lungs †.

Strangulation can hardly ever be taken account of as an accidental occurrence ‡.

§ 5. *Of Smothering.*

This is a variety of suffocation on which there is comparatively little to be said. It is the mere closure

* Discharge of blood at the ears sometimes takes place in this kind of death, and also in hanging. It was observed by the spectators at the execution of Abel Hill, at Stafford, in 1820, to stain his cap.

† Memoires de l'Academie Royale, &c. 1704.

‡ Since this went to press a singular instance of accidental strangulation is reported to have occurred in Westminster.

or covering of the mouth and nostrils in whatever way, so as to prevent the transit of the air, and thereby induce suffocation. Except in children it is a very rare occurrence; among them, however, it is not only a common accident, but often perpetrated upon them as a crime.

The possibility of its occurring accidentally to adults must however be admitted, for persons in a state of intoxication, or great debility from disease, may get into such a position as to prevent the transit of air to the lungs, and being unable to extricate themselves may perish. It may also be resorted to with a criminal intent, but it will require so much force and dexterity to accomplish the death of an adult of but moderate powers of resistance in this manner that we must expect to hear of it very rarely.

Of smothering children in or soon after birth this is not the place to speak particularly; but when respiration has been performed for some time, and the child has maintained its existence by the action of its own organs, the event falls within the scope of the present observations.

The *ratio moriendi* in this instance requires no particular illustration. Death is the direct consequence of the passage of the blood through the lungs being prevented, no injury being inflicted on the organs of respiration by external violence. It often happens too from *overlaying* children, as it is called, that is, by a pillow, bolster, or bed-clothes being ac-

cidentally laid over the child's face in such a manner that its own struggles cannot disengage it, while either no one is at hand, or nobody is aware of the circumstance till too late.

Circumstantial evidence must be the principal, if not the only means of ascertaining whether the event has been produced by crime or by accident.

Several authors have noticed a mode of suicide resorted to by negroes—and a very independent one it certainly is—that of doubling back the tongue and swallowing it down into the fauces so low, as completely to choke the individual. Whether it is a manœuvre that none can perform but themselves I have not had the means of ascertaining; but it is one that seems to require no practice in order to arrive at perfection, for they can only perform it once, the first successful attempt proving fatal, as it would appear they cannot remedy the mischief. Analogous to this is suffocation by tumors, or adventitious pressure on the Larynx from the presence of extraneous bodies. Cynanche Tonsillaris, and hard substances stopping in the Œsophagus, have this way proved fatal.

There is an intelligible modification of smothering, and likely enough, amid the accidents of human life, to occur—where the Thorax is so pressed upon that the muscles of respiration cannot perform their office, and the individual actually perishes by suffo-

cation, though the passages to the lungs may be left perfectly free.

It is unnecessary to remind the reader that laborious breathing often takes place from the muscles of respiration partaking of great debility under which the whole system may labour. This for the most part takes place towards the termination of life in diseases that induce extreme weakness. Now, if the muscles of the Thorax are prevented from acting by any other cause, the effect must be the same: continued impediment will produce death in a very distressing manner. This has often happened to persons who have been partially buried among earth or ruins; and is amply illustrated in the exploded punishment of those prisoners who when arraigned at the bar of our tribunals refused to plead, or as it is technically termed, *were mute*. Their sentence was—to be laid on the back in some low dark room, without any manner of covering but for the privy parts, and as many weights to be placed on them as could be borne, and more, until they should answer, or die, &c. This unnecessary and cruel ordeal was abolished in the 13th year of the late king; and wilful mutes are now to be proceeded against as convicted felons.

It has just been remarked that Suffocation is produced by disease in or about the organs of respiration. The practitioner will do well to bear this in mind in making his inspection of bodies under suspicious circumstances. He may be asked—are there no diseases which might produce appearances similar

to those in the present instance? Did you discover no morbid appearances in these parts? Did you *search* for any? and might not some have existed, capable of producing these appearances, that escaped your observation? It is also to be considered, that a degree of violence may cause death even in this way in one person, that would be comparatively trifling in another, or in the same person, under certain circumstances, that would not injure him at other times*. The law looks indeed to the intent; but we must look to the physical relations of the matter. Besides, cases may occur in which the intent can be established only, or at least principally, from the effects produced, and the previous state of the parts in which these effects take place.

CHAPTER III.

Of Wounds and Bruises.

These two descriptions of injury have been generally treated of together by Medico-legal writers; and there would be some inconvenience in considering them separately. They are by far the most common means of violent and accidental death, and

* This consideration will be elucidated in the following chapter.

are extremely diversified in their characters and consequences.

A wound is commonly defined to be a recent solution of continuity in the soft parts, caused by extraneous hard bodies; and *for the most part* accompanied by hæmorrhage.

Wounds are divided according to their own characters—as *incised,* when inflicted by a cutting instrument—*punctured,* when made by a sharp-pointed one—*lacerated,* where the parts are *torn* rather than *cut* asunder—*contused,* when inflicted with a blunt instrument, and the parts contiguous are bruised—and *gun-shot* wounds.

A *Bruise,* or *Contusion,* is an injury inflicted by a blunt weapon, accompanied with pain, swelling, and discoloration in the soft parts, causing laceration of the minute vessels, the effusion of whose contents produces the discoloration.

Both these injuries will occasion serious and fatal consequences. But they are of more or less importance, according to the parts in which they are inflicted. This consideration will form the basis of the subdivision I shall follow in the detail. Previous to this, however, it will be advantageous to bring together a few general observations.

If we take into account the numerous bodies and various degrees of force, with which wounds may be inflicted, the difference of these in point of extent, and with regard to the parts in which they may be situated, their variety must surpass calculation.

Experience in the management of wounds in every part of the body has enabled the practitioner to form a tolerably accurate idea of the danger from the first. Some wounds are considered necessarily fatal—either from the importance of the organs which are concerned, as when they lie beyond the reach of art—or from the magnitude of the injury, producing extensive inflammation and other consequences affecting the general health—or they become fatal from adventitious circumstances, as that of no aid being procurable.

Some wounds prove fatal to certain individuals, that would cause little inconvenience to others—and so with bruises. Persons of certain habits of body run the risk of their lives from a trifling cut, that in others would heal up immediately, without even the simplest treatment; a blow in the groin may cause the death of a person who is ruptured, while one more severe would be immaterial to a person quite sound. Injuries may also be serious or even fatal to the same person at one time, though they might have been inflicted without danger at another. Much depends on debility—the existence of disease, &c.; and obscurity may arise in cases of a nature so complex as to render it difficult to decide upon the real cause of death.

We cannot always estimate, from appearances during life, the extent of the injury done; trifling wounds, and blows that leave no traces whatever, may be inflicted about the head or over other cavi-

ties of the body, and be productive of extensive and fatal, though hidden, mischief; and, extraordinary recoveries having taken place under circumstances of the most alarming nature, we should be on our guard against hazarding unnecessary or erroneous prognostics. The case is frequently influenced in a material degree by the manner in which it may have been treated professionally, fatal results having occurred, that were more strictly chargeable to the practitioner than to the person accused, the only difference between them being the question as to intention. On the other hand, after wounds have been healed up, and the marks of original injuries have disappeared, the person having to all appearance recovered perfectly—he has died in consequence of them at a subsequent period.

On this account, the consideration of injuries from wounds, &c. in a Medico-legal point of view, was formerly a matter of much more intricacy than it is now. A person inflicting violence upon another was held amenable for the consequences during a year and a day; a most inconvenient principle of responsibility, and one particularly calculated to create confusion. A person's death may be fairly traced to an injury, even though it may not take place for a much longer period than 366 days after that injury has been received; and on the other hand, one may die upon the receipt of a blow, and yet, that death has been thereby occasioned, may not only be very doubtful, but even manifestly

untrue. The law now looks to the intent—and where there has been a design to kill, or do some "grievous bodily harm," the crime is made out, though the design may have failed. Here, however, the complexion of the case must be occasionally modified by considerations belonging to the province of the medical practitioner; as in the instance of a man who fractured the scull of a boy committing depredation in his grounds, by a blow with a stick. It was not only proved that the boy was actually guilty of the provocation, and that the man intended no more than chastisement; but that the stick was not of a size from which such mischief could have been anticipated; and, moreover, that the scull was thinner than ordinary.

The duties of the medical practitioner in cases of injury by wounds, bruises, and the like, may be summarily enumerated in the following manner.

In framing indictments, I believe it is not thought necessary to describe minutely the nature and extent of a wound, or the particular part of the body in which it may be inflicted; this, however, will be required of the surgeon when called to give his evidence after having examined the injury. It will be expected of him to declare in what particular part of the body it is situated, with a degree of precision that will call for some display of anatomical recollection—as, if about the head, over what bone, or even portion of a bone—if in or about the abdo-

men, in which of the nine regions into which it is technically divided—or if the examination has been *post mortem*, through what subjacent organs the lesion was traced, as viscera, vessels of importance, nerves, &c. The degree of injury done to each of these will be required; and how far the necessity existed, from the importance of parts involved in the mischief, for a fatal termination: any adventitious circumstance contributing to this must be noted and explained—as deranged habits in the constitution, unnatural structure or distribution of parts, &c.; and where a long period has elapsed between the infliction of the injury and the death of the person, it will be necessary to be cautious about giving a decided opinion. A knowledge of pathology will be indispensible, in order to assign the real or probable cause of derangements found in injured bodies; and of physiology, to distinguish morbid appearances from those of the healthy state; to know under what circumstances life is capable of being maintained, or when it must unavoidably be extinguished; and what different circumstances are understood to produce morbid appearances of a similar kind.

And even this is not all—the practitioner will be required to give information of the length, breadth, depth, figure, and direction of a wound; its character, whether incised, punctured, or lacerated, &c. and most probably to state with what sort of a weapon it appeared to have been inflicted. Let him be

careful in his dissection, that no aggravation be thereby added to the injury already inflicted; that no blunder or avoidable accident occur, and that the effects of careless or awkward dissection be not taken into account, or confounded with the real lesion. In laying open wounded or injured parts, they should be preserved as entirely in their primary state of derangement, as the necessity of sufficient dissection and due examination will allow.

In reading the evidence of some of our predecessors, we shall not be more ashamed of the ignorance and stupidity manifested on many occasions, than astonished at the satisfaction with which such blundering statements seem to have been received. In a case where the question was about an injury of the head; a practitioner came into court and swore that he had, on examination, found a large fissure in the cranium, which a better instructed member of the profession described to be the Sagittal Suture! The following account I insert, as an example of what should be avoided. It is the formal declaration of a surgeon called to give evidence on a trial for murder, as reported. "I was sent for to open the "body of the deceased, on the coroner's inquest. "I found in the sternum a small wound, which "penetrated into the breast. I found it necessary "to open it; and when I had opened the *breast,* I "found the cavity of the *belly* filled with blood, "and on examination of what *we* call the viscera,

"I found a wound in the *heart*, of about an inch "and a half, and it was impossible he should live "above two or three minutes."

The most perplexing occurrences of this nature are those where the effects of injuries are not immediately fatal; or rather, where a fatal termination is charged to the account of injuries inflicted a considerable time before; or where the effects of these are complicated with subsequent disease. The annals of judiciary enquiry are sufficiently fertile in such examples. One of the most recent as well as most interesting, is the memorable inquest held in 1819, at Oldham, on the death of John Lees, who was alleged to have died in consequence of injuries received several weeks before. The truth of this was denied by an eminent practitioner, who had *not* examined the body, and yet contradicted the conclusions drawn by another professional gentleman who had. Under such circumstances, the practitioner will have to exhibit a competent knowledge of the nature and progress of diseases, as well as of the import of vulnerary lesions; and, what in all probability he must find of the greatest use, an acquaintance with recorded facts of a similar nature. These his own reading must supply. The limits of this, or any other single work, necessarily prevent very copious illustration.

The questions to be elucidated, where a dead body is found with wounds or contusions, are, whe-

ther they have been inflicted during life; whether they were the cause of death; and if so, whether they are to be charged to the account of suicide or of homicide?

In discriminating whether a wound has been inflicted during life, or after death, the appearance or absence of inflammatory signs will alone be sufficient, where life has not been *suddenly* taken away. If deep wounds penetrate the cavities of the body, and prove fatal there, we must look for internal hæmorrhage; and in all cases of death from these injuries, there must be traces of the loss of blood. On the other hand, if a person has been first taken off in some other way, and afterwards wounded, (as in the case of Sir E. Godfrey) the want of hæmorrhage, internally, and of the *appearance* of it externally, will be very evident, and cannot well be mistaken.

Uncertainty has been caused in the case of contusions, from an alleged similarity produced in the skin after death, to what is caused by bruises in the living body, viz. discoloration. A distinction has therefore been made between these, the former being termed *Sugillation*, and the latter *Ecchymosis*.

Ecchymosis can occur in the living body only. It is a soft, dark-coloured swelling in the surface, produced by the effusion of blood into the cellular substance, from laceration of the small vessels, and, though considered as more particularly relating to

bruises, may accompany wounds. Ecchymosis is distinguished from *thrombus*, as being less circumscribed, and possessing the characteristics of a tumor in a less distinct degree.

Sugillation is also an effusion of blood into the cellular membrane—not from violent rupture of the vessels, but from intrinsic causes, such as the commencement of the putrefactive process—and often takes place in the living body. Its frequency in dead bodies is well known, and it is necessary to be aware of the distinction between these phenomena in cases of judiciary examination. Sugillations principally occur in depending parts of the body, and in the latter stages of disease, where pressure has taken place.

Foderé approves the distinction of Zacchias, that where the discoloration is the consequence of external violence, a congestion of thick *concrete* blood will be found; and adds, that in the spontaneous spot, or sugillation, the blood, upon incision, will be fluid—a necessary condition, where the extravasation takes place after death, or even previously, if caused by putridity. He enjoins also the necessity of taking into account, when estimating the importance of this sign, the time that has elapsed from the death of the person, or any fatal disease, or infirmities to which he may have been subject. He attaches some importance to the impressions made by instruments of violence in Ecchymosis, as evidence that it has been produced in the *living* body.

The classification of wounds according to their characters would be extremely inconvenient for the elucidation of the subject in detail. It would lead, among other embarrassments, to consider them distinctly from bruises, and violent injuries in general. I shall therefore treat of them according to the parts in which they may be situated; following the usual anatomical divisions of the frame of the human body.

§ 1. *Wounds, &c. of the Head.*

The consideration of these injuries occupies the most serious attention of the Surgeon; and if we take into account their general danger, the judgment required in their treatment, the anomalies and variety in their symptoms, and the uncertainty of their final issue, their great importance will at once appear. I shall consider them according to their extent, viz. wounds or bruises of the scalp alone; injuries affecting the bones of the cranium; and those extending to the parts within.

I. Mere incised wounds of the scalp are not necessarily even serious—not more so, at all events, than similar injuries done to other parts of the surface of the body; and the same remark is applicable to bruises. A complicated injury is frequently met with in the scalp, which produces but trifling and temporary inconvenience—I mean the well-known

ailment styled a *broken head*—inflicted for the most part by the blow of a stick, and causing probably several lacerated wounds, accompanied by contusion of the soft parts. This often yields to very simple treatment; and many persons of hapless notoriety pass through a fair duration of human life under a pretty close succession of these afflictions.

But even these, or injuries similar to them in their origin and aspect, may create troublesome and also produce fatal consequences. Wounds may appear to be strictly confined to the soft covering of the cranium, whose effects extend to the brain, without the possibility of our tracing any lesion in the intervening parts. To enter upon this at present however would be anticipating.

The scalp may be injured in several ways. A wound may extend simply through its substance; or it may be torn from its attachment to the cranium; or inflammation may extend beneath it, forming abscesses or sinuses difficult to heal, and extremely troublesome to the sufferer. The further consequences of fever, general derangement of health, and (ultimately) death, may be more or less clearly deducible from injury of the scalp, according to circumstances; and it is nearly impossible to furnish the practitioner with particular instructions for his guidance in estimating the real or most probable cause of death in every instance that may occur.

In estimating the danger of such injuries, or the probability of their having caused a person's death,

among other considerations to be carefully estimated, are the following.

1. *The nature of the injury.* A simple incised wound is less dangerous than a lacerated one, from which frequently ensue loss of substance by suppuration—exposure, and even exfoliation of bone, not originally implicated in the mischief—and impaired health. A punctured wound is often extremely alarming in its effects, though very trifling in its appearance. From its running under the scalp, parts of serious importance may be concerned, and it may give rise to a very troublesome train of symptoms. Should the injury be a contusion, it will be more or less dangerous, according to the degree of force with which it has been given; and it is of importance to ascertain this, if practicable, for violent blows, even without producing any external appearance, have been the cause of death. The scalp and the pericranium may be separated from the scull without any wound upon the surface; and here the mischief frequently extends to the parts within.

2. We must attend to *the state of the person's health, and constitution.* All kinds of violence are more dangerous in some people than in others. Inflammation in old persons, in bilious habits, in scrophulous and certain constitutions otherwise disposed to peculiar disease, is more dangerous than in the young, and the healthy structure.

3. *The degree of attention and skill that have been professionally paid* must have its share in deter-

mining our opinion. The neglect of precautionary measures, or practices pursued contrary to established experience, will materially influence the issue of the case.

And in these, as in all other cases of inquest as to the cause of death, we must weigh every circumstance in the state of the body, not only estimating the probable import of the injuries discovered, but ascertaining the presence or absence of other appearances that might have had an influence in producing death. A remarkable case is recorded, in which a woman received a blow on the head from a laundress's iron, and no fracture, or injury of the cranium was discoverable, though it was thereby laid bare. She was, (by advice of the celebrated Cheselden,) trepanned, and still no mark of injury about the cranium was detected. She went abroad, and followed her ordinary business for a fortnight afterwards; but at the end of 20 days from receiving the injury she died. On opening the head, they found a very large imposthume in the middle of the brain. This occasioned some perplexity about the real cause of death. The Surgeon who had managed the case was rather inclined to attribute the death to the blow; but would by no means deny that it might have proceeded from some inward cause. The deceased had been subject to frequent and severe head-aches before the accident occurred. Mr. Cheselden being examined on the trial, declared that he could not conceive how a blow should

be the cause of death, where there was no extravasation, and the person could go about for a fortnight afterwards. His allowing, however, that similar appearances were sometimes found in the brain of persons subject to head-ache, was of more importance to the prisoner.

II. Where the cranium is involved. The nature of injuries to which the cranium is exposed admits of distinction. The primary division is into *fissure* and *fracture,* the former meaning no more than a simple division of substance, without separation as to contact—comparable, perhaps, to a mere crack in a vessel of earthenware—the latter always implying recession of its edges; and this again separable into cases where the parts remain *in situ,* and those where portions of the bone are moved; in other words, into fractures without depression, and fractures with.

A simple fracture, by which is meant no more than the solution of continuity confined to the bony substance, without displacement, or injury to neighbouring parts, is not necessarily an event of great importance. In so simple an occurrence, we can hardly suppose bad consequences to ensue, or any particular treatment to be required; what is necessary to be performed in other cases of division of bony structure, viz. to place and preserve the fractured parts in juxta-position, is here performed by their natural situation; and the healing process would go on without requiring surgical aid. In

fact, if there were no external wound, indicating injury of the cranium, the existence of a fissure might never be discovered; and from the absence of those symptoms that are commonly connected with fracture of the scull, but really arise from the injury extending to neighbouring parts, might not even be suspected.

Simple cases like these, however, are comparatively rare. The term fracture of the scull, is almost considered a death-warrant. Persons who experience this injury, for the most part, undergo a train of severe symptoms, and frequently perish in spite of the most attentive and judicious treatment. This arises from lesions of parts *within* the cranium—the next set of injuries to be considered.

III. Injuries to parts within the cranium. The soft contents of the cranium being in close connection with its inner surface, any violence occasioning a displacement in the bones, must necessarily act upon these. Accordingly, where the fracture is so serious as to cause a separation in the bone, or to depress a portion of it, the Dura Mater is more or less involved, and in cases of great violence the brain itself.

In all systems of surgery, injuries of the head are so amply discussed in their different bearings, that an attentive perusal of the best authors will throw much light even upon that point of view in which it is our more particular business to consider them. I shall therefore say but little on the estimate

we are to form of the complicated cases now alluded to.

Injuries done to the brain may consist either in pressure, or in wounds. Pressure may be occasioned by a portion of the scull, by extraneous bodies, and by extravasation of blood, effusion of serum, or the formation of purulent matter, in its membranes, cavities, or substance.

We cannot ascertain the precise degree of injury sustained by the contents of the cranium from the external wound; nor does it follow that the more extensive the lesion, the more certain the danger. We know little of the œconomy of the brain; and though injuries to that important organ are generally of the most dangerous cast, surprising recoveries have taken place. The lodgment of a small quantity of blood, or purulent matter on its surface may produce the most alarming symptoms, and even terminate in death; while on the other hand, large portions of the brain itself have been separated, and recovery has taken place notwithstanding.

As it is of the last moment in cases of injury to the head, to obviate inflammation, and its consequences, so perhaps in some instances of violence, not immediately attended with the characteristic symptoms, the ultimate risk may be greater, from the very circumstance of no alarm having been excited until inflammation has actually made some progress; and when the existence of extravasation

or suppuration is suspected, all remedies may be employed in vain.

In such complicated cases, the degree of violence inflicted, the part in which it is received, and frequently the immediate symptoms, will enable us to form a probable opinion as to the result; and where death ensues, the extent of lesion discovered will demonstrate how far that event has depended on the injury.

Sometimes, however, violent blows are received upon the head, without causing any apparent wound, or leaving any visible marks of injury. A remarkable instance of this kind is reported in the History of the Royal Academy of Sciences of Paris. A stout young criminal, condemned to be broken on the wheel, ran, head-foremost, against the wall of his dungeon, with his hands behind him, and instantly fell dead. On opening the head, not the slightest appearance of injury was discoverable either in the scull, brain, cerebellum, or spinal marrow—except a very minute separation in the squamous suture, which could not account for so sudden a death. The substance of the brain was unusually firm.

By concussion, or commotion, of the brain, (if we have a familiar term applicable to its explanation,) is meant a violent and sudden shake. It is the frequent attendant of great injury offered to the head, in whatever way. It is denoted by insensibility at the time of receiving the violence; and varies extremely in degree. It is often effectually removed;

but it is also frequently succeeded by inflammation; and, though upon the whole, cases of concussion, the symptoms of which afterwards recede, are not so decidedly fatal as where they supervene to an accident which occasions no great uneasiness at the time, they are fraught with the most important consequences, and must not be overlooked.

Concussion of the brain may be produced where no violence is offered directly to the head, as by a fall from a height, upon the feet, or upon the breech. A case is given by Casaubon *, of a child that fell on its feet from the window of the first story of a house. It made no particular complaint at the time; but died at the end of three months, under symptoms of disease in the brain, in which, upon examination, an abcess was discovered.

The mysteriousness of concussion is considerably dispelled by a circumstance, which several authors have observed in such cases—that there is often a fissure in the substance of the brain, where no external symptoms of violence may be discoverable.

It must be evident from the imperfect remarks already hazarded, how important it will be that a practitioner, when called upon to assist the enquiries of justice, should ascertain the history of the case. This will be still more evident, if we consider in how many instances death is induced at distant periods from the infliction of violence on the head—

* Journal de Chirurgie de Dessault, tom. 1er.

and when perhaps the real cause might be overlooked. Passing by such cases as that mentioned by Ballard *, where the symptoms first appeared 29 years after the injury was received, (during which time the individual experienced temporary headaches only in one particular spot)—we are not deficient in well-established cases of death from injuries sustained a considerable time before. Mr. Charles Bell has recorded the case of a patient who died suddenly some weeks after having received an injury on the head. On dissection, a fracture was discovered in the base of the scull; and the *foramen magnum* having been thereby roughened, a sudden turn of the head had forced a spiculum of bone into the spinal marrow †. This was fairly to be considered the immediate cause of death, and is by no means without parallel. A gentleman in the neighbourhood of Bedford died suddenly several weeks after a fall from his horse—from the immediate effects of which he had recovered. On examining the head, a vessel was found to have given way, and to have caused extravasation in the base of the cranium. Dessault quotes an instance of a ball being lodged in the substance of the brain for four months, during which it would appear that the person was not incommoded, though at the end of that time he died convulsed.

It should never be forgotten that the injury done

* Notes to French Trans. of Metzger's Principles.

† Surgical Observations.

to the cranium is not always at the part where the violence is received; and therefore in a case where a person has sustained a blow at one part, while a fracture is discovered at a distance, we may pronounce without hesitation, that the one event has been occasioned by the other. The principal inference to be drawn from the cases just quoted (and there are many even more remarkable on record)—is, the impropriety of maintaining the general proposition, that the death of persons recovering from the *immediate* symptoms of violence, should never be ascribed to that violence. On the other hand, there are circumstances, under which the aberrations of morbid action, and peculiarities either of habit or of structure, may contribute to produce a fatal termination from violence, that might not *a priori* appear adequate to such effect, in the ordinary circumstances of human œconomy.

Certain injuries done to the face belong to this division of wounds and bruises. When they are confined to that part, the most serious consequences may be no more than deformity. The face is the seat of highly important organs. Those of five senses communicate there with the proper objects of their respective perceptions—and three of them there only. Mortal wounds have been inflicted, *through the face, on the contents of the cranium.* In several instances, individuals have been tried in this country, for killing by the accidental thrust of a cane through the orbit into the head. One of these was

Macklin the celebrated comedian. In like manner the Ethmoid bone may be crushed, and driven in upon the brain. A man was killed by a blow on the nose, the consequence of which in the interim was that the lower jaw could not be opened, and in the opinion of the surgeon, he died, from inanition—16 days after the accident. He was also unable to perform the usual natural evacuations. There was no fracture about the head, and the external wound had nearly healed up.

§ 2. *Wounds, &c. of the Neck.*

Wounds inflicted on certain organs about the neck are *necessarily* fatal—as on the carotid arteries, internal jugular veins, and spinal marrow; to which may be added the œsophagus. Assassination has, in this way, been frequent; and the common occurrence of suicide, by cutting the throat, is too well known.

The mere division of the trachea, however, is not necessarily fatal; and if it be not cut through, a tolerable recovery may ensue. To accomplish all the lesion necessary to insure death, in this manner, requires a strong hand, or great determination. Persons attempting their own lives in this way, frequently miss the carotid artery from cutting too high; yet even in these cases, very serious and fatal hæmorrhage may take place. In all instances of incisions made in the throat, the danger will be

modified by promptitude or delay in procuring assistance *.

Other fatal injuries may be done to the neck. I shall only specify that of dislocation. This may be the effect of accident, (as a fall); and is not a rare occurrence. It has however been done through criminal design. I have already quoted one case of this nature †; and about the same period at which that happened, a man was tried at the Dorset assizes, for silencing a scolding wife, (as he expressed it) by twisting her head round in her sleep. Wounds piercing the vertebræ, or passing between them, are fatal. A known method of murdering children, and, in some countries, of slaughtering cattle, is to pass a sharp pointed instrument between two of the upper cervical vertebræ.

§ 3. *Wounds, &c. of the Thorax.*

Wounds of the thorax are generally divided by practical writers into three classes. Those that are superficial—those that enter the cavity, but do not affect any of the contents—and those that injure the contents themselves.

The first of these I pass over entirely. The concurrence of other circumstances must be required

* There are some excellent observations on this subject in Cooper's Surgical Dictionary, article "Throat, wounds of;" and further remarks will be found in the next Section.

† That of Sir E. Godfrey.

to bring them under judiciary inquiry. Wounds penetrating the cavity, even without injuring any of the contents, may give rise to serious consequences. If they do not prove directly fatal, they may lay the foundation of much uneasiness, and of ultimate death. Inflammation of the pleura, and its consequences, hæmorrhage from an intercostal artery into the cavity of the thorax, and even the admission of external air, will oppress the breathing, and may induce a formidable train of injuries in spite of able treatment. The want, however, of proper assistance must greatly contribute to consequences immediately alarming, and it should therefore be very particularly enquired, what treatment the person has in such cases undergone. We can hardly suppose that protusion of the lungs can take place where surgical assistance has been obtained. In several instances where this has occurred, and the protruded portion of the lung was separated, the individuals are said to have recovered.

An injury done to the surface of the thorax, may, without a wound, cause inflammation of the pleura costalis, and this, particularly at a part where there may be adhesion between it and the pleura pulmonalis, might extend to a degree of importance not easily manageable, and ultimately perhaps occasioning death.

Another accident, connected with penetration into the cavity of the thorax, and very frequently occurring without any superficial wound, is fracture

of the ribs. This, though often so simple a case as to be overlooked, is sometimes attended with the severest consequences, by the fractured parts being driven in upon the lungs, exciting emphysema, hæmorrhage, and inflammation with its worst results.

This naturally leads us to injuries of the thorax reaching to the contents. This cavity contains the lungs, the heart, the largest blood vessels, the thoracic duct, the œsophagus, and some of the most important nerves—an injury inflicted upon any of which, is always of the most serious nature, and in several of them necessarily fatal.

If the great vessels are wounded, and their contents poured out, death is the inevitable consequence; and even in a case (which must border on the extreme verge of possibility), where an aneurism had previously existed in the vessel wounded, it can hardly be imagined that any perplexity would arise. The mere lesion is not all we should have to depend upon for detection—the progress of the wound in reaching that vessel would be traceable. If we suppose a case even where a wound does not penetrate into the cavity of the aorta, for instance, but having separated the fibres of the external coat only, induces an aneurism, which does not burst until after the patient may have recovered from the first effects or external injury, the knowledge of his having been wounded, and the direction of the cicatrix will help to throw light upon the subject.

Wounds of the heart, even of the slightest and most superficial kind, have been generally set down as fatal. That they are so, will not admit of denial, as those cases in which cicatrices have been found upon dissection, three and even five years after the wounds were known to have been inflicted, are too rare to overturn the general rule; and in others where the heart has been pierced even to its cavities, and the person has survived for several days, the occurrence is but a very remarkable deviation from the common course of events.

The heart cannot be wounded without the pericardium being concerned; though this membrane may be pierced where the injury does not extend to the heart itself. Wounds of the pericardium are said not to be necessarily mortal. Extravasation of blood, or effusion of lymph into its proper cavity, and also into that of the thorax, may be productive of fatal consequences. Richter relates a case where extravasation into the cavity of the pericardium proved fatal in twenty-four hours.

Wounds of the lungs are not necessarily fatal, though for the most part they are extremely dangerous. Immediate hæmorrhage may produce suffocation; extravasation into the thorax may also give rise to fatal consequences, and that with rapidity; or the foundation of an ulcerative process in the lung itself may be laid, which will ultimately terminate life. The patient, however, sometimes escapes with the loss of a lung, absorbed in this

manner, and no material inconvenience remaining, the extent of the injury may not be ascertained till after death.

The lungs may be seriously wounded by the fractured portion of a rib being driven into their substance. If we recollect that they lie in close contact with the *pleura costalis*, a fracture of this kind, attended with dislodgement, can hardly take place without injuring the lung. The lungs have also been considered liable to *concussion*, without any wound or lesion of structure; and on this principle, those cases have been explained, in which persons have been killed by cannon-shot, supposed not to have actually come in contact with the body, and which were formerly styled *wind contusions*. The explanation given of these events by Mr. Samuel Cooper*, is far more philosophical and satisfactory than that which charges it to the air.

If the thoracic duct be wounded, we must consider the case as necessarily fatal. It is beyond the reach of aid, and is so very important an organ, that though its lesion may not cause immediate death, yet through the diversion of its contents from the circulating system, and their extravasation into the cavity of the thorax, fatality is induced in a twofold manner.

The œsophagus too, within the thorax, being beyond the reach of art, (even did its structure admit

* Surgical Dictionary, art. *Gunshot Wounds*.

of surgical relief,) a wound in it must be deemed of the greatest consequence. Boerhaave has left an account of a case of this nature, which might be a source of perplexity, were the history of the event unknown. An admiral, in a severe fit of vomiting, ruptured the œsophagus quite across. Instances have also occurred of lacerations in this organ, to less extent, from the same cause.

The diaphragm, though one of the boundaries rather than belonging to the contents of the thorax, is frequently concerned in wounds penetrating this cavity; and injuries done to it have ever been considered of the most dangerous nature. We can hardly suppose a wound involving the diaphragm in which some other organ is not concerned. I have seen a case in which a sharp pointed weapon had passed through it; notwithstanding which the patient made a rapid and perfect recovery, to all appearance. At the end of about three months, he died from a strangulated hernia of the stomach, which had passed through the wound of the diaphragm into the thorax*. In this instance, however, the stomach, in all probability, by pressing against the wound, prevented those immediate effects, which, from the impossibility of our rendering surgical assistance, cannot be averted.

In most of those injuries of the thorax that reach to the contents of the cavity, we must consider that

* This case is recorded in the London Medical Repository for March, 1819.

a plurality of organs will be involved. The intimate connection of important nerves, also adds greatly to the magnitude of the injury; and upon the whole, there can be little danger of a practitioner who is acquainted with the anatomical structure and the physiological nature of thoracic organs, giving an erroneous opinion in a case of death after injury done to any of them.

§ 4. *Wounds, &c. of the Abdomen.*

Wounds confined to the parietes of the abdomen do not require any particular notice; but as every organ contained within this cavity is of high importance to the life, or well-being of the individual, and as it is so easily penetrated, injuries even trifling in appearance will be attended by the most serious consequences. The delicate texture and proneness to inflammation of the viscera of the abdomen, and of the membranes that are diffused through it, render any lesion inflicted upon them a matter of infinite moment; and the great proportionate extent of this part of the body, together with the weakness of its defences, exposes it in a particular manner to intrusion from sharp instruments, impelled with less force than might be requisite to penetrate the other cavities.

The first important part involved in wounds entering the abdominal cavity is the peritonæum; and this when wounded, or exposed to the irrita-

tion of extraneous substances, seldom escapes inflammation, to which also the texture of the alimentary canal is equally prone. In whatever way inflammation of these membranous organs may terminate, (with the exception of resolution) the danger is imminent; but the termination to which such inflammation is particularly liable, is the most formidable of all, viz. gangrene.

The danger from wounding any of the viscera within the abdomen arises both from the lesion of the organ itself involving derangement of structure and function, and from the effusion of its contents into the peritonæal cavity. In all these cases, neglect or delay in the application of remedies may fairly be considered fatal—the mere *vis medicatrix naturæ* being very rarely adequate to the rectification of such injuries.

Although in wounds of the abdomen, in which the alimentary canal is implicated, as the stomach, large or small intestines, we are to apprehend inflammation of the most formidable kind, and the worst of its terminations, it has happened that even after gangrene and separation of a portion of intestine has taken place, an adhesion has been formed, and the patient has survived.

A very common consequence of wounds in the parietes of the abdomen, is protrusion of the intestines, where these are not directly injured themselves. In such cases, death may result from this consequence, rather than from the necessary influ-

ence of the original wound. It is therefore requisite, before giving an opinion upon the import of such injuries, to ascertain what has been done in the way of relief, that the share of culpability may be duly apportioned, if any should belong to the practitioner. A case occurred in a regimental hospital in London, a good many years ago, of a man who was brought in, about nine in the evening, with a wound in the abdomen. About eleven next morning he was found with a great quantity of his bowels protruded, so as to hide the wound. Upon reducing these, the wound was discovered on the right of the navel, about an inch in length. He was then in great agony, and died in about an hour and a half afterwards. The court particularly enquired whether this man's life might not have been saved, had the intestines been replaced when he was first brought in—who was the surgeon that admitted him;—and other pointed questions were put, as to the probable results of proper practice, had it been resorted to in time. One surgeon stated, that if the wound had been enlarged immediately, and the intestine returned, (not having been wounded) it was more than probable that the patient might have done well.

On the other hand, where right treatment is pursued, the recoveries from wounds of this nature are occasionally surprising. Littre reported the case of a man who gave himself eighteen stabs in the abdomen with a knife; and though some penetrated no farther than

the parietes, others reached the contents. The symptoms were very severe; but by scrupulous care and attention he made a perfect recovery, which promised to be permanent. Seventeen months afterwards, however, he threw himself from a three pair of stairs window into the street, and was killed on the spot. On opening the body, all the wounds were found to be entirely healed, and all the cicatrices nearly level, excepting one which was not so level or firm as the rest. The cicatrices were traced into the intestines in various places, and consequent adhesions were found among these *.

Passing over the consequence of wounds in the great *vessels* that lie in the abdominal cavity, I may observe with regard to the solid or parenchymatous viscera, as the liver, spleen, and kidneys, that the same principles are applicable to wounds in them. They pour out their contents, and inflame; and though they are less disposed to gangrene, yet the consequences are not less dangerous. Persons have no doubt recovered from wounds of these; but such cases are of the most important nature. The various fluids which are extravasated by lesions in these organs, are irritating to the delicate membranous structure of the abdominal viscera, and whether it be blood, bile, chyle, fœces, or urine, that escapes among the intestines, the worst consequences are to be apprehended.

* Memoires de l'Acad. Royale, 1705.

The solid viscera are peculiarly liable to laceration where no wound is inflicted on the parietes of the abdomen. Such accidents are authenticated by the most eminent writers. Lacerations of the spleen and of the liver are not rare *. In a case that came within my own knowledge, the right kidney was torn in two transversely, by a kick from a horse. The person survived but twenty minutes.

Perplexity may arise, however, where there is question of previous disease, in cases of injury. A woman was tried at the Old Bailey in 1744, for killing her husband by violence inflicted on his groin. The surgeon deposed that on examining the deceased, he found he had an old inguinal hernia, upon which the blow had been given, and that, on opening the body after death, he discovered the gut to be mortified. Upon being asked what damage the blow might have caused to a sound man, he replied that it would not have hurt him. Some years ago, a very remarkable case occurred to a surgeon of my acquaintance, in one of the midland counties. In the course of an altercation between a man and his wife, the woman died, and a clamour was raised that the husband had murdered her. An inquest being held, a verdict was returned against him, and he stood his trial at the following assizes. He was there acquitted; for, to the best of my recollection, evidence was given that he had not even touched his

* An interesting case of laceration of the liver is to be found in the Transactions of the Royal Coll. of Physicians, Vol. III.

wife during the quarrel—at least such is now the belief in the neighbourhood. The deceased was a person of an extremely violent temper ; and on opening her body, it was found that she had been labouring under suppuration of the liver, and that án abcess had burst into the cavity of the abdomen, through the agitation into which she had been thrown.

The practitioner will be able to make his own use of these illustrations when similar events occur. On a trial for murder, that took place a few years ago, where death was ascribed to a kick in the region of the stomach, given several months before, and where, on opening the body, a discoloration was detected in that part of the viscus in which the violence was understood to have been received *, a physician was asked whether such an appearance might not be the effect of disease ; and replying, of course, in the affirmative, the Judge considered it unnecessary to go on with the trial. Another physician, however, thought proper to declare that no such appearance could be caused by violence to the stomach, *without involving the liver !* An assertion of so extraordinary a nature, that we cannot reconcile it even with anatomical *ignorance.*

Blows on the belly, without wounds, have frequently caused death. In one instance, which oc-

* It is likewise necessary to mention, that a train of symptoms connected with the injury commenced immediately, which indicated some lesion, and which were unquestionably connected with the *ratio moriendi.*

curred at the Lincoln assizes in 1812, the prisoner was charged with the murder of a boy, by whipping him. The deceased died within two days; many bruises and discolorations were discovered about the loins and thighs; and the professional opinion was, that he had died from the absorption of extravasated and mortified blood into the system. The jury acquitted the prisoner.

A very familiar illustration of this frequently occurs in that species of personal combat peculiar to Englishmen. A blow given in the region of the stomach will cause instant death, without any visible signs of the manner being discoverable. The cant phrase of "knocking one's wind out," seems to come near the most probable explanation of this mode of death. For by the sudden shock to respiration, through the intimate connection of the eighth pair of nerves, it is supposed, by the best authorities, that people are thus killed.

Vessels are often ruptured by external violence, and this has occurred even to the large vessels in the abdomen. Extravasation of blood among the contents of the abdomen is always a presumptive cause of death.

I pass over wounds of the pelvis and its contents. To the foregoing observations there is nothing peculiar to be added in respect to them. Nor do I think it necessary to prolong this chapter by entering upon the consideration of injuries of the extremities.

I ought, perhaps, to apologize for the imperfect manner in which the subject of wounds and bruises has been discussed. To embrace the full consideration of the subject, merely in relation to *Forensic* practice, would require far more ample limits; but it is to be hoped that even these cursory remarks and illustrations may serve to introduce the practitioner into the right path; to the end of which his own attainments will conduct him.

SECTION III.

DEATH BY SPONTANEOUS AGENCY, OR *SUICIDE.*

In sketching the usage of Coroner's Juries, when returning verdicts upon unusual and violent death, the term *Felo-de-se* was quoted as significative of *criminal* self-destruction. Persons frequently take away their own lives without leaving room to charge them with criminality, and *suicide* is a term applicable to all instances of self-destruction.

The *moral* consideration of the deed is often founded upon circumstances, of which the medical practitioner cannot have any knowledge, unless acquainted with the person's previous history; though it must frequently depend, in a great measure, upon the elucidation derived from inspection of the body, and verification of the cause and manner of the death, whether the deceased in fact deprived *himself* of life or not.

In the foregoing remarks on violent death, it was unavoidably necessary to apply facts to this conclusion as we went along. A few observations, however, still offer themselves, and will form a suitable supplement to what has already been said.

The reader is by this time perfectly aware that much light may be thrown upon mysterious cases

by the discoveries and deductions of the medical practitioner. Instances often occur, in which a person takes away his own life, where the friends of the deceased may wish to conceal the fact, and may attempt to shelter the real state of the case under some natural cause of death. It is far from being desirable that medical men should impertinently busy themselves in divulging the truth, where little can depend upon the result but the opinion of survivors about the unfortunate victim, or at the worst, an immaterial indignity offered to the corpse. Where, however, the decision must be between the rashness, insanity, or criminality of the dead, and the imputation or suspicion of crime with regard to living individuals, it is our particular duty carefully to assist in developing the truth. Of circumstantial means I decline to speak, they are not peculiarly within our province—though they must have their weight in aiding even *our* researches. The motives that may prompt to suicide, and the moods of the mind under which it is for the most part committed, belong more properly to the subject of mental alienation. It is with physical circumstances alone that we have to do at present.

It will be admitted that a person may inflict upon himself any of the species of violent death already treated of; but there are some which are not the *probable* means that one would resort to for that purpose. For instance, we have no experience of persons wilfully exposing themselves to noxious

vapours—and that for a reason (among others) which merits consideration in many cases of suspected or alleged suicide. There are but few situations in which the effect could be insured, without a delay and trouble of preparation inconsistent with the state of mind in which a person must *generally* be when intent upon destroying himself. Simplicity of means, readiness of access to them, and certainty as to the result, are the objects that commonly decide the unfortunate being who lays violent hands upon himself, or seeks (in whatever way) to secure a termination to a burdensome existence. There have been suicides, who with extraordinary coolness and deliberation, have adopted and executed plans of self-destruction of an astonishing nature—but these are not common occurrences—and the consideration of such procedure belongs to the moral rather than the physical investigation of the manner of death.

Is it possible to confound a case of suicide with death by *natural* means? It may be the interest of survivors to establish that a person died by disease, where suicide is alleged or suspected. A person labouring under a disease that would have soon terminated fatally, may take away his own life—and, on examination of the body, appearances of a morbid nature and degree calculated to encourage the idea of natural dissolution might be found. But, if violence has been used, it must have been in some of those ways discussed under the article Homicide, while the traces must be somehow ap-

parent; and as in these instances there is no question of assassination, or criminal interference on the part of others, we must take into consideration the prior history of the subject—his circumstances, habits, and state of mind, which will have much weight in enabling us to decide.

The question, however, will, in the great majority of instances, be between *homicide* and suicide; and in the brief observations that remain to be offered, I shall follow the order in which I have treated of the former.

With respect to *poisons*, almost all the observations that are here called for, have been already given in the prior consideration of death by poisoning. Concurrent circumstances will tend greatly to elucidate the history of a doubtful case of this nature; such as the mental condition of the deceased previous to his death, and other moral considerations that should be kept in mind. As to physical proofs or presumptions, the nature of the poisonous substance, or rather the form, and vehicle in which it has been used, will have considerable weight. Assuming (for example) that in a case formerly alluded to, the deceased was poisoned by laurel water *—the circumstances on the face of this event discouraged the supposition that he had made away with himself. The very choice of laurel water, by

* Page 171.

a person not conversant with it, and not having ready access to it, was unlikely; and the peculiarity of mixing poison in his medicine was still more unlikely to have been done by an individual bent on his own destruction. There was no occasion for such an attempt at concealment; and it is hardly to be supposed that a person intending to destroy himself would think of using means for the recovery or preservation of health—further it is not likely that he would *in this manner* have attempted his own life, from the hazard of not succeeding—a person determined on suicide will chuse the most effectual means in his power. On the other hand, the mode of administering poison by a designing and reflecting individual to another, will be that least likely to be detected. This has ever been the principle in slow poisoning; and laurel water, not being familiarly known, at least at that period—forty years ago, partaking of certain sensible qualities that belong to some medicinal preparations, and, above all, being administered in a mixture of this kind, seemed to promise every chance of evasion, and to give credibility to the tale of the deceased having died from disease—but could furnish no evidence whatever, *prima facie*, as to his having taken away his own life. As a contrast to this case, if on opening a body, pieces of solid arsenic be found in the stomach (as in the young woman quoted by the French writers, and alluded to in the note at page 102 of this work,) what can we conclude but that

they have been swallowed of the person's own free will and consciousness? The notoriety of the poison, its being easily procurable, the simplicity of the form in which it has been swallowed, and its being perhaps in very large quantity, will force us to the conclusion that suicide has been committed—while, on the other hand, a substance unusual, or procurable with difficulty, prepared with particular care, and disguised so as to deceive, will afford matter of presumption that other interference has been the cause of the person's death.

In addition to these hints, which are more especially directed to the medical practitioner, it may not be unacceptable to quote from Foderé the following circumstances, which the physician will do well to enquire into, although the estimate of their importance may not exclusively belong to him. They will apply to other means of suicide, and should be always kept in mind.

"1. If the person had for some time laboured "under melancholia; had met with losses, disap- "pointments, or had suffered any acute chagrin *. "2d. If any of his family, associates, or connections "had any interest in his death. 3d. The season of "the year should be taken into consideration; for "I have observed, without being able to assign the "reason, that suicide is more frequent during the "solstices and the equinoxes. 4th. If the patient, "instead of complaining, remains quiet, seeks for so-

* To which may be added anticipation of punishment, or disgrace, from misconduct.

" litude, and refuses medical aid. And 5th. If there " be any writing, (as those who destroy themselves " ordinarily express their last opinions or will) it " will be one of the most satisfactory proofs that " they have made away with themselves. Remains " of poison found in their pockets, or in the apart- " ment, are but an equivocal proof, and one which " may attend upon homicide as well as on suicide*."

It may also be observed, that the circumstances under which persons have been occasionally found *drowned,* have clearly indicated that they have purposely sought their death in this manner. In March, 1806, a young woman at Little Sheffield in Yorkshire, made away with herself, by breaking a hole in the ice upon a pond, and thrusting her head in, while the rest of the body remained out; and others have been suffocated in water so shallow as to cover no more than the face—a situation in which an adult, at least, could hardly be drowned by external force, though in peculiar circumstances we may admit the fact of *accident.* One would imagine that if a person be taken out of the water tied hand and foot, there need be no hesitation about inferring that he was forced into that situation.

Two instances are recorded, however, as having happened within these five years, in the metropolis, where this was not the case. The one occurred in the end of June, 1816, in the case of a gauging-in-

* Med. Legale. IV. § 948.

strument maker, who had been missing from home for some days. His body was discovered floating down the Thames; and on being taken out, his wrists were found tied together, and made fast to his knees, which were in like manner secured to each other. He had been in a state of mental derangement for two years. The cord with which he had tied himself was recognized as one that had hung from the ceiling over his bed, by which he used to raise himself up—having been confined to bed for some weeks. He was a good swimmer; and it was presumed he had taken the precaution to prevent himself from swimming. The verdict in this case was "Found drowned."

The other instance occurred two years afterwards. A man, aged 28, with a wife and children, was reduced to great distress. On a certain day, he took an affectionate leave of his family, declaring he would not return till he got some employment, by which he should be able to procure them bread. The day following, his body was taken out of the New River, with his hands and legs tied. A card with his address was found in his pocket; and also three-pence. When he left home he had five-pence; and it was supposed he had purchased the cord with the deficient sum. How he had contrived to tie himself we are not told; but the coroner's jury returned a verdict of "Insanity *."

* Public prints of the respective periods.

An article of discrimination between suicide and homicide, or accidental death in drowning, has been repeatedly hinted at, in the absence of water in the lungs. It is by no means, however, established, (nor indeed am I aware that the attempt to establish such a fact has been actually made) that water is more seldom found in the lungs of those who have drowned themselves, than in those of persons drowned otherwise. Besides, the very circumstance from which the conclusion has been drawn, is of more than questionable reality, viz. that persons throwing themselves into the water hold their breath for quicker dispatch. If they even do make the attempt in the first instance, the impulse of nature to obtain relief in such a situation will be greater than that of volition, and will lead to unavailing struggles, and their usual consequences. It is very evident that *under water,* self-possession is quickly lost—for persons have been found holding firmly by things adhering to the bottom when they have come in contact with them—no doubt from an *instinctive,* but *undiscriminating* hope of assistance.

In addition to what has been offered on the subject of *hanging,* it may be observed, that in the great majority of cases where persons have been extrajudicially hanged, it has been in the way of suicide. This conclusion will be encouraged if there are no marks of previous resistance, no disorder among surrounding objects; if the situation in which the body is found be public, or liable to the

visit of passers by; if near the body there appears to be some object by which the individual might have elevated himself within reach of the place to which the rope is fastened—as a stool, chair, or other article of furniture. If the person be not elevated from the ground or floor at all—while the cord is not so tight about the neck as to strangle in this posture, and no other cause of death is discoverable, there can hardly be a possibility of doubt as to self-murder. Persons have repeatedly made away with themselves in this manner. A few years ago, a man, aged 75, destroyed himself at Castle Cary, by fixing a cord round his neck, while sitting on the bed-side—leaning forward till his purpose was accomplished. His wife, who had for years been bedridden, and therefore not likely to have been very fast asleep, was in the room during the transaction, and knew nothing of what was going on.

There can be no doubt that however unlikely the complication may be, persons have both wounded and hung themselves. I have already alluded to a case of this nature recorded by De Haen *. Such a complication might be the consequence of wrong placing the cord, and suffering being thereby protracted, together with the eagerness to accomplish the object. Ballard relates, that a young priest having first cut his throat to a certain extent, hung himself in his professional habiliment †. In cases

* Page 219. † Notes to Metzger.

like these, there can be little difficulty in ascertaining the real cause of death.

Strangulation can hardly be considered a mode of taking away life within the power of the individual himself. The case of the old man at Castle Cary was rather one of hanging—the power applied being really the weight of the body, though it was not entirely suspended.

Nor can we suppose that a person can *manually* smother himself: although we must admit the case of choking by doubling back the tongue. This cannot be done by another person, and must always be considered a case of suicide. If tumors in the neighbourhood of the parts or foreign bodies are found in the trachea or œsophagus, the fair conclusion must always be, that disease or accident has led to these, design being entirely out of the question.

As to *wounds*, there are few which one person can inflict upon another, that may not be accomplished by an individual on himself. There are some, however, which form an exception—if not on the score of possibility, at least on account of their extreme difficulty. For instance, if we find a person to have been wounded by a small and sharp pointed instrument in the spinal marrow, some extraordinary combination of circumstances would be necessary to sanction the surmise that it was done by his own hand. The same remark will apply to injuries about the head, with the exception of those caused by fire-arms. A person may shoot himself in almost

any direction, but he can scarcely by *manual* violence fracture his own scull. Incised wounds (with a remarkable exception) are rarely resorted to for the purpose of suicide—and wounds inflicted from behind are almost always to be laid to the account of others. With respect to bruises, it may be admitted that persons have made away with themselves by violence rather belonging to this description of injuries—but corroborative proof must in every such case be requisite before forming this conclusion.

I believe that fire-arms, and cutting instruments applied to the throat, are by far the most common means of self-destruction by mechanical lesion. In the former case, from the close contact into which the weapon is brought with the body, there may be a difference in effect, from what would be produced when it is discharged at a distance, or, in other words, by another person. I know not if we may build any presumption on the ball being found or not in the body. From the circumstance of the nearness of the instrument, (say a pistol,) we might be led to suppose that it would pass through—but as this will depend on the strength of the charge, the direction of the ball, and the resistance yielded by the solid parts of the body, we cannot venture to draw any general conclusion. The direction of the wound will be more important. It may be assumed that a person will not shoot himself from behind—and it may be almost taken for granted, that if the weapon has been introduced into the de-

ceased's mouth, and there discharged, it has not been done by another.

Some light may be thrown upon a case of this kind, by attention to collateral circumstances; not indeed particularly belonging to our province, but which we should be aware of as well as other people. In several instances, the guilt of murder has been affixed to the right person by means of the wadding of the pistol. A case of this description was lately quoted by the Lord Chancellor, and a similar occurrence is said to have taken place in France in the beginning of 1818. In both these a portion of the wadding being carefully examined, was discovered to have been torn from paper found in the possession of the murderer *. The circumstance is of striking importance; and in a case of suicide, it might sometimes lead to right conclusions, and should ever be kept in mind. Authors have generally noticed the discoloration of the fingers from the combustion of the powder in the pan, as a mark of self-shooting—and no doubt it is of importance. It is, however, a mode of concealment to which a crafty assassin might have recourse.

In cutting the throat, it has been observed, that persons frequently miss the carotid artery from cutting too high. But neither from this vessel being wounded, nor from its escaping altogether, can we draw any conclusion as to assassination or suicide.

* Debate in the House of Lords, Nov. 10, 1820; and Literary Gazette, April 4, 1818.

In the reign of King Charles II. and for some years afterwards, a good deal of discussion arose respecting the death of the Earl of Essex, who was found in the Tower (where he was a prisoner) with his throat cut. The case had some important political bearings; but I avoid noticing these. Some remarks, however, on the physical circumstances of it were hazarded from time to time. The authoritative report was that he had killed himself; and among the advocates for this conclusion we find the celebrated Bishop Burnet, who thus observes *—

"Both the jugulars and gullet were cut a little "above the aspera arteria; and when his body was "brought home to his own house, and the wound "was examined by his own surgeon, he told me it "was impossible the wound could be as it was, if "given by any other hand but his own—for except "he had cast his head back, and stretched up his "neck all he could, the aspera arteria must have "been cut."

On the other hand it was stated that the two surgeons who viewed the body at the Tower *swore* that the trachea *was* cut—and several judicious members of both faculties, who were examined before the Lords' Committee, declared—"that they "would not positively say it was *impossible* for my "Lord to cut his throat through each jugular vein, "the aspera arteria and gullet, to the neck bone, "and even behind each jugular vein, on each side

* History of his own Time, 1683 and 84.

" of the neck, (as some judicious surgeons who " viewed the throat had reported it to be cut) but " this they would be very positive in, viz. that they " never saw any man's throat so cut, which was cut " by himself; and they did believe that when any " man had cut through one of his jugular veins and " the gullet and windpipe, and to the very neck- " bone, nature would be thereby so much weakened, " by the great effusion of blood (*and animal spirits*) " that the felo-de-se would not have strength suffi- " cient to cut through behind the other jugular, as " my Lord's throat, by surgeons who saw it, was " said to be cut *."

Any thing that might now be added would occupy the reader without much informing him. In all cases there are such peculiarities, that general rules can hardly be laid down; and it will be necessary to maintain coolness and freedom from prejudice

* There were other circumstances connected with this elucidation, which will interest the reader. He may consult the IXth volume of Cobbett and Howel's StateTrials, and also Braddon's Discourse addressed to the Essex Family, printed 1725. In Coke's Detection of the Court and State of England, 1683, Vol. II. there is the following instructive piece of information. " Before the Jury was impannelled, the Earl's body was taken out of the closet where it was pretended he had murdered himself, and stript of his clothes, which were carried away and the closet washed; and when one of the jury insisted upon seeing my Lord's clothes in which he died, the coroner was sent for into another room; and upon his return, told the jury *it was my Lord's body*, and not his clothes they were to sit upon."

or the influence of current report, where investigation is required. I shall conclude these physical remarks on suicide by a very striking instance of the importance of professional inquiry, when pursued with intelligence and judgment.

In the case of a person whose death was connected with an attempt to assassinate one of our Princes, many were dissatisfied with the account of his having laid violent hands on himself. The declaration of Sir Everard Home has set this question completely at rest; and the manner in which this has been done, furnishes an admirable lesson on the importance of medical investigation in cases of doubt or difficulty. Sir E. found the throat cut so effectually, that the man could not have survived above a minute or two—and from the length and direction of the wound, no doubt remained of its having been given by his own hand, for *any struggle would have made it irregular*. Sir E. further states, that the coloured furniture above the Duke's pillow was sprinkled with arterial blood—an appearance which could not be mistaken by those who had seen it. The deceased had cut his throat on his own bed, and had hung his coat previously so far from the bed, that his own blood could not reach it. On the wrist of this coat there was *dry sprinkled blood*, evidently from a wounded artery—from which kind of sprinkling the arm of the assassin of His Royal Highness could not escape; but must have been sprinkled along with the furniture of the bed.

A hint was formerly given as to the law in respect to self-murder. Absurd as it may appear, *a priori* to inflict punishment on a corpse, there are many exemplifications of such procedure in history. The very bones that had for a long series of years been mouldering in the earth, have been torn from their silent obscurity, and an eclat given to the character of their former personality, by treating them with fancied contempt. All civilized, and indeed most savage nations, preserve the social compact in the grave. Common burying places are not merely a convenience; but much individual comfort is connected with the place of interment. Even in England, there is a general preference for reposing in *consecrated* ground; and those who ascribe no sanctity to one spot of earth above another, (as in countries where prelacy has been abolished) are at least anxious to have their remains deposited near their friends.

The penalty attached to suicide in this country seems to have been founded on the strength of the above feeling; for the prominent character of the punishment consists in the refusal of *Christian Burial;* not only excluding the body of one who destroys himself from a participation in the respect (or advantage, if such there be) of lying among his former friends or fellow-citizens; but ignominiously burying him in the highway, without any funeral obsequies, and thrusting a stake through his body. The intention of this must have been to deter others.

If the self-murderer be possessed of property, it becomes forfeited to the King—(an award that can touch the innocent survivors only—already sufficiently afflicted by the deplorable event of their friend's death—and seldom carried into effect.) On the score of *posthumous* reputation, there cannot be much solicitude in the breast of a person about to make away with himself—or, at all events, he cannot be very anxious about the manner in which that body is to be interred, which he is going to disfigure and destroy. Were no burial at all allowed—were the body of every person who presumes to shorten his own days, assigned by law to purposes of public utility; the effect on the living would be more powerful; and in a country where anatomical study is pursued under so many difficulties, such a law would operate in a manner doubly beneficial.

At the same time it must be confessed, that while the plea of insanity is admitted so easily as it too often is, the remedy would have little scope, for verdicts of felonious suicide are rare. The character of insanity can by no means be so frequently due in these cases, as the decisions of juries would teach. If temporary frenzy be admitted so frequently as an apology for this crime, why should it not for many others equally repugnant to our nature—as that for instance next to be considered—the murder of her offspring by an unhappy mother? or an event that now and then takes place under

circumstances of real frenzy, where an unhappy and desperate lover destroys his mistress—a husband his wife, &c. the general state of whose mind towards the object is that of intense affection *? And yet we read of such cases, in which the plea of insanity is argued in vain, and the homicide is executed! Why deal more tenderly with the dead than with the living? And what evils could possibly result from so far altering the practice, as to substitute the knife of the scientific anatomist for the brutal practice of driving a stake by some ruffian?

It has been argued that suicide is of itself proof sufficient of mental derangement. This doctrine has been already refuted. But it has been urged, that it is frequently the first act of derangement. However this may be, I should not be disposed to admit the allegation as a principle of proceeding in judiciary investigations; and I would specify my idea of preventing suicide in something like the following terms—"That in every case where an individual is proved to have taken away his own life, the body should be given to some anatomical school for dissection, unless such evidence can be adduced to prove the mental alienation of the individual, as would have exculpated him under a charge of murder, had he been tried for the same."

* Among other notorious exemplifications, may be quoted that of Hackman, and the recent affair of Stent.

It may be alleged that I have passed the limits I have prescribed to myself in the conduct of this work. I confess I am at least on the verge of doing so, and shall close this section with referring the reader to the subject of insanity, for the doctrine that should bear more especially on this point.

SECTION IV.

INFANTICIDE.

THE last section of this class of questions relates to the extinction of life, under circumstances whose œconomy differs from those to which our observations have been hitherto applicable. It resolves itself into two divisions, that must be treated of separately; for the crimes are distinct from each other in almost every bearing; though the destruction of a human being is the object of both. I shall therefore consider first the destruction of the fœtus while yet in the womb of the mother, commonly called *criminal abortion*, and scientifically designated *fœticide;* and secondly, the destruction of the new-born infant, or *infanticide* strictly so called.

CHAPTER I.

Criminal Abortion.

Abortion or *miscarriage* is the separation of the immature fœtus from the womb of the mother. It is an event to which women, in the pregnant state, are much exposed, and to guard against which, in many cases, very scrupulous management is required. When it takes place, it not only destroys, for the time, the hope of offspring, and lays the foundation of evils, (among which the most frequent is a disposition to miscarry on future occasions,) but it is often accompanied with great danger to the mother.

On the other hand, attempts have been made to procure the ejectment of the contents of the gravid uterus at an early period of pregnancy, for the most part with a view to conceal the consequences of sexual imprudence ; though too frequently also from an unnatural desire to avoid the inconvenience of child-bearing, and even for the purpose of preserving personal symmetry. For whatever end, however, the practice be resorted to, it is not only imprudent but highly criminal, inasmuch as it accomplishes the destruction of a human being.

We know nothing of it practically as a crime in our country, except where there has been illegitimate intercourse, and the object is to conceal that

fact, by removing the consequences—and to this view of the subject I shall confine myself.

According to the law of England, if any person wilfully or maliciously administer medicines, &c. with intent to procure the miscarriage of any woman not being, or not proved to be *quick with child* at the time, such shall be considered guilty of felony, and liable to transportation for fourteen years—but means resorted to with the same intent *after* quickening shall be punishable with death.

Though it is foreign to our business to comment on the laws, it would be improper to omit that there is a distinction in this enactment founded on what has no real existence. It was formerly believed that the embryo had no separate principle of animation until a certain stage of pregnancy; and therefore that, prior to this stage, it was no more than a growing mass, or excrescence within the uterus—in destroying which nothing worse than inconvenience could be the consequence. Hence the practice long prevailed without any idea of criminality being attached to it. When the period of animation arrived, which was supposed to be marked by the perception of the motion of the child by others as well as the mother, the fœtus was then considered to be possessed of a distinct personal existence. The fallacy of this notion will presently be shewn—in the mean time, as the law stands, there is considerable importance attached to every variety under

which the procuring of abortion may call for investigation.

Before proceeding farther in estimating the import of questions connected with abortion, it will be advantageous to offer a short detail of the progress of the fœtus *in utero*, and the changes it is found, from time to time, to have undergone. A knowledge of these is indeed a necessary foundation for the investigations we may be called upon to make.

From the twenty-sixth to the twenty-eighth day after conception, the embryo reaches a size that is perceptible. It has been compared at that time to a tad-pole, composed apparently of two masses, the larger being the head. At the end of the fifth week it is curiously defined; the abdomen is then in contact with the amnion. About the sixth week it reaches the size of a large bee; and the umbilicus is formed, the twisting of which begins after the tenth. A white speck (the vesicula umbilicalis) is observable in the early weeks between the amnion and chorion, near the umbilicus—but after the third month it is scarcely visible. Before the thirteenth week the sex is not readily distinguishable, the female clitoris being so disproportionate as to resemble the penis of the male.

The head is early covered with down, and the fingers and toes are often furnished with nails by the end of the third month.

Between the fourth and the sixth month, the developement becomes more perfect—the lower parts

approximate the upper in proportion—at the fourth month and a half, the embryo is about seven inches in length. At the fifth month the abdomen seems to predominate over the thoracic cavity. At the sixth month the fœtus has acquired a considerable degree of vigour; it then measures about nine inches—and from the fifth to the seventh, may be born alive, though still incapable of being reared. At the end of the sixth month the testes in the male begin to descend to the scrotum; though they are not found there till after the eighth.

From the sixth to the ninth month the progress is rapid. At the seventh the infant is perfectly formed—and is deficient only in size and weight *. It is then capable of being reared, and of attaining to old age—so that we cannot carry the consideration of *abortion* beyond the seventh month of pregnancy—the child being then on the same footing with one perfectly mature; and the questions relating to the extinction of its life will fall to be considered in the next chapter.

Abortion may occur at any period of pregnancy, previous to the evolution of the fœtus to that degree which enables it to support existence separate from the mother—in other words, during the first seven months. It is an established fact, that under the fifth month no fœtus can be born alive—from the fifth to the seventh it may come into the world alive, but cannot maintain existence. The French term these *non viable*. We may designate

* About this period the membrana pupillaris disappears.

them non-rearable, or more properly *immature*—in distinction to those between the seventh and the ninth month, which may be reared, and are termed *premature*. A child carried to the full term of utero-gestation only, is properly *mature*. These distinctions are of considerable importance.

As to the exploded notion of the period of utero-fœtal animation, about which so much has been written—the origin of it is easily explained. After the embryo is conveyed into the uterus, no new characteristic can be communicated to it. It is furnished at the time of impregnation with all the constituent principles of a living being, and its future progress is but the developement and increase of these—not the acquisition of any more. Quickening, instead of marking the period at which the future individual becomes endued with humanity, or elevated to distinct personal identity, is but a proof that the developement and aggrandisement of the growing body have attained a certain size, and that it is now possessed of a greater degree of force. This commonly occurs about the end of the fourth month, when the uterus is so distended, that it rises out of the cavity of the pelvis. The fœtus being now stronger, and its members more perfect, the motions that had hitherto been feeble and imperceptible, are of sufficient strength to communicate a sensible impulse to the adjacent parts of the mother.

There is no direct communication between the system of the mother and that of the fœtus *in utero*.

The placenta is a sort of demarcation, to which the supplies required for the nourishment of the ovum are conveyed by the vessels of the parent, and at which they are received by the umbilical cord to be transmitted to the child—that which is superfluous being returned through the same medium. Nothing can thus affect the child directly through the parent—and therefore the idea of conveying the intellectual principle in the course of the period of gestation, must be considered even more absurd than that of the influence of the maternal imagination.

Morbid abortions occur most frequently between the beginning of the second and the end of the third month. As, during this time, the fact of pregnancy is not very apparent, and many women do well after a miscarriage, the practice of inducing it must have been of easy suggestion. The ancients certainly bestowed great consideration on the subject, and it is very evident that they cultivated it as an art. A class of medicines was introduced into Therapeutics, under the title of Emenagogues, supposed to have the power of acting peculiarly on the womb.

Abortion is in general injurious to health, and is seldom unaccompanied with suffering. The administration of Emenagogues to force a separation of the ovum, where the constitution has no tendency to throw it off, is highly dangerous to the mother. No drugs can act in this way upon the uterus, but by involving it in a violent shock given to the general system. It has frequently occurred, that the un-

happy mother has herself been the sacrifice, while the object intended has not been accomplished.

The causes of abortion are very well understood. Sometimes they appear to be constitutional. Certain women are so highly predisposed thereto, that it is in them the sure consequence of impregnation; and females of a disreputable way of life, have been known to be repeatedly pregnant, and in the early months to regain a more convenient state without any apparent means. Not that I believe them to be in possession of any secret remedy for pregnancy—but probably some, by encouraging a constitutional disposition to abortion, which women of character similarly situated would take every pains to avoid, may succeed in their object. It is impossible to describe an abortive habit, in the manner of some dispositions to morbid states of the system.

The exciting causes may exist in the mother or in the fœtus. On the part of the parent may be reckoned acute diseases; agitation of the system from violent mental emotion; severe exercise; dancing; raising heavy weights; falls, &c.; the general stimulus of spirits swallowed in quantity; strong purgatives; electricity passed through the uterus; blows on the abdomen; coughing, and straining to vomit; want of food; resistance in the uterine fibres impeding its expansion, and thereby inducing the expulsion of the ovum by premature contraction: on the same principle it will be stimulated by tumors in its cavity, and external pressure on the

abdomen—often caused by certain articles of female dress, which have been justly censured as injurious both to the virgin and the married woman. All these, and other causes, which to the practitioner will readily suggest themselves, may occur without the slightest culpability.

In *procuring* abortion, the female may either be an accomplice, or she may be deceived into acquiescence under false pretences, or she may be altogether unconscious of the nefarious attempt which is made upon her. How far the aid of the practitioner may be able to decide upon her own guilt or innocence, it would be difficult to say. Before the motions of the child are perceptible, or (as it is termed) the period of quickening, she may not believe herself to be pregnant, and it may therefore be difficult to ascertain the fact. It is possible likewise that she may be deceived to take medicines in the persuasion that she labours under a natural disorder. We must form our judgment of the intent therefore from the nature of the substances administered. There are certain powerful articles that have been generally given for the purpose of expelling the ovum—as *savine*, *colocynth*, &c. Where mechanical violence has been resorted to, it may sometimes be easy, and sometimes difficult to trace the connection between cause and effect. Much will depend upon finding the ovum, which in the very early period may be con-

founded with other substances—and other substances again may be mistaken for it. Abortions at that epoch sometimes occur even without consciousness on the part of the woman herself.

The common symptoms of abortion in the early stage of pregnancy need not be detailed—they are familiar to every practitioner. When it occurs morbidly, it usually does so from the tenth to the twelfth week. The ovum is often expelled broken, and occasionally the complete expulsion occupies several weeks. In the first month of pregnancy it is about the size of a nut, and consists of a sac containing the embryo. It requires care not to confound it with a clot of blood, or a mole or false conception, which is sometimes enveloped in a similar membrane.

Moles are disorganized masses that form in the uterus; and, continuing for some time to increase, cause some of the symptoms of pregnancy. When thrown off, they also give the appearance of a miscarriage. They have been found in females who never had any intercourse with the other sex. In the true conception the placenta will envelope nearly the whole of the mass, at one end of the sac, which ought to contain water.

The longer abortion is delayed, it will become more difficult of concealment—the appearance of pregnancy will be more conspicuous, and the symptoms will be more allied to those of labour. When

the ovum comes away, it will be well defined, and cannot be separated from the mother without consciousness and even inconvenience on her part.

The attempt to procure abortion often ends, it has been said, in the death of the unhappy mother—and there are cases enough on record illustrative of this. Some of the substances swallowed have been of a decidedly poisonous nature, and others have acted indirectly as such, by the extent to which they have been taken. The fact of having administered certain drugs and preparations to women with child may be the only article of accusation against a prisoner—the intent being fairly deducible from the reputed powers of the substance administered; and by law, more or less heinous, according to the period of pregnancy at which the attempt is made.

The duty of a medical practitioner in aiding legal enquiry into a case of abortion, is first to ascertain the reality of the event—and secondly, whether it has been caused by natural means or improper interference.

If, when we are called, abortion is going on, our knowledge of this event, as a disease requiring professional aid, will enable us to detect the fact. The woman will be in a state of suffering, and in all probability unable to conceal the truth; but as it is possible that it may take place without exciting much uneasiness, it will be our duty to examine into her actual situation.

A discharge of a bloody and ichorous nature takes place from the vagina. This we must carefully examine, as solid substances are frequently mixed with it, and among these, in the early stage of pregnancy, the ovum might escape unobserved. On examining the vagina itself, we shall find it relaxed, and dilated—the labia enlarged and soft—and the os uteri will be found open. In the mean time, if the ordinary concomitant of *uneasiness* be present, we shall find it resolve itself into tremors, faintings, and pains in the region of the uterus, and (as was already observed) the farther pregnancy has advanced, there will be a stronger resemblance to the process of parturition. If gestation has made considerable progress, there will be a sudden disappearance of previous abdominal enlargement; a secretion, or approach to secretion of milk in the mammæ; flaccidity and rugosity of the surface of the abdomen; and other derangements of the usual bodily appearance familiar to the medical practitioner.

If the abortion has taken place some time before, and the woman has recovered, circumstantial evidence only can prove the fact, or it can merely be inferred because pregnancy may be proved to have existed. Actual examination is of little use where ten days or a fortnight have elapsed. The parts by that time return to their usual state—or, if they do not entirely regain it so speedily, progress enough to baffle enquiry is made. In proportion as the fœtus has increased in bulk, or in other words, ac-

cording to the length of time it has been carried alive in the uterus, the greater will be the derangement caused to the parts by its exit, and the longer time will be necessary for their restoration. The only difference in the article of examination at the time of abortion, and afterwards is, that in the former case we may come to absolute certainty, by finding the ovum, and in the latter we must rely upon the traces alone. If the woman is dead, we may attain more satisfactory information by dissection; and the appearances by which we are to be guided here, will be detailed under the article of Pregnancy.

In ascertaining whether abortion has been induced by unavoidable causes, or through criminal instrumentality, we must in some degree be guided by circumstances. The situation of the parties as to the warrantable nature of the pregnancy—the fact of concealment—or, on the contrary, of complaint and resort to medical aid, when miscarriage began, and the knowledge of the woman's immediate previous history, whether she had met with any accident or violence capable of causing abortion. These and similar considerations require to be attended to—though of themselves they are not enough to lead to a physical inference.

Although there may be some variety in the methods resorted to, in order to excite the expulsion of the immature ovum, I presume they are all referable to two kinds—those that act through the general

system of the parent—and those that are at once applied to the uterine system—the former being chiefly medicaments, and the latter partaking of mechanical violence.

Of medicines that act upon the gravid uterus in a manner analogous to the effect of emetics on the stomach, or cathartics on the alimentary canal, it is not established that there are any. Of late an article, generally ranked among poisons, has been introduced into obstetric practice, and is said to facilitate the advance of labour. I allude to the *Secale Cornutum*, or Ergot of Rye, which, when mixed with bread made from that grain, produces serious consequences, as dry gangrene of the extremities, and is believed to be emenagogue when given in small doses.

It has hitherto, however, been by causing violent action in parts connected with the uterus, or inducing general disorder and debility, that this organ has been excited *medicinally* to throw off its contents. Numerous have been the instances in which this plan has been resorted to, and as far as the accomplishment of the ultimate object may have been concerned, with success—but comparatively rare are the instances in which the parent has not suffered materially — and often indeed has the forfeit to the criminal attempt been her own life. It may, and frequently does happen, that an uncertainty exists as to the fact of impregnation, and the intent may be no more than to favour the return of the menstrual discharge;

but the distinction is difficult to establish, and improper in many cases to be admitted. It is but right, however, to remember that an ignorant female may be unconsciously rendered the victim of crafty persons, and may be deceived by other pretences to lend her aid in the nefarious undertaking.

The practitioner should be aware that certain drugs or preparations have been more generally resorted to than others, with the view of procuring abortion; for it may happen that the verification of an article known to have been administered to a female during the pregnant state, is an important point of proof. It must be recollected that the statute expresses the criminality to consist in *administering, &c. any medicines, drug, or other substance or thing whatever, with the intent thereby to cause or procure the miscarriage of a woman, &c.* Upon this a person was charged to have administered to a woman a decoction of *savine;* and witnesses having been called on his behalf to prove that it was not *savine,* it was argued that this signified nothing, for if the substance administered to the woman, (whether actually with child or not) was in the prisoner's opinion capable of procuring abortion, he was equally guilty. In this instance, however, the verdict was *not guilty,* as it appeared the woman had threatened to destroy herself if she could not conceal her shame, and the prisoner had given her an innocent draught to amuse her. Still,

however, it is proper to be aware of what drugs are vulgarly considered capable of effecting the purpose.

The plant just mentioned, the *Juniperus Sabina*, an article of the Materia Medica, is a very powerful stimulus, and certainly, if it should produce hæmorrhage from the uterus, might cause the separation of an ovum; and such effect if given in sufficient quantity it will produce: but here the abortion is no more than the consequence of a most dangerous attack upon the general system as well as the uterine.

In a remarkable trial* on this subject, the following circumstances, among others, were given in evidence—that the prisoner had declared himself, in conversation, skilled in anatomy and physic, and able to prevent pregnancy—that he had shewn one witness an instrument, for this purpose, &c.—but further, that on searching his bed-room—three bottles were found in his wardrobe—marked *poison water*, *Jacob's water*, *and savine oil.* It was also sworn by another witness, that he had sold him savine oil, to the amount of a quarter of an ounce—an article that a person not practising medicine can scarcely be supposed to have any reason for purchasing, or keeping in his possession.

The *Cucumis Colocynthis*, or bitter apple, has also been given to pregnant women. Its effects are

* That of George Angus for the murder of Margaret Burns, at Lancaster, Sept. 1808.

analogous to those of the former article, but not so ready to act in the same way. In like manner, preparations of turpentine, purgatives in general, and emetics, (which when necessary at any time in the pregnant state, require caution in the administration) though they have been very often resorted to for the purpose in view, are not of such probable efficacy.

The indirect means of procuring abortion are not confined to articles of this nature. Experience having long since shewn that accidental injuries, and violent exertions often produced miscarriages, recourse has been had to artificial methods of a like nature. Hence we find that women of their own accord, or by the advice of others, have exposed themselves to accidents, or have been subjected to violent treatment, with a view to cause abortion. In 1811, a man was executed at Stafford for the murder of his wife. She was in the pregnant state, and he had attempted to induce abortion in the most violent manner, as by elbowing her in bed, rolling over her, &c.; in which he succeeded—not only procuring abortion, but along with it the death of the unfortunate woman. The practitioner should also be aware of the fact (not common indeed in this country) of women resorting to blood-letting for the same purpose. The loss of a determinate quantity of blood, taken by consent, and even by the hands of a medical practitioner, may not appear to savour of criminality—but Belloc alludes to a prac-

tice, of a likely nature—viz. being bled by a practitioner—and, after his departure, removing the bandage, and encouraging further hæmorrhage. If I recollect rightly, he gives an instance of this kind in the case of a female who had lost a small quantity of blood in the usual way from a vein in one of her feet—and afterwards placed the bleeding foot in warm water, with a criminal design *.

The last method of procuring abortion that remains to be noticed is the direct application of mechanical irritation to the uterus. This may be done with or without instruments. M. Foderé, alluding to a description of one given in a memoir by Dr. Duncan, senior, seems to congratulate his country on its having been invented elsewhere. That which was alluded to on the trial of Angus, was described as *a silver tube with a slide, at the end of which was a dart with three points.* This may be considered *instar omnium*—all other instruments being constructed with a view to produce the same effect. The medical practitioner needs no farther elucidation here of the capability of exercising villainy on this principle; and believing that no good purpose would be promoted by much illustration, I shall close the subject with a case from East's Pleas of the Crown.

At Durham assizes in 1781, Margaret Tinckler was indicted for the murder of Janet Parkinson, by inserting pieces of wood into her womb. The deceased took her bed on the 2d of July, and from

* Cours de Medicine Legale.

that period thought she must die, making use of various expressions to that effect. She died on the 23d. During her illness, she declared that she was with child by a married man; and he, being fearful, should she be brought to bed, that the knowledge of the circumstance would reach his wife, advised her to go to the prisoner, who was a midwife, to take her advice how to get rid of the child—being at the time five or six months gone. The delivery took place on the 10th of July, three days previous to which a person saw the deceased in the prisoner's bed-chamber, when the prisoner took her round the waist and shook her in a violent manner five or six different times, and tossed her up and down. She was afterwards delivered at the prisoner's house. The child was born alive, but died instantly; and it was proved by surgeons to be perfect. Upon opening the womb of the mother, it appeared that there were two holes caused by wooden skewers, one of which was mortified, and the other inflamed. Additional symptoms of injury were also discovered.

After a solemn and deliberate consideration among the principal practitioners of midwifery in London, (assembled for the purpose) of the propriety of exciting premature labour in certain cases, in order to save the life of both mother and infant, where the latter, (if not both) must perish at the usual period of parturition, the *necessity, humanity,* and *safety* of the practice have been

established beyond question. Every medical student in Great Britain, of which the discovery is no ordinary boast, is so carefully instructed in the principles and circumstances of this affair, that I should unwarrantably swell this work, were I to follow the example of several Medico-legal writers, by discussing the merits of the question : and for the same reason I pass over the subject of the Cæsarean operation.

CHAPTER II.

Infanticide.

While *abortion* relates to the destruction of the immature fœtus, or of the embryo, this regards the destruction of the child after it has been separated from the mother, having attained a sufficient degree of strength and developement, to be able to maintain its existence in the separate state, under the usual aids required in infancy.

Whatever obscurity, mistake, or uncertainty may have existed as to the criminality of procuring the separation of the embryo from the womb of the mother, the murder of a child newly born, or about to be born, has in most codes of Jurisprudence been denounced as criminal ; and has not only been vi-

sited with condign punishment when proved, but until very lately in our own country was punishable with death, where only presumed.

By a law passed in the 21st year of the reign of King James I. it was enacted that concealment of the birth of a child, which, if born alive, would have been a bastard, was to be accounted satisfactory proof of murder against the mother. The evidence of one witness at least was required to establish the fact of such a child having been born dead.

In the 43d year of his late Majesty, however, this law, which by its extreme severity, seems to have defeated the purpose of its enactment, was repealed; and the trials of women in England and Ireland, charged with the murder of their illegitimate offspring, are to be conducted upon the same principles as other trials for murder—the jury, in cases of acquittal on the charge of murder, having the power of finding (if made out in evidence) the fact of concealment of birth—for which the court may adjudge the accused to two years imprisonment. In cases where the murder is proved, the punishment remains unchanged, viz. death. To prove concealment of birth, it may be sufficient to ascertain that there has been a pregnancy, or a delivery: to establish the guilt of child murder, the body of the infant, supposed to be murdered, must be found.

Notwithstanding the number of instances in which unfounded accusations are certainly made, the crime is one of too frequent occurrence. If we consider

the outrage that is done to the best feelings of human nature—the absence of that affection in the female breast, quoted as proverbial even in holy writ—the want of all excuse on the score of provocation, and no stimulus of gain on the part of the assassin—if we add to this the consideration that the victim would never have existed but for an excess of the tenderest attachment at a former period, the change that must have taken place in the mind of the murderess might appear incredible.

But we know that many of the tenderest of the sex have committed this crime, and have thereby laid claim more to our pity than our detestation. If we advert to the ruling power that dwells in the female bosom—the regard for the reputation of chastity, without which a woman is of no account in civil society; and the penalty, (to a rightly constructed mind worse than death) attendant on the irreparable loss of that jewel—a secret which the living consequence alone perhaps can reveal, we may lessen our wonder that concealment, even by criminal means, if they appear to be the most effectual, should be attempted. I agree with Dr. Hunter*, that this deed is frequently the result of insanity—and I would add my persuasion that a verdict to this effect might be returned in many cases of this kind, with at least as much truth, as in some of suicide.

* Paper on the uncertainty of the signs of murder in the case of Bastard Children, read before the London Medical Society, July 14, 1783.

It must not be urged that the insanity here is not real because temporary, as long as *temporary insanity* is so readily admitted in the other case—and we know well that in many instances of the like state of mind, where suicide is unsuccessfully attempted, the supposed lunacy shortly disappears. This plea, however, rarely avails the child-murderer; and yet if the loss of property, or other misfortunes, are to be taken into account, as presumptive causes of insanity where there is no real evidence of the fact, the *feelings* arising from which being the real goad that stings some men to their fate; are we to give a modest female, (one that has probably erred through excess of confidence and attachment towards a villainous deceiver,) no credit for despair, for distraction, under the anticipation of the infamy that is approaching her?

In a case of alleged infanticide, it may not only be necessary to establish by the evidence of professional men, that a child has really been born alive, but to fix an actual delivery on the mother. The reader will find what is necessary to be said on the latter subject under the article *Pregnancy*. In the mean time our observations will be confined to the first part of our duty.

Referring to the body of the child alone, it will be of primary importance to ascertain that the infant has been so long carried in the uterus as to attain sufficient powers to support life when separated

from it. If it be discovered that the child has not reached the end of the seventh month of uterine gestation, the charge of murder must fall to the ground; for, although a fœtus may come into the world *alive* previous to this period, experience has taught that it cannot continue to live; while before the end of the fifth month no fœtus can be even born alive. It is of the highest consequence therefore to enquire if we can verify the age of a fœtus, yet so far from having reached the full period of gestation, as to render it doubtful whether it has or has not passed the seventh month.

No child born after the termination of the seventh month of pregnancy should weigh less than five pounds avoirdupoise, or be less than fifteen inches in length *. From the seventh to the ninth month the process of enlargement is rapid in proportion to its previous rate of advancement; and indeed the fœtus may during this period be considered perfectly developed, except in the articles of weight and measurement.

In the immature fœtus there is considerable vascularity. The skin is strongly tinged with red.

* I am aware that even *four* pounds have been recorded as the weight of a fœtus at the full term of *nine* months—but, (without urging the possibility of mistake as to the period of reckoning) it is to be remembered that exceptions are not the rule, and that other circumstances will always require to be taken into consideration.

This hue, however, is not acquired until the vessels have attained a certain capacity, and red blood is circulated with some degree of vigour. It loses it again when the integuments become sufficiently opaque to obscure the appearance of the circulating fluid. The redness, however, still remains conspicuous in those parts where the deposition of fat in the cellular membrane is wanting—as in the palms of the hands, soles of the feet, &c.

The head, though proportionably less than it has hitherto been, is still large. The bones are very soft and yielding, and the connection among them very imperfect—the fontanelles being very wide; and although the scalp is furnished with hair, it is scanty, and light coloured. The eyes are closed, and for the most part the membrana pupillaris is present, and the iris is not yet perfectly formed.

Something also may be learned from the sexual peculiarities. In the male, the testes between the sixth and eighth month are in progress towards the scrotum—at the end of the seventh they are not yet found there. The scrotum is generally of a red colour. The *partes exteriores* of the female are protuberant, and the clitoris disproportionately large.

We must, however, seek for corroborative appearances as to the age of the fœtus in the internal disposition of the viscera. On examining the thorax we shall find the heart disproportionately large, without much difference of capacity between the

auricles and ventricles—the lungs small, solid, and retracted from the anterior parts of the cavities in which they are situated. In the abdomen we shall find the liver very large, and approaching the umbilicus; while, if there be any fluid in the gall bladder, it is of a watery consistence, and nearly transparent. Some stress has been laid on the tenuity of the brain, and the appearance of the membranes within the cranium, the pia mater being in contact but not united with the surface of the brain.

Chaussier has given a scale of admeasurement, from which to deduce references as to the age of the child. If it is founded in experience, it must be considered of no small importance; and the practitioner may, in the course of his own opportunities, ascertain how far reliance may be placed upon it. He states that at the full term of gestation the middle of the body of the fœtus corresponds exactly with the umbilicus; at the eighth month it is two or three centimeters higher; that it approaches still nearer the sternum at the seventh month, and at the sixth falls exactly at the abdominal extremity of that bone. Were this established, (and I believe that there is less variety in the length of the fœtus towards the term of maturity than in the weight) we should be able to conclude that when the middle of the length of the body falls at the cartilago ensiformis, the fœtus must be under the seventh month, and consequently could not have continued to live after birth.

Having made these preliminary observations, let us now proceed to the verification of an alleged murder on the body of a new-born infant. The corpse is submitted to our inspection, and it is clear that the child is either of the full term of utero-gestation, or so nearly approaching thereto, as to have been rearable—the problem for our solution is whether it came into the world alive—and if it did, what has been the manner of its death. These two considerations may be treated of in the order now mentioned.

If a child has been dead for some time previous to its birth, the usual consequences will be more or less striking as it may have remained in the uterus for a longer or shorter period before expulsion. A fœtus may die several weeks before the accomplishment of the ordinary term of gestation, and yet be carried to the end of the ninth month. Every practical anatomist has a knowledge of the phenomena of maceration—and this is the process to which the dead fœtus is exposed while it remains in utero. The *liquor amnii* acts upon the surface at least, and of course the cuticle will separate easily. The body in general becomes flaccid; sugillations take place under the skin, and effusions of a bloody nature into the cavities. The expression of the countenance, instead of that rotundity common to young infants, will be sharp and disagreeable. We shall also find that no traces of respiration, or altered

circulation from that peculiar to the unborn fœtus, are discoverable.

For it is by evidence of the *circulation* and *respiration* that we must decide in a doubtful case, whether a child has or has not been born alive. Until it is separated from the mother, and has commenced its independent state of existence, there is a considerable difference in the œconomy of the circulatory system from that of the adult, which after birth immediately commences. A recapitulation of this œconomy is indispensably necessary before we can advance further in the present inquiry.

The fœtus *in utero* derives its supply of blood from the system of the mother, the placenta being the medium of communication between them. Thence the umbilical vein conveys the arterious blood of the parent to the child, which, passing into its abdomen at the navel, and entering the left branch of the vena portæ, part of it is distributed in the liver—a portion, however, is conveyed direct to the vena cava inferior, by a vessel that branches from the umbilical vein, peculiar to the fœtus, called the *canalis*, or *ductus venosus*. The blood having found its way to the right side of the heart, would pass through the lungs by the pulmonary artery and its ramifications—but, previous to their distension by air, the lungs can receive no greater quantity of blood than is necessary for their nutriment, and there is therefore an obstacle to the

passage of the whole. Relief however is provided in a two-fold way—by a direct communication between the auricles of the heart, through an opening termed the *foramen ovale,* and by a vessel that passes from the pulmonary artery to the aorta, termed the *ductus* or *canalis arteriosus.* Partly therefore by the pulmonary veins, and partly by the foramen ovale, some of the blood is transmitted to the left auricle, and thence through the ventricle of that side to the aorta, while the remainder finds its way to this vessel from the pulmonary artery direct. It is then distributed through the various parts of the body; until from the two iliac it is conveyed to the two umbilical arteries, communicating with the former, and through them is returned to the placenta. The umbilical vein and arteries, together with cellular membrane, and common integuments, form the umbilical cord, the connecting organ between the mother and child, which at the usual term of delivery is, for the most part, about two feet in length.

Such is the œconomy of the circulatory system in a fœtus before birth; and in addition to these remarks on the organs *in situ,* the following are to be added. Assuming for the present (what it will be my business directly to prove) that an unborn child cannot respire, the lungs might afford sufficient evidence as to the fact of its having been born alive or not. Where respiration has not taken place, they will (if sound) be of a dark or chocolate colour, resembling that of the liver—there is often a whitish

hue upon their surface, but this will never perplex us as to the question of their having performed the function of respiration. They do not in this state cover the pericardium, or in other words, fill the cavities of the thorax. They are of a solid consistence, and if we take them out of the body and place them in water, they will sink, as the liver, spleen, or any other parenchymatous viscus would do. On cutting into them, no air is emitted, and no hæmorrhage follows the incisions.

In the heart, we shall find the foramen ovale open; and in examining the thoracic organs we must observe the ductus arteriosus. It will be found pervious, and containing blood. We shall also perceive that the diaphragm is greatly arched, convex upwards, and concave towards the abdomen, in a greater degree than after respiration has been performed. In the abdomen we shall find the canalis venosus in a state corresponding to the canalis arteriosus, and blood in the umbilical vein. The urinary bladder for the most part contains urine, and meconium is copious in the intestines. Discolorations about the body will partake of the character of sugillations and not of ecchymoses—a distinction which has been already explained.

If the child has been born alive, the organs now enumerated will be found to have undergone important changes. Following them in the same order—it is to be remarked, that the immediate effect of inspiration is to change the colour of the lungs to a

florid red—and to expand them to the full capacity of the cavities in which they are placed. They will be found (when fully inflated) to cover the pericardium. They become of a light and spongy consistence, and if placed in water are so buoyant as to float on the surface. On cutting into them, the escape of the air contained in their cells causes a peculiar crepitating noise; and a bloody fluid will exude. In the heart we shall find evident marks of the altered course of the circulation. The foramen ovale may not be closed, as that is an alteration requiring some time for completion; and the distinction, that there is *an approach* to union, may be too nice for practical observation. But as the whole of the blood has now been passed through the lungs, the canalis arteriosus will be found empty. The same will be the case with the canalis venosus; and both these passages collapsing become imperforated ligaments soon after birth. The pulmonary vessels will be enlarged. The diaphragm will have less convexity than in the former case. The urinary bladder will probably be empty, and the intestines much freed from meconium—as the evacuation of these excretions is performed by most living children soon after birth. These, however, are proofs of but a subordinate nature—the last in particular, from the frequency with which meconium is evacuated by the pressure of the maternal parts on the child during its passage through the pelvis—especially in breech presentations. Much stress cannot

be laid upon ecchymoses, because they may be produced by natural pressure during birth, even though the child should come dead into the world. Particular circumstances may occur, however, to warrant all these being taken into account.

Such is a general sketch of the physiological grounds for concluding, upon inspection of the body of a new-born infant, whether it has been born alive or not; and happy should I deem myself could I here leave the subject even with a solemn admonition to beware of exceptions. But the proof of infanticide may be fairly called the *Opprobrium Medicinæ Forensis.* Objections have been raised to the grounds of conclusion, that demand very serious investigation: obscurity has been thrown upon points that I would hope are far from being unfounded or unsatisfactory, when duly estimated; and many practitioners, neither ignorant nor idle, are of opinion that there is no certainty about the matter whatever. As it now stands, the bent of professional testimony is in favour of the accused, who is always entitled to the benefit of doubt and uncertainty. God forbid that I should be the means of facilitating the condemnation of unfortunate beings for a crime that perhaps admits of palliation—a crime peculiarly repugnant to human nature, and to the female mind in particular—but, believing as I do, that there is no good ground for the *unqualified* accusations that have been brought against the tests in this matter, it is doubly my duty to weigh

the question fairly—persuaded further, that the result of clearer acquaintance with the proofs afforded by anatomical enquiry will not tend to bring calamity upon innocence.

The first article of proof to be discussed is the HYDROSTATIC TEST by the lungs, the original *Docimasia Pulmonaris* of the continental writers. It is founded on the difference of specific gravity, compared with that of water, in lungs that have not respired, and those that have been distended with air. If in the former case they are thrown into water, they will sink, and in the latter they will float. Upon taking out the lungs of a still-born fœtus, we shall have this at once illustrated. They are dark-coloured, dense, and specifically heavier than water; so that if placed in a vessel of that fluid, they will sink to the bottom; but on blowing air into them, the colour brightens, they are distended, and become buoyant. The fact was known to Galen, but no use seems to have been made of it till about the year 1660—a very late period of medical history; and it was afterwards long considered a satisfactory test as to the birth of a living or dead child. More accurate observation, however, pointed out some fallacies to which the experiment was liable; and objections of great moment having been urged against it, practitioners seem to have passed from the extreme of implicit reliance, to unqualified disregard of the Hydrostatic test. It is but a few months since a professional witness declared in one

of our courts, that it was *absurd and long since exploded!*

The best commentary on so startling an assertion will be an examination of the objections that have been urged; together with such refutations as careful experiment and observation have warranted persons acquainted with the matter to bring forward. I apprehend the result will be to convince the practitioner, that when called upon to give evidence in a like case, his duty will be of a more troublesome nature than merely to cry down facts that cannot be *known* without being esteemed of some importance.

It is to be argued, that a fœtus within the parts of the mother cannot breathe, because there is no access of air until the head at least be protruded—that until respiration takes place, the lungs are collapsed, and if taken out of the body, will sink in water—but that they become distended upon respiration, whereby they are rendered specifically lighter, and float—that the circumstance of respiration having, or not having taken place, is indicated by the state of the lungs, and proof is thence to be drawn in cases of alleged infanticide, whether the plea of defence, that the child was still-born, be true or false. Let us now see whether this can be warrantably established, or whether any, and how much of the corollary is to be rejected, or admitted, and under what qualification.

1. It has been alleged that the infant may respire

before it is born, and yet not come into the world alive—in which case there will be dilatation and buoyancy of the lungs. To begin with the most remote bearing of this objection, respectable authors have gravely recorded that children have not only breathed, but uttered sounds in the uterus—laughing and crying, and even making exclamations, before there was any question of the process of labour*. Not only have ancient and foreign authors spoken of such cases as well authenticated, but in the 26th volume of the Transactions of our own Royal Society, there is a circumstantial account of a child that had been crying in its mother's belly for five weeks, except a day, before its birth, after which it became a very quiet inhabitant. The case is reported by Derham the Physico-Theologian in a communication to Sir Hans Sloane. We cannot but conclude that Mr. Derham was gifted with powers of belief not very common in our days. Mahon properly inquires if the best possible authority be sufficient to establish so extraordinary a fact? "Few writers," he adds, "venture to say with Bohn, that they themselves have heard it—three-fourths quote hearsay and adduce witnesses†."

* Livy in the first and third decades of his history alludes to seasons in which many great wonders were recorded to have taken place—among which were children in the mother's womb crying "Io triumphe;" bullocks talking, &c. As long as such illustrations keep this sort of company, they will not embarrass us.

† Med. Legale. II. p. 396.

Derham speaks only from the account of the mother and the midwife.

Dr. Hutchinson* says, "it is proved that an infant may respire whilst it is in the uterus, when its mouth presents at the dilated orifice of that organ, and the vagina admits a free passage for air to it." Mahon admits this as the only clear case in which the fœtus can respire freely before its birth; and without enumerating circumstances that must contribute to render it at least a very rare, if not a very doubtful occurrence, the fact that such a presentation will render a labour so difficult, that the assistance of a professional person will be indispensable, does away with the force of the objection †. Infanticide, under such circumstances, cannot be committed secretly; and it is the crime of a solitary individual, which can only be perpetrated where labour has been concealed. Where, therefore, a child respires in utero, a charge of concealed birth, and consequently of infanticide, seems by that very event to be guarded against.

After the head of the child has passed the os uteri, there is more reason to think that respiration may be attempted, and partially performed, before the child be born; and this even while the head is within the external parts. I have in my possession the lungs of a fœtus that strongly favour this belief. A gentleman who practises and teaches midwifery

* Dissertation on Infanticide, § ix.

† Mahon, ut supra, p. 401.

in London with unquestionable ability, informed me in the autumn of 1819, that he had a fœtus for my inspection. He had been called by the attending midwife to a woman who had been in labour sixty-four hours, in order to deliver her by the forceps. For twelve hours the head of the child had been resting on the perinœum, and during this time there had been no pains. They had returned on his arrival, and the child was expelled by the natural efforts of the mother, with the face black and swollen, the head elongated, and the scalp slightly lacerated. The fœtus was quite dead; the discharges were very offensive, and the funis discoloured, as if the putrefactive process had commenced. The people being in poor circumstances, the body was easily obtained, and was considered by us as an unquestionably still-born fœtus, and consequently a proper subject for experiment. On examination, there were no signs of putrefaction; the lungs were apparently collapsed, and seemed as solid as they generally are in a case of death before respiration. The colour, however, in certain places was lighter than usual. Under these circumstances, and on taking them out with the heart and œsophagus attached, they were found to float near the surface of the water. Putrefaction was out of the question; we had every reason to believe that no air had been blown into the lungs; and it may therefore be taken as a case in which the child had breathed imperfectly before birth—if the advocates

for that opinion please; but if so, the labour was of a nature scarcely compatible with a charge of infanticide or even of concealed birth.

The late Dr. Hunter was of opinion, that when the head, or mouth of a child was born, or in other words, had passed the external orifice, it would begin to breathe, and yet might die before the rest of it came into the world. The largest part of the child having passed, there can be but little probability of that which should follow being retained; and, if it should be so, it seems established that there can be no danger, unless the face of the child be enveloped in the membranes, and thus allowed to remain—or some unusual impediment exists to the access of the air through the mouth and nostrils.

To plead in defence of an allegation of infanticide, that the child died after its head was born, is what we cannot conceive. A woman accused of the crime would not venture to draw so nice a distinction, and though a practitioner were to admit the possibility of the occurrence, it would be a bare possibility only. In such a case (allowing it to occur) there cannot be full distension of the lungs; for the play of the respiratory muscles will be opposed by the pressure of the parts of the mother on the thorax. If therefore we find that there has been partial inflation of the lungs, with increased *absolute weight**, attempts to respire must have been

* This will be explained presently.

made on the part of the child; and if there be doubt whether they may have occurred before or after birth, the accused will have the benefit of the uncertainty. It is to be supposed, however, that other considerations may assist in the formation of a right opinion.

2. It has been urged, that though a child be still born, air may be artificially introduced into the lungs. A woman delivered privately of a still-born bastard child, may do all in her power at first to resuscitate it, by blowing air through the mouth or nostrils; but, finding the infant really dead, she then adopts the resolution of concealing her shame, there being no moral reason for suffering the knowledge of the birth to transpire. It has also been surmised that this operation may be performed through malice on the part of another person. There is no doubt that air may in this manner be introduced; and if so, how are we to verify its origin?

It is a thing very difficult to effect under the circumstances alluded to; for a woman during the process of parturition, without the means or the ability to arrange the infant properly for the success of the experiment, and in all probability ignorant of the proper manner of undertaking it, is not likely to succeed. But, supposing that air has been conveyed into the lungs in this manner—authors have pointed out in such cases the flatness of the chest, and the absence of crepitation and hæmorrhage on cutting into the lungs. These will be but partially distended; and

Beclard has observed, that all the air thus introduced may be squeezed out, and the lungs restored to their original density, upon which they will sink in water; while those that have respired acquire new properties, and no pressure will cause them to sink to the bottom of a vessel of water*. But the distention of lungs after death can never increase their *absolute weight*, which respiration must necessarily do.

3. It has been remarked, that the lungs may be rendered specifically lighter than water by the evolution of air in the course of the putrefactive process. In such a case, the child of course must have been some time dead. It may either be supposed to have been carried in the uterus for a certain period after death, or that a sufficient time since its birth may have elapsed to allow the process of putrefaction to advance considerably, before the body be subjected to anatomical examination. Were this emphysema to take place, the lungs might be rendered specifically lighter—and I am not disposed to deny that it has been observed.

Haller procured the lungs of a child that died before its birth. They were of a dark red colour, and both when entire and when cut in pieces, sunk in water. A portion being left to putrify in water that was never changed, the colour became brighter, it was covered with air bubbles, ascended gradually as the process of putrefaction advanced, and at

* Bulletin de la Societé d'Emulation, Nov. 1818.

length reached the surface, where it continued to float.

Admitting that lungs are putrid, and that air is consequently evolved, it is to be observed that the process is from without inwards: the aëriform fluid is generated especially on the external parts of the lungs, lying under the enveloping membrane in bubbles, running along the fissures of the component lobuli. If the lungs are in this state, by squeezing them hard these bubbles will burst, and, the gas escaping, the lungs will be heavier than water, as before.

But I attach little importance to this objection. Bodies have repeatedly been found in a very advanced state of putrefaction, where the lungs were not yet overtaken by it. Ballard was called to examine a child, the muscles of whose face were reduced to "bouilli"—were in a state of solution—and in which putrefaction had advanced so far as to prevent discrimination of the sex—notwithstanding which the lungs immediately sunk*. Whatever may be the cause, the lungs resist putrefaction longer than all the other parts of the body, excepting the bones. This fact has been assigned to their compact structure previous to respiration, and their not having been excited to action—as well as to the impenetrable nature of the membrane in which they are enveloped, it being well adapted to oppose the passage of aëriform agents.

* See also Mahon, Med. Legale. II. p. 400.

But in an extreme instance, if there be putrefaction to such an extent as to baffle our inquiries, we must decline the attempt to throw light upon the case by our investigations. At the same time we should take care not to admit the validity of an *apparent* obstacle for that of a *real* one.

4. On the other hand it has been asserted, that the lungs of children born alive, after complete respiration, sometimes sink in water. This can only be admitted as fact, where there is disease; and such a phenomenon may therefore be observed in the lungs of adults. But we are considering healthy lungs only—a *sine qua non*, perhaps, in the condition of those upon which we undertake to make experiments. Tubercles, vomicæ, schirrhosities, and congestions of blood are extremely rare in the lungs of new born children *; but if we find them, (and where they exist they ought to be discovered) we can easily assign to them their real degree of importance. Where difficulties are thrown in the way, however, which we cannot get over satisfactorily, our duty will be to decline any positive deduction, and leave justice to satisfy herself in some other manner.

Hitherto I have been speaking of the lungs in

* In the bodies of *seventy* infants opened by Buttner, not a single case of diseased lungs occurred; and in all those inspected by Ballard, one only was observed, which he says was too rare to merit being made the ground of exception to the general rule.

their *entire* state; but this last-mentioned objection suggests the necessity of making a distinction as to portions of these organs. If there be a tubercle, or even a congestion of blood in them, it will probably be confined to some particular part, and not a conversion of the whole substance of the lungs into a mass of morbid structure. Therefore, granting that there is a morbid or solid part, (if that term be insisted upon,) which will cause lungs that have respired to sink in water, let such a part, or such morbid portions, be separated from the sound structure. The former may subside in the fluid, but the latter will not. Let the same measure be resorted to with lungs that appear to be partially distended with air, and in those that exhibit signs of putrefaction. The fact is—and all authors who treat the subject very properly inculcate it—that whether there be doubt or not as to the state of the lungs, the experiment is not conclusive or complete till the lungs have been cut in pieces, and tried also in that manner. This observation will help us to estimate the force of the next objection that falls to be considered.

5. It has been noticed that in sound lungs one will sometimes sink, while the other will float. In this state there can be but partial inflation of one, the other remaining in a state of collapse. The observations called for here illustrate a curious fact in infantine physiology. If the buoyant lung in such a case be the *right* one, the force of the objec-

tion is lost. Dr. Hunter has stated that "if a child makes but one gasp, and instantly dies, the lungs will swim in water as readily as if it had breathed longer, and had then been strangled*." That the lungs will float after "one gasp," I am not prepared to deny. The eminent author of the statement just quoted, gives it as one which he knew "from experience to be true," and for the confirmation of which he appeals to every person who has been much employed in midwifery. There is reason, however, to take the clause "as readily as if it had breathed longer," with some caution.

According to experiments made by Portal, it seems to be established that the air enters the right lung sooner than the left. His memoir on the subject was first produced in 1769†; and an analysis of it is contained in the first volume of Dr. Duncan's Medical Commentaries, where the following *ratio* of the phenomenon is given. "The trachea, when it "reaches as far down as the second or third ver- "tebra of the back, separates into two branches, "differing from each other in capacity, length, and "direction. The right is one fourth part thicker— "[wider]—and one fifth shorter than the left, while "the direction of these tubes undergoes changes at "different ages. The left bronchial tube in a fœtus

* Paper read before the Medical Society.

† Memoires de l'Academie Royale des Sciences, année 1769.

" is inclined more backwards than it is in an infant " after respiration has once taken place; and the " right, in an infant born to the full time, is more " elevated than before birth."

The result of Dr. Hutchinson's researches on this point is very satisfactory. They confirm the opinion that respiration is not completely performed on the first effort, but that it is a process gradually advancing to perfection—and that it will be more or less protracted according to the degree of vigour of which the infant is possessed*. Life may be maintained under a very imperfect state of respiration. We often find on opening adult bodies, one lung entirely consumed by disease, and perhaps part of the other, notwithstanding which the subject had been able to live for some time. This occurrence therefore rather tends to enforce the practice of trying the lungs by portions, than to invalidate the result of a fair experiment; and the observation naturally introduces the only formal objection that remains.

* Dissertation on Infanticide, sect. ix. The author observes that he had seen a case " where the *right* lobe [lung] when separated from the left, sank in water, though it was the most dilated by respiration, and the infant had lived forty hours, and cried pretty strongly: but it died from suffocation, by being over-laid by the mother, which produced such an engorgement of blood in the lungs as to counterbalance the influence the small quantity of air they contained could have on their s: g:" Still here, a *piece* of the lung, so gorged, floated.

6. It has been argued that children may be born alive, and exist for a while without respiring at all.

Many children come into the world without any positive signs of life; but through the employment of proper means recover, perhaps at the distance of hours, and thrive very well afterwards. It has therefore been alleged that even if the inflation and buoyancy of the lungs should be admitted as a proof that the child was born alive, their being collapsed and sinking in water is not proof that the infant was still born. Suppose then that a bastard child comes into the world in a state of Asphyxia—either attempts will have been made to resuscitate, or they will not. In the former case the objection resolves itself into the second one, already discussed; and in the latter, the worst mistake that can ensue will be to pronounce the child to have been still born, on the criterion of the Hydrostatic experiment—an opinion that must prevent the possibility of procuring the condemnation of an innocent person. But, if from evident signs of circulation having been carried on after birth, such as may be presented by wounds, or other sorts of violence having been inflicted on the infant, we should be led to believe that the child had been born alive, while the state of the lungs is urged against that opinion, it will be the business of the judicial authorities to decide upon the import of the doubt raised; and if it cannot be got over, the accused will have

the benefit of it. Cases will occur in which we should act in a most unwarrantable manner did *we* pretend to ascertain the truth.

The *specific gravity* of the lungs is not the only circumstance about them affected by the change in the circulation after birth. While it becomes so much diminished, their *absolute weight* is increased. When the fœtus was dependent on the mother for its supply of blood, and the circulation went on through the medium of the umbilical cord, and those other channels described as peculiar to the uterine infant, part only of the fluid went to the lungs—that part which was required for the nutriment of their substance, and no more. The qualification necessary for the purpose of circulation which the blood receives from the atmospheric air, was imparted to it in the lungs of the mother, and transmitted from her *arterial* system to the child. Separated from her, such a supply is no longer possible, and the infant acquires new powers—the most early and important of which is the adaptation of the blood for the purposes of life, through the medium of its own pulmonary system. The whole circulatory fluid passes to the lungs. These are not only distended with air by the act of respiration, but they are now filled with blood, their vascular system is enlarged, and they are increased in *absolute weight.*

Dr. Baillie, in his Morbid Anatomy, under the head of *Inflammation of the Lungs,* observes that " the portion of the lungs which is inflamed becomes

" considerably *heavier* than in the natural state, " *from the accumulation of blood in its vessels* and " the extravasation of the coagulable lymph; it " therefore commonly *sinks in water.*" This is a fair illustration of what takes place in the fœtal lungs when their vessels are throughout filled with blood; they must become heavier also.

For the application of this fact to the detection of infanticide, we are indebted to Professor Ploucquet of Tubingen. He styles it the *New Pulmonary Test,* Nova Pulmonum docimasia; but it has been since called by his name—and by that designation I shall treat of it.

" The blood vessels," says this author *, " in the " fœtal lungs, being yet collapsed and compressed, " admit but a small quantity of blood; but now " (i. e. after respiration) being dilated, extended, " and more free in the expanded lungs, they receive " a greater quantity, are thereby further expanded, " and acquire a larger diameter. This is a *perma-* " *nent* change; so that, from the increased capacity " of the vessels a greater quantity of blood remains " after death in the arteries,—at least the smaller " ones—but especially in the veins, than in lungs " that have not respired. Consequently the *abso-* " *lute weight* of the lungs cannot but be increased."

Although Ploucquet seems to have announced this discovery so far back as 1777, I am not aware

* In a tract published at Tubingen, 1782, called " Nova Docimasia Pulmonaris, &c."

that it has ever been mentioned in a Court of Justice in this country—although by this time had even a very moderate share of attention being paid to it, its applicability or inadequacy must have been fully established. The very existence of such a test is yet unknown to some British practitioners.

The observations, or experiments made by Ploucquet himself, as well as those communicated to him by Jæger down to 1782, had warranted the statement, that the weight of the lungs of a full grown fœtus which had never respired was to that of its whole body as one to seventy; while in new-born infants, after respiration had been established, it was increased to two to seventy, or as one to thirty-five—that is, absolutely doubled. These experiments, however, seem to have been too few to warrant the establishment of a rule from them; and of this Ploucquet was fully aware; for he expressly observes, that it cannot be received as an established proof until after a great number of trials shall have been made, their results accurately recorded, and even a scale of proportions deduced between the absolute weight of lungs to that of the bodies of children born at different periods of gestation.

Since that time experiments have been made, the result of which would appear to discourage all hope of establishing such a standard. Lecieux, among four hundred examinations, found such a discrepancy, that one cannot but suspect either an improper selection of subjects, or inaccuracies and

inattention in the investigation *. Weakly children should not be used for this purpose, nor those that vary much from the established standard of gross weight, according to their term of gestation. In weakly children, respiration, in all probability, is not so soon accomplished to the full extent as in others; and though it is necessary that the test should be applicable to *all* children born after the seventh month of pregnancy, whatever may be their gross weight, subjects should not be indiscriminately employed for the purposes of experimental inquiry.

My principal view in calling the attention of practitioners to the proposed test of Ploucquet, is to impress them with an idea of the necessity of examining into it for themselves. If only ten practitioners were each to examine the bodies of ten children *in a proper manner*, the aggregate amount would be of infinite consequence, and might perhaps establish or set aside the test at once—neither of which appears yet to have been done. I must confess that, hitherto my own observations have disposed me to

* I expected to have been able to insert the result of some investigations of my own upon this point; but they have not yet reached a satisfactory amount. I may, perhaps, be excused for saying in the mean time that, as far as I have personally examined into the weight of the lungs, the result has preponderated in favour of the new test of Ploucquet. I hope shortly, however, to lay before the profession some details on the subject, on a scale that may better warrant conclusions.

anticipate a successful result—and I would suggest the following mode of proceeding.

Practitioners of midwifery, and I mean male practitioners only, are those to whom the profession must look for a sure basis of investigation; and unless we set out upon unquestionable grounds, we may do infinite mischief. It is requisite that we should be accurately acquainted with the history of the subject upon which we are to pursue the inquiry. We should be satisfied either from our own attendance, or the report of the accoucheur who has attended the delivery, that the child has performed the function of respiration with ordinary vigour for a definite space of time, or that it was born quite dead; that it was above the seventh month, and either a full grown fœtus, or born at a specified term short of nine months. In fact, we must select cases in which there is neither any thing mysterious, nor out of the ordinary course of events. We are first to weigh the whole body; then, separating the lungs carefully, weigh them alone, accurately noting the leading circumstances of each case. This will afford the best means of acquiring a fair estimate of the test of Ploucquet, and will establish the necessary data, (or at least ascertain if such really exist) upon which to construct a standard ratio of proportionate weight between the lungs and the body.

Private cases are preferable to those that occur in hospital practice; and they should by no means belong to the indigent classes. Under the pretext

that we wish to ascertain the cause of death, refusals to inspect the body will not often be met with.

Such practitioners as may be inclined to pursue this idea, may derive assistance from using forms similar to those given at the end of this volume.

If the hydrostatic test, which seemed to require no particular management in the performance, has met with so much opposition, it is not to be wondered at, if this new, and nice, and difficult experiment, requiring some knowledge of arithmetic, was by no means acceptable to all practitioners; and accordingly its promulgation was met by several formal objections, which I shall here enumerate; some of them with the answers of the discoverer, as given in the treatise above quoted.

1. On the ground that nature, in various parts of the body sometimes disregards regular proportion, it has been enquired whether a constant ratio of the weight of the lungs to that of the whole body can be obtained? To this our author replies, that "exceptions from the ordinary law of nature, and "unusual constructions do not overturn the law "itself." He founds his belief "that a mathematical "ratio may be established, on the result of *numer-* "*ous* experiments, from which a *mean* may be ob- "tained, applicable to extreme cases. Moreover, "with the exception of monsters, these aberrations "do not occur so frequently in new-born children "as in grown up persons, in whom during the

" course of life innumerable noxious powers may " effect a change in the original construction."

A proper advice to those who put this enquiry would be, to make a number of observations themselves, in order to help us to form the proper answer.

2. On the difficulty of establishing the experiment in children, who do not, in point of weight, answer the usual description of full grown infants, the remark, as to numerous experiments and the establishment of a scale of proportions, is repeated—but as the lungs are less liable to variation in point of size, weight, &c. than the rest of the body, probably the result of accurate and numerous experiments will be to enable us to draw the conclusion from weighing them alone. " Thus, the ordinary medium weight of the lungs of a mature fœtus that has never respired being two ounces, should the lungs on examination be found to weigh about twice as much, we may confidently declare that respiration has taken place"—though the child's whole body should be above or below the usual proportion.

3. It having been urged that if the child had died of hæmorrhage, the loss of blood would alter the ratio—in such a case he argues that the lungs would bear a greater proportionate weight. " In dying," says Ploucquet, " the right side of the heart gives some pulsations after the left is still; and therefore some undulations of blood will be sent into the lungs, (if they have been once dilated) which

will remain there, because access to the left side of the heart is refused—by which the absolute weight will be augmented." *The loss of urine and meconium should be noted, and subtracted from the weight of the body.*

4. Dropsy of the body, or of the lungs themselves, and putridity may destroy the ratio. Admitting the occurrence of such cases, we must class them among those that cannot be cleared up by physiological proofs.

5. Nodes, schirrhus and mucus congested in the lungs will augment their weight—but these are discoverable, and their existence forms cases to which the test is not to be considered as applicable.

6. It was urged by Jæger, that the lung of a non-respiring fœtus might become equal in weight to that of a fœtus which has breathed, by a congestion of blood; so that if inflated, by swimming in water, it might not differ much from one that has respired. The existence of the foramen ovale and ductus arteriosus in a fœtus that has never respired, must prevent a congestion of blood in the lungs by the easy means they offer of escape—"by whatever force it may be urged to such lungs, it cannot rush in any but the usual mode." Ploucquet gives an account of two cases from Rœderer, the one of a boy and the other of a girl, both of which died *in partu* without having respired, and in which the hearts and their vessels were extremely gorged with

blood, the membranes of the thorax in the latter being red and inflamed, but no remark (though the phenomena were described particularly) was made in either case upon the state of the lungs; and Rœderer was particularly attentive to all matters relating to Medical Jurisprudence.

After all his concessions, our author makes this declaration. "Though the power urging a small quantity of blood into the vessels of the lungs, beyond the usual mode, may distend them above their natural diameter, it will never so increase the weight of the lungs, that they will approach the ratio of those which have respired." Nor would it be candid to pass over in silence the aphoristical opinion of such an authority in the matter of pulmonary tests. He lays it down that whatever is to be learned from these organs, "they can only be brought forward to prove the life of a child—never to disprove it." Experience alone will enable us to appreciate this opinion as it deserves.

I have now alluded to the only pulmonary tests that are capable of practicable application. Another has been proposed by Professor Daniel, but the principle upon which it is founded has appeared with good reason to be unsatisfactory. He considered, that as the process of respiration increased the circumference of the thorax, and altered its shape and capacity, a scale of admeasurement might be established. It is proper and even requisite that in taking account of the appearances and changes

connected with the question of respiration, in these cases, we should not neglect the aspect of the thoracic cavity; but it can only be considered as a concomitant item in the amount of proof. I think it more advisable to pass over entirely the investigation of a proposition rejected on all hands after due consideration, than by discussing an obscure point, run the risk of confusing, rather than aiding the views of the practitioner.

I proceed now to enumerate the more ordinary ways in which a new-born child is deprived of life.

Although the law was deemed severe that took away the life of a woman for concealment of pregnancy, it is wise, and if the preservation of the species be of any importance, even necessary, (in northern climates at least, and among civilized females,) to guard against solitary delivery. A woman in a peculiar instance may perhaps be endued with sufficient knowlege and physical power, to render those services to her offspring which infants require at the time of birth in all cases, and even to obviate occurrences that frequently accompany the entrance of a child into the world, and menace it with immediate destruction. But such is not usually the case. Many unfortunate women, who incur this penalty of irregular commerce, are unacquainted with the nature of the event that must terminate their pregnancy; and the immediate consequences of parturition are such that a woman can hardly be supposed

capable of ascertaining the real state of her child at the moment of its extrusion from her own body ; or if she be, she may not have strength under her own sufferings to do what is right, even if possessed both of knowledge and inclination. The real duty of an assistant, in the great majority of labours, is not so much to aid or regulate their process, as to perform the necessary services that are required towards the child when born. Accordingly, in the strict, and by no means severe view of the subject, if a female wilfully incurs the danger of a solitary accouchment, criminality ought certainly to be laid to her charge, even though there should be no ground for insinuating that any injury was purposed to or perpetrated on a child found dead under such circumstances. Medical writers on Infanticide have therefore separated the *modi necandi* into two classes—that of *omission,* including the fatal event occurring in the manner just alluded to—and that of *commission,* where the life of the infant has been actually *taken* away.

Let us first advert to the former. We may suppose the delivery to have been solitary and unassisted, or it may be that there is an accomplice, who wilfully withholds the requisite aids. Four ways, in which a child may perish by *omission* or neglect, have been commonly enumerated.

1. After the head is born, the adaptation of the shoulders to the passage (I speak of the common presentation of the head) turns the body half

round—so that if the woman be lying on her side, the face of the infant may be placed downwards, and, if not removed, it may perish by smothering. It may be drowned also in the discharge of blood that follows its expulsion. Children are often born with a portion of the membranes over the face, which is a complete impediment to breathing, and must be speedily removed. In cases also where the umbilical cord is longer than usual, it often passes round the neck of the infant, and strangulation might thus take place.

2. When the living child is fairly separated from the mother, and no impediment exists, it soon begins to breathe, which is a sign that the course of the circulation is altered. The apparatus, therefore, which had hitherto carried the blood between the fœtus and the uterus, becomes useless. The mere inconvenience of its continued attachment would have pointed out to the human female the necessity of separating the secundines, as instinct has directed the lower animals to do. Accordingly, one of the first attentions a new born child receives is to disengage it from these, by cutting the umbilical cord. Although this should not be done until the function of respiration has decidedly manifested itself, as for instance by the crying of the child, and therefore not until the blood has ceased to pass by its previous accustomed channel, yet there would be the greatest danger of losing the child by hæmorrhage, were the portion of the cord remaining at the navel not pre-

viously secured by ligature. A second ligature is placed at a little distance from this one, not merely as a preventive of inconvenience, but as a proper precaution in case of a second child remaining *in utero*. The separation is made between, and a few inches are left on the side of the infant, that in case the first ligature should be insufficient, or come away, another may be efficiently placed behind it. It is criminal therefore wilfully to neglect these measures; and very important proofs in a case of child-murder may be afforded by the appearance of the umbilical cord.

There have been cases in which separation of the cord has taken place without any loss of blood to the infant. Therefore it may not always be correct to ascribe the death of a child, in whom the cord has never been tied, to this precise cause. Such cases are only exceptions to a general rule. Limbs have been violently torn from the body without any hæmorrhage, and yet no one ever argued against the necessity of applying the proper means of prevention under operations. From the fact just quoted, however, the necessity of tying the umbilical cord in new-born children has been denied. But so well established is the rule of securing it in this manner, that where it is found to have been departed from in the case of a child born alive, the best pretence that can be set up must be ignorance—an explanation that it would not be proper to admit.

It has been argued that the vessels of the umbilicus are so contractile, that they form their own impediment to the loss of blood when divided, in whatever manner; and the analogy of animals, who merely divide and cannot tie it, has been resorted to. Not only, however, has it been shewn that the structure of the human cord is not the same as in the brute species, that vessels of their magnitude do not contract, and the truth of the statement as to their actually contracting denied, but it appears very questionable whether the œconomy of animals has been accurately observed. Chirac reported to the Academie Royale *, that he saw a bitch, which had twice whelped, pressing the cords of her puppies with her teeth, as if masticating; that having had a third litter, after losing two of her incisor teeth, she could not compress the cords so well, and the whole of the puppies had umbilical hernia.

Although the doctrine that a ligature is not required on the umbilical cord cannot be admitted, we must not conclude from the mere circumstance of no ligature being found, that the child has died precisely from that cause. In such a case, however, (which should be always investigated with caution) if there be no other cause of death discoverable in the body of the child, and the whole circulating system be void of blood, (the right side of the heart and the veins, being usually found to contain it after

* Histoire de l'Academie Royale des Sciences, 1716.

death) we cannot but conclude that the infant has died in this way from hæmorrhage. On the other hand, if blood be found in these vessels and cavities, some other cause of death must be sought for—it has not perished through the ligature being neglected.

3. A new-born child may perish by exposure to cold—in other words, by merely neglecting to keep it duly warm. Exposure to cold in a new-born infant may be the real cause of death, even where every other aid has been withheld; and in premature or weakly children, the subjection to a lower degree of temperature than they enjoyed *in utero*, is extremely hazardous. The signs of a child having perished in this manner, are a determination of the blood from the superficies of the body towards the interior, leaving paleness of the skin and vacuity in the vessels of the surface. But in such an instance, there will in all likelihood be strong corroborative circumstances to lead to a right conclusion, as an infant can scarcely be supposed to die of cold, but in an exposed situation.

4. All other aids may be afforded—the infant may be cleaned, the umbilical cord properly managed, and due warmth maintained, but it may yet perish for want of nutriment. This, however, is a case not likely to occur. It cannot suddenly produce the effect where it might be intended, and would to a certainty be the means of disclosing the secret,

unless in a very remote situation, and connected with other influencing causes of a fatal nature. A child, however, may even be exposed and abandoned, sufficiently clothed to escape the effects of cold, and remain thus until it dies for want of nutriment. The dissection of the body would ascertain the fact as to its having been fed or not, at least for some time before its death.

Passing over the mischief that may be done to a child by mismanagement, and officious interference, which belongs rather to the obstetric than the legal consideration of child-birth, I now proceed to state the ordinary ways in which children are actually murdered at or about the time of birth—or to treat of Infanticide by *commission*.

New-born infants may be the subjects of every species of violent death that we know to be inflicted upon older persons, and which have been already treated of. The remarks which have been introduced in the former parts of this work will therefore have their use here.

The fundamental supposition that the murdered infant had respired, being kept in mind, (for indeed we are not to imagine that inquiry can be made into the cause of death, until the fact that the subject was alive be first inferred) it will not here require much discussion as to death by poison, strangulation, drowning, wounds, and the like. The œconomy of the infantile system, when acted upon in any of these

ways, will be disturbed in the same manner as that of adults. But there are some modifications of injurious interference to which young children are exposed, and which cannot be practised upon grown up persons.

1. A child may be killed by *premature ligature of the umbilical cord.* It may, and often does happen when a child is born that the blood continues for a short while its accustomed course; and respiration has not yet commenced. If a ligature be applied then, the original source of vital support is cut off, before the new one be established. Hence it is a rule in the practice of midwifery not to apply the ligature until by crying, or some other unequivocal signs of respiration being manifested on the part of the infant, the change in the circulating œconomy be surely indicated. For the most part, however, this signal is given so soon, that we are not to suppose a ligature will be often fixed with such fatal promptitude — nor indeed in ordinary cases even accomplished where it might be intended. There is no occasion therefore to discuss this point.

2. With regard to *suffocation,* there have been certain practices detected, which are not unlikely to be resorted to. The mere application of the hand to the face of so helpless a being will be sufficient to take away its life; and if done after the child has been permitted to breathe, we shall find the consequent phenomena of congestion in the pulmonary vessels, right side of the heart, &c. Children are

often smothered by being placed under bedding, hay, or even chaff, mud, earth, or sand, &c. Where it has been buried among any such substances as those last mentioned, we may probably detect some particles about the mouth or nostrils. It is also averred that they have been suffocated by exposure to noxious inhalation, as the fumes of burning sulphur—and that they have been choked by forcibly doubling back their tongue in the manner alluded to when treating of smothering *. But if the fact be established that the child has been born alive, it will be unnecessary to enlarge upon the mode of examining and estimating any of these causes of death, after the explanations that have been offered concerning them in the adult state. New-born infants may be killed by *drowning*, *hanging*, and *strangling*, in all the varieties of manner that have been already discussed; and they have very often perished in privies. It is unnecessary to say any thing upon Infanticide by *poisoning*.

3. Besides those evident lesions occasioned by many wounds and other kinds of violence, which the most superficial examination will discover, it is necessary to be aware that a horrible device has been resorted to, in the hope of escaping detection; viz. thrusting a long, fine and sharp wire into the brain by the fontanelles, behind the temporal bone through the squamous suture, or into the spinal

* Page 231.

marrow between two of the vertebræ; and also into the heart. A midwife was executed at Paris for practising this upon infants before the head was expelled from the vagina—and consequently before respiration could have taken place. Careful examination will detect even this should it occur: and fractures of the scull, or luxations of the cervical vertebræ will speak for themselves.

It now remains to make the application of all that has been said; and this I shall do in attempting to describe the manner in which the practitioner should proceed in the investigation of an alleged case of Infanticide.

When authorised to make the necessary inquiries, he should first take a careful and deliberate account of the adventitious circumstances and appearances about the child; the more particularly, if it has been discovered in an exposed situation, and has not yet been removed—which should always be avoided, if practicable, until the inquest has been held, upon view of it in that situation. Let a note be made of every fact and appearance, as they are discovered. On this account, as well as for greater certainty and corroboration, there should be two medical men if possible; and the one may write while the other dissects. The nature of the situation in which the child is found should be noted down: the state of the body as to filth or blood: and if the child has been removed from an exposed

situation, it should be recorded whether it be clean or otherwise; and if the latter, of what nature the substance is that dirties it—whether any mud, or other matter capable of stopping the mouth and nostrils be found about them.

This being accomplished, the next step is to have the fœtus washed, and the head shaved—then to weigh and measure the body, and carefully examine, with a view to ascertain its probable age as to the period of utero-gestation. The marks by which we are to decide upon its viability—upon its being under or above the seventh month—have been already given*. It is to be noticed whether it is in a sound or putrefied state, and if the latter, to what extent the putrefactive process has attained, as well as what parts appear more particularly affected by it. It should be also carefully recorded whether there are appearances of its having died in utero, and having been afterwards retained there for some time †.

Before proceeding further, the surface of the body is to be minutely examined, in order to detect any ecchymoses, or wounds—more particularly in or about those parts where such instruments as I have just spoken of might find a passage—as the fontanelles and sutures of the head. If such wounds have been made, a slight ecchymosis can hardly have been avoided, and any discoloration of this nature, however trifling, should be scrupulously looked into.

* Page 312. † Page 315.

Larger wounds and bruises will necessarily attract notice. Nor is our attention to be confined to wounds. We must recollect that there may be fatal luxations. It is therefore incumbent to ascertain the state of the cervical vertebræ. Children are easily killed by twisting the head about. If any external indications of the foregoing nature be detected, the practitioner must consider them as an imperative call to examine carefully the parts beneath. In doing so he will at once verify the character of discolorations, whether they are real ecchymoses, caused during life, or sugillations only that have arisen after death. By dissecting carelessly, it often happens that the progress of inquiry is baffled by mismanagement. In pursuing the course of such a lesion as that caused by the introduction of a slender wire into the brain, too much nicety cannot be followed; and in every direction to which the operator may have to turn his attention, let him scrupulously avoid confounding his own derangements of parts with those that previously existed. Above all things, as extravasations of blood are of extraordinary import in these tender subjects, attention should be paid to avoid causing its effusion, by unnecessarily cutting into vessels that may contain it. Before any of the cavities of the body are laid open, the appearance of the umbilical cord should be carefully observed; and any marks of pressure about the neck should be scrupulously distinguished.

In examining the spine, it will be more convenient to do so before laying open the large cavities. After dissecting the soft parts carefully from the vertebræ, it will be particularly advantageous to take off the dorsal parts of these by means of a pair of scissars; and the apophyses of the true vertebræ will be easily cut through. The practitioner will be able to estimate justly any wound, or laceration, or effusion of blood, discovered about the spinal marrow.

We proceed now to the interior cavities; leaving the head till the last. We should commence our examination at the upper part of the trunk, laying open the thorax and abdomen as nearly together as possible. Our incisions must begin higher up than in ordinary dissections. The cavity of the mouth and fauces, being important parts in the investigation, we should endeavour to obtain a commodious view of them. Authors direct an incision to be made from the under lip to the top of the sternum, and another along the inferior margin of the lower jaw—dissecting back the triangular portions of the integuments thus traced out, then dividing the jaw at the symphysis menti, and turning back each lateral portion, separating with the scalpel what soft parts are attached to the bone. The head should be bent back, in order to put the soft parts that are to come under the knife upon the stretch. The position of the tongue should be observed before we proceed farther; and if there is any thing unusual, let it be

particularly noted. The contents of the mouth, if any, must be recorded: straw, feathers, sand, mud, earth, excrementitious and other extraneous matters have often been introduced there. The quantity and consistence of mucus should be observed—and, if necessary, the state of the nasal cavities should also be taken into account. By pulling the tongue downwards, and cutting through the arch of the palate, we shall have a view of the pharynx. We must divide the larynx and trachea, observing whether there is any fluid; and, if so, noting its appearance.

The incision is to be continued downwards over the sternum, and when we reach the lower part of that bone, or rather of the cartilages at its lower extremity, a separate incision is to branch off through the abdominal parietes to the spine of each ilium. Let the sternum and ribs be laid bare in the usual manner; and in dividing them, great care must be taken not to plunge the knife upon the viscera within the thorax. The use of a scissars will therefore be again advantageous, as not being so liable to produce this kind of mischief. We must be careful, as we turn down the flap of the abdominal cavity, to examine the umbilical cord without, in order to ascertain whether and in what way it has been divided, and to secure the umbilical vessels within by a ligature before we apply the knife to them. If all this has been properly effected, the important inspection that is to follow will be made with every possible advantage.

These great cavities being laid open, before we venture to handle any of their contents, we should take a general but an accurate view of their relative aspect—as regards the diaphragm, in particular, whether it be remarkably arched towards the thorax, or of the usual figure in the bodies of those who have lived for some time. It will save inconvenience and promote accuracy, if the abdominal viscera be removed before those of the thorax be meddled with. First, however, let the position of the lungs be carefully remarked—how much of the cavities of the thorax they appear to occupy, likewise their colour and general appearance in other respects. The liver should also be examined, and its sound or morbid state ascertained. The whole intestinal canal should be then removed, in the manner directed when treating of poisons, and for the same purpose*. Let the urinary bladder be examined as to its state in respect of distention or emptiness; and if any evacuation should have been caused by accidental interference, it is a circumstance that must not be left out of the account. The presence of fluids in the abdominal cavity must be looked for; and if there be any, their nature and origin should be verified—and any unusual or morbid appearance, as for instance, of inflammation or lesion from violence, is of great importance.

We now return to the thorax. It is impossible

* Page 96.

that the practitioner can forget the importance of the lungs, or overlook even the whole of the work which is to be performed with them: but if he should inadvertently resort to one step of the process before another that should have preceded, he will baffle his own efforts; and I am inclined to lay some of the uncertainty that has obscured the minds of medical men, with regard to the pulmonary tests, to confusion in the mode of making the experiment. There is but one order in which the steps can be taken, and if, after having pursued the investigation fairly to the end, the result prove unsatisfactory, the professional witness will be at least able to answer that he knew what was to be done, and did it rightly. He cannot then be accused of impeding the advance of justice.

It will be necessary to ascertain whether there are adhesions between the lungs and the pleura costalis. If so, they must be noted, and separated by the finger with all possible delicacy. It is a principle to be strictly kept in view, that these organs are to undergo no more handling than is absolutely necessary. We now take out the lungs, separating them from the trachea as low as possible; but as it is proper to preserve the heart in connection with them in the first instance, ligatures must be placed upon the vena cava and aorta. Let the lungs be sponged clean, if covered with blood, and their consistence, soundness, and colour carefully enquired into. If any part seems morbid, or affected by putrefaction,

let it be scrupulously noticed. They should be held inverted over a clean glass vessel, that if any fluid be ready to escape, it may be preserved.

A vessel about the size of a washing bason, and deeper, if it can be obtained, having been prepared, nearly full of clear fresh water, let the lungs be gently placed in it; and while they remain undisturbed, the following circumstances are to be carefully remarked: whether they sink or float—and if the former, whether they descend to the bottom—rapidly or slowly—or, if they remain suspended *in* the water, at what depth. If they float, observe if the buoyancy is decided and general, or if one portion floats while another sinks. Let them now be taken out, and accurately weighed, by drachms rather than ounces. The result being recorded, place a ligature on the pulmonary vessels; separate the heart by cutting between it and the ligature; reserve this organ for inspection; weigh the lungs alone, and place them a second time in the vessel of water. The appearances are again to be noticed in the same manner as before.

The next step in the process is to divide the right lung from the left, and to try them in the water separately. We must note any difference that appears in their degree of buoyancy; whether one sinks while the other floats; and if one floats more freely than the other it is of great consequence to ascertain whether it be the right or the left. The two lungs are to be preserved henceforward distinct.

The knife may now be applied, and when cutting through their substance we must be attentive to catch the crepitating sound that will issue from the cells if they contain air, as well as to mark what appearance there is in point of hæmorrhage. Each lung being cut in pieces, is to be tried thus in water, and any differences in respect of buoyancy are to be carefully noted. They are then to be pressed as forcibly as possible in the hand, or in a towel, and tried in water once more.

The heart is now to be taken, and carefully inspected, beginning with the vessels. The ductus arteriosus should be laid open; and it is necessary to remark whether it contains blood, or is empty: the right auricle and ventricle must be examined; the circumstance of congestion there will excite suspicion of death by suffocation. The state of the foramen ovale lastly demands attention.

It will be profitable to recapitulate here the import of the appearances we may suppose to have been discovered in the course of this investigation. If the diaphragm be very convex towards the thorax; and the lungs of a dark red colour, retracted from the anterior part of the cavities, not covering the pericardium, of a firm consistence resembling that of the liver, sink in water under every variety of experiment, emit no sound when cut into, and effuse no blood—when, along with these circumstances,

blood is discovered in the ductus arteriosus, and the foramen ovale of the heart is found to be open, the conclusion must be that respiration has never been performed. On the other hand, if we find that the lungs fill up their cavities, are of a pink or light red colour, elastic to the touch, swim high in water, make a crepitating noise and pour out florid blood on cutting into them, we need no further proofs that breathing has been carried on. If to these we should be able to add the corroborative result as to *absolute weight*, the mass of physiological evidence will be strong indeed. The mere fact of respiration not having been performed, is not, it seems, to be received as evidence that the child was not born alive. In this case all we can do is to declare that we can throw no further light on the matter from professional research, and leave it to law and justice to deal with the case in their own way. We should nevertheless continue the dissection, as we may, perhaps, ascertain more positively from other appearances, whether the child could have come into the world alive.

If we discover that breathing has been performed, and consequently that the child has lived after birth, we are to pursue the investigation with a view to discover the cause of death; and in its further progress, it will be conducted on the same principles as those that should guide us in examining the bodies of grown up persons under

suspicious circumstances. By keeping in mind the causes of violent death, we shall make a right use of the remaining parts of the body.

I shall not here make any particular account of the intestinal canal, further than calling the attention of the practitioner to the contents of the stomach. If there be water, we must examine it particularly, with a view to detect the fact of submersion—extraneous substances and the like are therefore to be taken into account. If there be alimentary matter, no further proof can be required as to the child having lived—on the other hand, a state of inanity will bear on the supposed cause of death, if that be starvation. If poison be in question, the mode of procedure has been already pointed out*. But in laying open the intestinal canal, we must in all cases take into account the state of the meconium. Infants in utero cannot evacuate this excrement; and if they come into the world dead, it is not to be supposed that any spontaneous evacuation will then take place. The sphincter ani should therefore be examined. A violent death in adults and in animals often excites a fœculent discharge, and this may go for something in the cases we are now

* Mahon observes, that in the stomach of a full grown child, there is a thick mucus of a pale ash colour. He admits the possibility of liquor amnii being there, known by its clearness, want of tenacity, and slight saline taste. But *water* either pure or contaminated, he considers as presumptive evidence of drowning.

considering. It will be said that in breech presentations, meconium is often evacuated during labour. Granted—but these cases cannot often form the subject of such enquiry. A woman can rarely be delivered in solitude where there is an unnatural presentation. And even if so, it would be accomplished under circumstances that would furnish very marked evidences of the fact. I am not inclined to attach great importance to the state of the urinary bladder, though it must not be overlooked. If quite empty, or very nearly so, it is probable that the child has lived—or that the urine has been evacuated after birth rather than before—as the bladder is not so easily acted on by pressure as the intestinal canal. These and like circumstances are not to be magnified into over importance. They belong only to the rank of subordinate proofs, and are to be searched for merely as corroboratives.

In opening the head, we do not seek for information whether the child has been born alive; but we may thereby strengthen our opinion even on that point. The cause of death may, however, be ascertained in this stage of the process. On fractures of the cranium it is unnecessary to speak. If punctures have been made, we must carefully examine their direction, and the degree of injury done to the parts within. Attention must be paid to detect morbid appearances, congestions, and even extravasations. It is therefore evident that too much care cannot be bestowed on opening the cranium. A

scalpel for the integuments, and scissars to remove the bones, are all the instruments required. An extensive crucial incision from ear to ear, and from the lower part of the os frontis down to the neck should be made, and the soft parts carefully retracted. The membranous connection of the bones will enable us now to use the scissars, and the parietal and frontal bones are to be taken away *.

What has been hitherto advanced on the subject of Infanticide, must appear to promote the conviction of a female accused of this crime. It is equally our duty to know and examine into circumstances that will bear an exculpatory construction—to promote the acquittal of the innocent, as well as contribute to the punishment of the guilty—or at least to be able to estimate the degree of credit that may belong to statements offered in defence. Some observations in regard to this subject must now be brought forward.

If the practitioner allows himself to reflect for a moment on the general tendency of the vulgar to exaggerate allegations, and construe suspicion into certainty, he will be in no danger of receiving an improper bias in undertaking investigations of this nature. The unthinking part of society delight in what is extraordinary, and feel a perverse interest in things that are necessarily odious to the more en-

* The instructions given by Dr. Hutchinson are very minute, and highly important.

lightened; in short, they are in a manner pleased with events that must be painful to the reflecting and liberal-minded. It is unnecessary to obtrude any formal exhortation to my professional brethren not to be led away by popular invective.

There are certain considerations, however, of a moral nature connected with allegations of infanticide, which the practitioner should not overlook. The natural affection of a woman for her offspring, is paramount to every other feeling; and often with the utmost detestation of the man by whom she has incurred the disgrace of illegitimate fruitfulness, and been treated in the most unfeeling manner, she entertains as deep-rooted an affection for the unfortunate evidence of her imprudence, as would be her pride as well as her duty in happier circumstances. In taking away the life of her child, she is driven to the commission of so unnatural a crime, that we cannot but admit the possibility of mitigating circumstances in many instances. The law allows of none, where the crime has been committed. It is not here (as it may be in killing a grown up person) that there was provocation urging to ungovernable fury, or that one's own life was threatened and in danger, or that an accident occurred from fire arms, or other chance medley. The new-born infant cannot be connected with any such influence. But a new-born child may actually die a violent death, and such an account be offered in explanation as our knowledge of the œconomy

of human parturition may not only admit to be possible, but even to be true.

Concealment of birth is a frequent occurrence; and in such cases it may be just to surmise the worst. But if we admit the possibility of a woman being delivered in solitude, without any such intention on her own part, and being delivered of a still-born child, what *moral* criminality will follow her resolving to conceal her disgrace, since no one can be thereby injured? A young female, to whom reputation is every thing, suspects herself to be with child. At first it cannot be more than suspicion. Why should she yet confide the secret of her shame to those who would be the first perhaps to take advantage of such confidence to ruin her? Time, however, confirms her unhappy surmises, and she is perplexed about the result. She is without a friend to whom she could reveal her unquestionable situation—or if she had a sure confidant of her own sex, the revelation even to her must be a severe misfortune, as she will thereby lower herself in that person's opinion. Shall she impart the secret to one of our's? The idea is out of the question. She resolves then to make what preparation she can to meet the urgency of the moment when it shall arrive, and then, when secresy is no longer practicable, she will apply in a quarter where she can obtain the necessary aid. Sooner than this it would seem to be unnecessary to announce the event, and it would be to the last degree repugnant. Such is

her mode of reasoning with herself, and she silently pursues the course of concealment, until she is unexpectedly overtaken with the pains of labour, either in such a situation that no assistance can be obtained, or the process is so rapid, that it would be impossible to avail herself of any, even if at hand. She finds herself delivered of a dead child, and the success of previous concealment encourages the hope that if she can hide the traces of what has now happened, her reputation will be saved, while no one can be injured. Certain circumstances, however, lead to suspicion; search is made; the child is found; an accusation of infanticide is set up, and a case occurs which requires judiciary investigation.

The experience of most practitioners in midwifery must so far come to the aid of a woman who pleads unexpected and rapid labour, as to admit the *likelihood* of the event, in women who have borne children, and the *possibility* of it in the case of a first pregnancy. In this way women have repeatedly asserted that, in certain places, the pains of labour came upon them, and the child was born so suddenly as to be precipitated, even without their consciousness, into a fatal situation. A woman was tried at the Old Bailey for the murder of her child, by dropping it into a privy. She declared that while there for a natural purpose, an uncommon pain took her, the child fell, and she sat some time before she was able to stir. On this occasion a

practitioner was examined on the possibility of such an event; who stated that an instance came within his knowledge where, while the midwife was playing at cards in the room, the woman was taken suddenly, and the child dropped on the floor. It happened recently in the circle of my own acquaintance, that a lady who had borne several children, and must therefore have been alive to the import of uneasiness in the last hours of pregnancy, was sitting in company at dinner, and perfectly free from any consciousness of approaching labour, when she experienced an irresistible impulse to repair to the water closet. She had scarcely got there when she was delivered of a child. Had the place of retirement been differently constructed, this infant might have perished. It will very properly be urged that a woman, on finding what has happened, ought (if her feelings and intentions are right) to give immediate alarm. But we must admit the possibility of her being unable to do so from the effects of the occurrence on her own person. After she has recovered, an alarm might secure her in the case of trial; but it can be of no use to the preservation of the child, and the idea of concealment will more naturally arise.

In like manner, if we find that the child's scull is fractured, experience has fully shewn, notwithstanding the elastic state of the cranium, that a fall from the height of the *locus extrusionis* on a stone surface will produce this effect—and where there is

no other fracture, than of the vertical part of the scull, or other mark of great violence, we can hardly imagine that the infant has fallen from a greater height. If murder be intended in this way, it could not be insured, unless by a fall much beyond that of three feet, or at the most but a very little more.

The fact of delivery occurring under such circumstances being unquestionable, we are bound to admit the possible consequence of death to the child, without interference or even wilful neglect on the part of the mother, not only by this sort of injury, but by others. Thus, the same fall that on a stone surface will fracture the parietal bones, may, where the surface offers less resistance, rupture the umbilical cord, or by forcing away the placenta, cause fatal hæmorrhage.

Taking all the accidents of sudden parturition into account, it must be admitted that the probability of a child being lost thereby is very great. This plea, therefore, being advanced, it would be of the last consequence to verify the accuracy of the statement as to the nature of the labour, as well as to admit, from inspecting the body of the child, that it may have perished in consequence thereof. I fear in a case of concealment that circumstantial evidence alone can be of use—that *we* must not pretend to be wiser than others. By examining the supposed mother, we may be able to decide whether a child has been born or not—but whether the

delivery has been rapid or protracted, an *ex post facto* inspection cannot enable us to pronounce.

A woman may undergo a tedious labour in solitude, either by a strong resolution to abide the result, without revealing her situation, or from the impossibility of obtaining aid. In these circumstances the child may perish before born; and there are appearances that often present themselves about the body, which are the mere result of protracted or laborious parturition. Long continued and severe pressure may occasion extensive discolorations in various parts, particularly about the head. These we must be careful not to confound with the effects of voluntary injury. The bones of the cranium overlapping each other, in the passage through the pelvis, give the head an elongated form, and produce a tumefaction at the vertex. This may be accompanied by ecchymosis—a sure mark of the presence of vitality at the time of its production. But, if the ecchymosis be of this nature, it will not be deep, and will be pretty extensive. It has been stated that the violence of labour may fracture the bones of the cranium. I doubt whether there be authority for such a statement; although the extreme force of uterine propulsion, powerfully resisted, upon the head of a child unusually large may separate the parietals from their soft attachments. There are other ways also in which protracted labours may cause the death of a child, of which the practitioner cannot be ignorant. Sometimes monstrosities or

malformations on the part of the fœtus may be the cause of such a labour. We must therefore be able to give these, where they exist, their due share of estimation *.

I have already alluded to the possibility of a woman endeavouring to resuscitate her still-born child by breathing into the lungs. Where the presence of air in these organs is ascribed to this cause, there are certain circumstances which will countenance the idea of artificial inflation—and if it cannot be

* It can hardly require discussion, but it may be adverted to in this incidental manner, that persons have conceived it warrantable to destroy infants born with such defects or monstrosities as to render their continued existence impossible, or their death desirable. Without arguing against the unwarrantable nature of the notion I shall merely quote the observation of a learned Judge at the York assizes in 1812, when two women were tried for drowning a child that was born with a deficiency in the cranium, in consequence of which it was likely that it could not survive beyond a few hours. There was no concealment on the part of the prisoners, one of whom was a midwife, and bore an excellent character for humanity. "I think," said his Lordship, "this prosecution may "be of great use to the public, in removing an erroneous opi- "nion, that the law allows the right of deliberately taking "away the life of a human being *under any circumstances* "*whatever*. It is therefore highly necessary that the contrary "should be known."

The exception, however, of the case of embryotomy, in order to save the life of the parent, at least until the Cæsarean operation, or some other alternative is established as successful must not be considered as prohibited even by this statement from so high a quarter.

proved that such inflation has been performed by any other person than the mother—or at least without her instigation or concurrence, such a discovery must discourage the belief that she wilfully contributed to the destruction of her child.

Great importance, in these cases, is attached to the circumstance of the mother having or not having made preparations for the care of her future offspring. Thus the plea of delivery by surprise receives strong confirmation if baby-linen be found in her possession—and from other precautions having been taken. In Dr. Hunter's paper, already alluded to, and which cannot be too often perused, this point is illustrated by the story of a young woman who concealed her pregnancy, and was delivered in solitude. I cannot deny myself the gratification of quoting a case which bears in a striking manner upon more than one of the preceding observations, and from a perusal of which I confess some of them to be derived. "She was," says he, "suspected; the room was searched, and the child "was found in her box, wrapped up in her wet "clothes. She confessed that the child was her's, "but denied the having murdered it, or having had "any intention to do so. I opened the child with "Mr. Pinkstan of St. Alban's-street, and the lungs "would not sink in water. Her account of herself "was this. She was a faithful and favourite ser-"vant in a family, which she could not leave without "a certainty of her situation being discovered; and

" such a discovery she imagined would be certain
" *ruin* to her for life. Under this anguish of mind
" she was irresolute, and wavering from day to day
" as to her plan of conduct. She made some clothes
" for the preservation of her child, (a circumstance
" which was in her favour) and she hired a bed-
" room in an adjacent street, to be ready to receive
" a woman in labour at a moment's notice. Her
" scheme was, when taken in labour, to have run
" out to that house to be delivered by a midwife,
" who was to have been brought to her. She was
" to have gone home presently after, and to have
" made the best excuse she could for being out.
" She had heard of soldier's wives being delivered
" behind a hedge, and following the husband with
" the child in a short time after; and she hoped to
" be able to do as much herself. She was taken ill
" of a cholic, as she thought, in the night; put on
" some clothes both to keep her warm, and that she
" might be ready to run out if her labour came on.
" After waiting for some time, she suddenly fell
" into such racking pain and terror, that she found
" she had neither strength nor courage to go down
" stairs, and through the street in that condition
" and in the night. In despair she threw herself
" upon the bed, and by the terror and anguish
" which she suffered, she lost her senses and fainted.
" When she came to a little recollection, she found
" herself in a deluge of discharges, and a dead child
" lying by her limbs. She first of all attended to

" the child, and found that it was certainly dead.
" She lay upon the bed some time, considering what
" she should do; and by the time there was a little
" day light she got up, put all the wet clothes and
" the child into her box, put the room and bed into
" order, and went into it. The woman of whom
" she hired the room, and who had received a small
" sum of money as earnest, though she did not know
" who she was, swore to her person, and confirmed
" that part of her story. * * * * She was acquitted."

So connected a tale could not fail to gain credit in minds alive to the possibility of occurrences of this nature and unbiassed by prejudice; and the evidence of the woman who let the room would, in the eye of the law, be sufficient to do away with the misdemeanor of concealed pregnancy. Artful women may prepare clothes; but the exposure of their person to future identification would be a step incompatible with criminal intentions towards the child. The law even here looks to the intent—and we have seen that intentions of the best nature may be baffled as to the execution by events, in which the woman plays no willing part. In a very strong case, tried at the Chelmsford assizes in 1820, where the birth was not discovered until the vessel in which the child was contained, rendered the room of the prisoner so offensive, that she was reduced to the necessity of pointing it out, three days after the birth—and where the lungs floated in water, the prisoner was not only acquitted of the murder, but

of concealment of the birth. The result was most gratifying to every one who read the trial. The unfortunate lady had acquainted the person by whom she was pregnant of her situation, and had been buoyed up with the hope of his arriving to shield her from its consequences. An accident prevented the accomplishment of this purpose on his part until the unfortunate object of his solicitude was thrown into the hands of justice. She had not attempted to secrete the body of the child, though it would appear that she might have done so before it was discovered. She seems to have been quite ignorant of what was to be the event.

We cannot admit the plea that the woman did not know she was with child. But as we find the great majority of women against whom the charge of infanticide is brought have borne good characters, as to the previous tone of their feelings, the very circumstance of their carrying a child successfully through the term of pregnancy to the time of parturition, will bear a favourable construction. If it can be proved that for nine months, or the greater part of that time, the accused has been careful of herself, and has not been known to take or be in the habit of taking drugs, it is a negative ground of presumption that she meant no evil to her offspring. Designing females may have recourse to practices favourable to abortion—and though they themselves may perish in consequence, and may be equal objects of compassion with those who stand the trial

to the last, and then terminate unfortunately, yet the avoiding noxious influences in the manner of married women, who consult the safety of their uterine charge by studying their own, must be a favourable article in the history of such an affair.

I cannot pretend to enter upon the consideration of supposed accomplices—and I doubt whether we can throw any light on that subject by the means within our particular province: for in the case of malicious interference with the body of a child, in order to throw suspicion on the mother, I presume we can only attempt to ascertain whether violence has been inflicted during the life of the infant or not.

There is yet a point relating to infanticide, which the practitioner may be called upon to clear up—that is to prove that the accused has really borne a child. The signs of recent delivery will be given under the head of Pregnancy; and I close this sketch—for it is but a sketch, and that an imperfect one—by reminding practitioners that we want observations and facts to place some points in a fair light, and by calling upon them to co-operate towards the accomplishment of this desirable object.

Of Survivorship.

Before leaving this class of questions, I ought to advert to a subject which has occupied a considerable share of attention among Medico-legal writers. It is often of consequence to determine the fact of survivorship; and it has been repeatedly necessary to do so under very difficult circumstances — as where several persons have perished together from a common cause, without witnesses to the event. If these individuals stood in certain relationships to each other, the settlement of property might entirely depend on the adjudication of the fact as to the person who existed longest, be the difference of time in this respect ever so trifling. Thus, if parents and children—husband and wife—brother and sister—or mutual legatees be involved in a common fatal event, it may be of the last importance to their respective collaterals or successors to know upon which side the inheritance should run. The European codes upon this point are (in general) founded on the Roman law, and have therefore a common feature. The French code has attempted the settlement of such questions in the following manner.

"If several persons, mutually heirs of each other, "perish under the same event, without the possi- "bility of knowing which died first, the presump- "tion as to survivorship shall be determined ac-

" cording to the circumstances of the case—and in " default thereof, by strength of age and of sex.

" If those who perished together were under " fifteen years, the oldest shall be presumed the " survivor.

" If they were all above sixty years, the youngest " shall be presumed the survivor.

" If some were under fifteen, and others above " sixty, the former shall be presumed the survivors.

" If those who have perished together had com- " pleted fifteen years, and were under sixty, the " male shall be presumed the survivor, where ages " are equal, or if the difference does not exceed one " year.

" If they were of the same sex, the presumption " shall be admitted which opens the succession in " the order of nature—of course the younger shall " be considered to have survived the older *."

This is no doubt wiser than to leave the settlement of obscure questions to the precarious light that adventitious circumstances may throw upon them. Yet as particular examination for physical proofs may be required, we ought to have some notion of those that are most worthy of attention.

The data by which we can form a professional opinion in such cases will hardly admit of formal description. A few very general facts only can

* Code Napoleon. Titre 1er. des Successions, ch. i. § 6. 270, &c.

with propriety be quoted—to which, if the limits of the work would allow, exemplifications might be added.

Where one common accident kills several persons by similarity of lesions, such as the crush of falling bodies when people are buried in ruins, it must at once be declared that medical science can offer no general rule for the solution of the problem. Nevertheless, incidental circumstances may facilitate conjecture in particular cases. We may fairly conclude from parts involved and the extent of injury, that the continuance of life must have been impossible in one person, while vitality was not necessarily extinguished so rapidly in another. Thus, under the circumstances of common danger just alluded to, a stone falling upon the head of an individual, and crushing it, will kill instantaneously, while a stone of equal or superior magnitude falling on some other part (the extremities for instance) of another person, will admit of the continuance of vital functions for a space, however short, sufficient to establish the probability of survivorship.

If two persons are found dead in the water, and it be clearly made out that they were drowned, besides the circumstantial presumptions afforded by evidence of greater buoyancy in the one body than the other, or the knowledge that he was a swimmer, and the other not, we may by careful dissection surmise that death had supervened earlier in the one than in the other, from the appearances pre-

sented in the organs immediately acted on by this manner of death. Allusion has already been made to the presence of frothy mucus in the lungs, generated by vain attempts to respire * ; the longer these attempts are continued, we may suppose that the greater appearance of froth will be occasioned. Besides this indication, we may be guided in many cases by marks of longer continued, or at least more vigorous struggling in the one individual than in the other.

Persons have been repeatedly found dead from noxious inhalation. In cases of this nature our attention should be directed to the following circumstances—the relative situation of the bodies as to the vicinity of the noxious air in its highest state of concentration ; the state of the respective respiratory organs of each as to healthiness of structure and vigour of action. Some distinction may be made perhaps between those of different sexes, on the score of thoracic capacity, the male chest being generally more expanded than the female.

Upon a case of plurality of deaths by Suspension, some light may be thrown by careful examination. The position and tightness of the cord, suspension being complete, or partial marks of great struggling, injury or want of injury to the spinal marrow, &c. In the instance of a public execution, where a father and a son were hanged together in this country,

* Page 208.

and in which there might have been litigation about the succession of some property, the matter was decided in consequence of the spectators distinctly observing that the one shewed signs of being convulsed after the other had become motionless.

The most common cause of such a question, however, is where a mother and a child die together in parturition. This is a case connected with a considerable variety of bearings; in clearing up some of which, the doctrines on Infanticide may perhaps be successfully referred to. Frequently, after the death of the mother, a child has been found extruded. Survivorship here may be a difficult point to decide, and one which the physician may not feel himself competent to settle.

I subjoin a short account of a case or two which may perhaps convey clearer ideas on this subject than any doctrines that might be formally laid down.

In 1658, a father and his son perished in the famous battle of the Dunes, near Dunkirk, and at noon the same day the daughter and sister took the vows in a nunnery—whereby she became dead in law. The battle commenced at that very hour. Question being made as to survivorship among these three persons, it was decided that the nun died first; as her death being voluntary was consummated in a moment, whereas that of the father and son being violent, there was a possibility of their having lived some time after receiving their wounds. Between these two the only means of de-

cision were furnished by the established rule, and it was decreed that the son had been the survivor. In this case there seems to have been no occasion for physical illustration. I shall add one, which is more to the purpose.

According to the law of England, a man marrying a woman possessed of freehold property, if it be not specially settled by marriage articles, has no claim upon it after the death of his wife—unless he has a child by her; in which case he retains the property during his life, as *Tenant by Curtesy*. In order however to obtain this curtesy, the following conditions (among others not relevant to the present question) are required. First, the child must be born alive; and it seems formerly to have been necessary to prove that it had cried—other proofs however, have been since admitted. Secondly, it must be born during the life of the mother; so that if the wife die in labour, and the child be taken out of the womb by the cæsarean section, the husband is not thereby entitled to curtesy. Thirdly, the child must be capable of inheriting the estate—for if lands be given to a woman in tail upon the heirs *male* of her body, and she has daughters only, the husband will not be tenant by the curtesy *.

In 1806, the cause of Fish v. Palmer, tried in the court of Exchequer at Westminster Hall, arose

* I have introduced this last condition, as mistakes and misrepresentations have by no means been unfrequent as to the sex of *adults*, and much more so with respect to new-born children.

out of the grounds now quoted. Fish * had a still-born child by his wife, and at her death resigned the estate to his wife's brother-in-law. Some circumstances afterwards occurred to induce him to bring this action, and to attempt to prove that the child had not been born dead. Dr. Lyon (deceased at the time of the trial) had declared, an hour before the birth, that the child was alive; and having directed a warm bath to be prepared, gave the child, when born, to the nurse to be immersed in the warm water. It did not cry, nor move, nor shew any symptoms of life—but while in the water (according to the testimony of two women) there twice appeared a twitching and tremulous motion of the lips. Upon informing Dr. Lyon of this, he directed them to blow into its throat, but it never exhibited any other signs of life.

Drs. Babington and Haighton agreed that the muscular motion of the lips could not have happened if the vital principle had been quite extinct, and that therefore the child was alive. Dr. Denman, on the contrary, gave it as his opinion that the child was not alive. He drew a distinction between uterine and extra-uterine life, and thought that the remains of the former might have produced the twitching of the lips.

Setting aside the more than questionable accuracy of the two women, which was well urged by the

* In some accounts this name is stated to be Fisher. I cannot settle the question as to the mis-nomer.

learned counsel for the defence, the reader, by referring to an observation already made on the contractility of the fibre after death *, may form his own idea as to which opinion of the professional witnesses might have been the right one. The jury found that the child was born alive †; and according to Foderé, who quotes the case, the twitching was no evidence as to vitality.

* Page 28.

† Jesse Foote in his Life of Mr. Bowes, relates that this gentleman having had a still born child by his first wife, caused the bells of the town to be rung, nevertheless, as if for the birth of an heir—a fact, however, which he could not afterwards substantiate.

CLASS II.

QUESTIONS arising from injuries done to the person, not leading to the extinction of life.

This might formerly have been a very copious division of FORENSIC MEDICINE, even according to the comparatively limited application of the term as connected with British practice. While the law remained in force by which a person was for a year and a day held responsible for the life of another whom he had injured, there must have been many cases assignable to this class, which called for professional consideration, as the probable result of an injury—the probable *distant* result, must often have been a matter of the highest importance; to ascertain which, recourse was had to the opinions of competent persons, while the real amount of injury sustained must also have been frequently an object of legal enquiry.

Among the older authors on Medical Jurisprudence this subject occupies a conspicuous place. Fortunatus Fidelis has a chapter expressly on the means by which the physician may foresee that certain functions are to be injured from partial wounds *; and in most of them we find discussions of the same kind. Foderé, who, among recent writers may be

* De relationibus Medicorum. Lib. ii. cap. 5. There are other chapters almost equally particular.

considered *instar omnium*, has a precise article on the prognostication of a fixed term for recovery from curable wounds, and gives an extract from the penal code of France, relating to such cases *.

By the law of England, maiming the King's subjects seems, in Henry the Eighth's time, to have been considered both as a crime, and an offence for which compensation might be recovered by civil process. In the reign of Charles II, Sir John Coventry having been assaulted in the street, and his nose being slit, by way of revenge for some words spoken by him in parliament, it was in consequence enacted, that if any person should of malice aforethought, and by lying in wait, unlawfully cut out or disable the tongue, put out an eye, slit the nose, cut off a nose or lip, or cut off or disable any limb or member of any other person, *with intent to maim or to disfigure him;* such person, his counsellors, aiders, and abettors, should be guilty of felony without benefit of clergy †.

Were I to discuss this class of questions, in a detailed manner, such as that in which the former has been attempted, it might be separable into two distinct sections: viz I. Maiming or disfiguring a person, or MUTILATION; and II. Violation of Females, or RAPE. For form's sake, I shall observe this division, in order to introduce a few remarks on a subject intimately connected with the first.

* Medecine Legale. Tom. iii. §. 810.
† Blackstone's Commentaries. Book iv. chap. 15.

SECTION I.

OF MUTILATION.

MUTILATION may take place from injuries intended to destroy life—from no particular intention whatever,—or from a positive design to mutilate. It may also be the result of mal-practice on the part of a surgeon. By it, is to be understood not merely the loss, but every derangement of parts of the body whereby they are unfitted for the discharge of their proper functions. On the first description of such injuries no medico-legal discussion can be required in this country, the law making no distinction among the consequences (to the person) that may arise from the miscarrying of a murderous design. Shooting at a person with *intent* to kill or maim him, was made felony without benefit of clergy in the reign of George I. With regard to mutilations of the second description, they must in general be considered accidents; many of which may be beyond the reach of human prevention, or foresight; though culpability may be chargeable in some such cases.

Of the third kind, where there is a design to mutilate, I am not aware that much notice is re-

quired to be taken here. Injuries of this nature can hardly be so obscure as to require the assistance of professional men to establish the fact; and if that be established, the law requires not our aid to prove the degree of culpability. Besides which (in this country) such occurrences are extremely rare. We may suppose a case, such as that of castration, where it might be insinuated, in defence, that the organs said to have been taken away were never present, or had been removed at a prior period. But such suppositions are too extraordinary to admit of elucidation. Were I to imitate the tedious formalities of some of my predecessors, I might also descant at great length on the question of surgical operations; and absurdly attempt to prove, that they are *lawful, not contrary to religion,* and ought not to entail upon the surgeon any responsibility to public justice if they do not succeed. It is certainly matter of question, under what circumstances we are warranted to deprive a patient of part of his bodily organs, even against or without his own consent—but this is a rock upon which there is little danger of splitting; and whose bearings are too well understood to call for description.

Much scope indeed for animadversion is offered under the last species of mutilation; where by neglect or mismanagement on the part of the professional attendant, local complaints curable in themselves, become the cause of perpetual disability; or where accidents remediable by profes-

sional skill and attention, are rendered permanently otherwise—as a common ulcer being allowed to run to such an extent of disease as to involve the use of the limb, endanger the life of the patient, and render amputation ultimately necessary; while want of proper attention in the beginning may be proveable against the party: or where a joint is dislocated, and no attempt is made to reduce the luxation, until the parts are so altered that remedy becomes impracticable. I could quote glaring instances of this nature in which patients have recovered heavy damages. The exemplification, however, might be considered invidious, and be unacceptable to the reader, as well as disagreeable to the writer. It is to be understood that I am speaking of members of the profession—those *regularly* qualified by law for the exercise thereof, for as to irregular pretenders to the power of healing diseases, &c. those who choose to consult them, must be prepared for all consequences.

I shall be excused for quoting an observation made by the late Lord Chief Justice of the King's Bench on the trial of a medical practitioner who was indicted *for the murder* of a patient, while in the supposed discharge of his duty *. In his charge to the jury, Lord E. rebutted the idea of murder in the case, but admitted it was matter of considera-

* In this instance the Judge discountenanced a full report of the trial, for reasons that I decline repeating.

tion whether *manslaughter* had not been proved, as laid in the Coroner's verdict. In that case, he said, the prisoner must have been guilty of criminal misconduct, either through the grossest ignorance, or from the most criminal inattention. It did not appear that there had been any want of attention on his part; and that he had some degree of skill, was established by the evidence * * * * *. His Lordship however discountenanced a verdict of *manslaughter,* which would encompass the exercise of the profession with dangers that would deter a reflecting man from entering on it. A verdict of *not guilty* was returned.

SECTION II.

RAPE.

CHASTITY is a quality of such high order in the female character, that nothing can compensate for its loss. When a woman voluntarily, or from weakness, or even through being deceived, parts with her personal purity, society consigns her to disgrace; and nothing, to a virtuous female, can be a greater injury than to be deprived of it against her will. Accordingly, in every civilised country, this violation has been ranked among crimes of the greatest enormity, and very generally punished with death.

According to our laws, in which rape is defined to be *the carnal knowledge of a woman against her will,* death is the penalty of its perpetration; and, whatever may be the opinion of individuals as to the propriety of punishing with death crimes that fall short of murder, there is much to be urged in favour of severity in this case. Not only does history prove that women, in innumerable instances, have preferred death to dishonour, and rushed upon it after having suffered the injury in question; but the annals of our own country teach that a *slight* punishment would be fraught with great mischief. Under Edward I. violation of females was considered merely as a trespass; but the consequences

were so formidable, that a few years afterwards, and during the reign of the same monarch, it was made felony. In the eighteenth year of Elizabeth, offenders were adjudged to suffer death without benefit of clergy.

Although in the definition given of this crime it is stated to be done "against the will" of the female, yet if she be under the age of ten years, the circumstance of her consenting does not obviate the criminality of the deed. There is a peculiarity in the law upon this point as to the age of discretion, it being in other cases fixed at the period of *twelve* years—and indeed, according to the statute of Edward I. already alluded to, (which reduced the forcible knowledge of a woman above twelve years of age to a trespass, leaving all those below that period within the pale of the old law) it would seem that the consent of a female between the ages of ten and twelve is of no avail—and so it has been held by eminent authority *.

The crime is not only equally atrocious, whether committed on the person of a virgin or of a married woman, but also if the subject be of ill fame—even a common prostitute, professing neither chastity nor any regard for it. It is felony to force such a woman, because she may have altered her course of life.

A male under the age of fourteen is by law deemed incapable of committing this crime. Boys of more tender years have been justly convicted of

* Blackstone's Commentaries on the Laws of England.

other capital crimes; but with regard to that now in question, there is not only a certain degree of judgment requisite, of which proofs may be given earlier, but a condition of body which in general is not acquired till about that period of life.

If the complainant be of proper age, her own testimony may be satisfactory to justice. A married woman may swear that the accused lay with her forcibly after the manner of her husband; and if she be of good repute, and no circumstances are adduced to shake the credibility of her evidence, nothing further perhaps is wanting; indeed no other sort of proof could well be offered: nor can we conceive any better method of establishing the charge in the case of other adult females, as to the *perpetration* of the crime. An assault with *intent* to commit a rape may frequently admit of the testimony of other persons—but the facts *penetrationis, seminisque emissionis,** which constitute the perfect accomplishment of the crime, could rarely indeed be made out but by the evidence of the suffering party herself. It is therefore obvious that a female possessing that innocent ignorance which embellishes the young virgin, might be unable to give satisfaction on this point; and under such circumstances no doubt many culprits have escaped.

With cases of this sort a medical man can rarely have to do—unless where injuries partaking of the first description of this class are combined, such as

* Under the head of *Impotence*, the reader will find this further explained.

lesion of parts, or morbid contamination. I pass them over, therefore, and the more readily, because such discussion as they might perhaps require, is not altogether fit for the public eye.

The crime is of a peculiarly detestable and cruel description when committed on the person of a child. It is then that the aid of the surgeon may be necessary, not only to remedy what physical injury may be done to the body, but to verify the fact of the specific manner and extent of the violence:—which leads me to enquire how we are to discriminate in such a case.

Much has been written on the signs of the virgin state; and the presence or absence of these signs has been considered the proper criterion for decision. They are often extremely fallacious—and their presence in the adult cannot always be received as proofs of chastity—while on the other hand the want of them should never of itself be taken for evidence of incontinence. In unmarried women who have reached maturity, they are allowed to be rarely found perfect; and it would be to the last degree unwarrantable, from the mere absence of the hymen for instance, to bring a charge of an immoral nature against a grown-up female.

In the infant we may rely rather more upon the state of the case in this respect: but in enumerating the commonly received signs of existing virginity, it will be better to advert to the period of puberty, in which difficulty of decision is

more likely to occur, and from which the appearances we may be called upon to examine in younger females will be readily enough explained.

The vagina, in a healthy person of this description, should be rigid and narrow. The only function it has to perform in the state of celibacy, is the transmission of the menstrual flux from the uterus, for which a very inconsiderable passage will be amply sufficient. The natural tendency of the undilated vagina is to narrowness, both from its contractility and the pressure of surrounding parts. It may, however, become enlarged and relaxed from various innocent causes; and there are disorders to which the parts are liable, whose tendency is to render it so. Certain practices will also have the effect of destroying this rigidity in the same manner as sexual intercourse—while an *occasional* event even of this last nature may occur, and the original narrowness be almost recovered.

Where we meet with the hymen, (however we may discourage the conclusion as to incontinence when it is wanting, or found ruptured) we might think it a sure sign of the virgin state, did we not know that it has been found unruptured even in labour. This has repeatedly occurred. The general fact however is, that this membrane must be ruptured by the act of venery. Other circumstances of an accidental and innocent kind very often destroy it, which cannot act upon the capacity of the vagina. But where it is found entire, the existence

of virginity cannot well be called in question, and an accusation of rape would accordingly fall to the ground*. Cases occur in which the hymen is originally *entire*, without any orifice, inducing at the period of puberty very distressing complaints, that render manual interference necessary. Some have added as a proof of virginity, or at least of rare indulgence in sexual commerce, rigidity of the frenum labiorum, at the inferior, or posterior commissure of the pudenda †. Stress is also laid upon the state of the mammæ: in the healthy virgin they should be firm; but upon this of itself no reliance whatever can be placed, for they are often remarkably firm in voluptuous women; and

* This occurred in the case of a man named Stewart, who was tried at the Old Bailey in 1704, for ravishing two female children. The evidence being at variance as to the fact of penetration, the children were sent out of court to be examined, and the eldest was found to have the signs of virginity.

† If I have omitted any description of the *partes pudendæ* in general, and particularly of the HYMEN, it is because such is accurately given by innumerable authors, and I presume has been studied by all medical men. As the existence of this membrane, however, has been denied by some; I think it my duty to add an item of testimony in its favour; having seen it entire in an adult female subject, (apparently between twenty and thirty years of age) which was brought to the dissecting room in Windmill-street, in 1811. There was a strange circumstance connected with the fact, that must have contributed to fix the recollection of it in the minds of the other gentlemen who were present, as well as myself.

are by many causes rendered large and flaccid where the individual is immaculate.

The integrity and uniformity of parts in respect to the presumed state in which they ought to be found in an innocent female, will strongly favour the conclusion as to the presence of virginity ; but the mere circumstance of imperfection, or even general derangement, will never warrant the opposite decision, though in some instances of suspicion, they may serve to corroborate.

Nevertheless, the Jewish test of bridal purity was founded almost entirely on the state of the hymen; and nothing short of proof that this membrane was entire, could save the character of the new-married female. On the other hand, if insinuations against her character could be disproved by the production of " the tokens of her virginity," or in other words, of the rupture of the hymen, a heavy fine was inflicted on the slandering husband *. Such tokens might be produced without much difficulty or depth of contrivance ; and the awful consequence of not being able to furnish them, (viz. public execution) must have stirred the resources of female ingenuity at an early period.

In a case of alleged rape on the person of a female, who has reached the period of organic developement, I apprehend that a professional investigation would lead to no fair conclusion, unless

* Deuteronomy xxii. 13.

made immediately after the commission of the crime. It may then be possible to decide that intercourse has taken place—and perhaps the appearances may even prove the allegation of force. Besides the general state of agitation and debility in which we may find the subject, there may be local marks of violence, such as laceration, tumefaction, hæmorrhage, *cum semine emisso*. If time has elapsed, we cannot draw the same conclusion; for these traces may have disappeared. Buffon talks of the renewal of virginity, repeatedly in the same individual, from fourteen to eighteen years of age. The renewal of virginity we cannot allow—but from what we know of adhesive inflammation, and the effects that may be produced on that principle, we can believe in a spurious reparation of certain local consequences incident to the loss of virginity. The same author observes that when a girl has incurred this loss before puberty, there is no hæmorrhage, provided the disproportion of the parts be not too great, or the efforts too violent; while at puberty, hæmorrhage is often produced by trifling causes, particularly in plethoric habits *.

There is a circumstance connected with the violation of females, that must not be passed over. It has been a prevalent opinion among the lower libertines of our sex, that in a case of gonorrhœa, the best possible cure is intercourse with an uncon-

* Histoire Naturelle de l'Homme.

taminated female. In consequence of this, we have been accustomed to meet with that disorder very frequently where a rape has been committed; and especially in the case of young children. This has not arisen from any particular virtue being supposed to reside in females *infra pubertatem,* but because the accomplishment of intercourse with them is necessarily unaccompanied by that repugnance which a suspicion of morbid contamination or a sense of impropriety would excite in a female of riper years. Slight force will effect the purpose intended, and the cure is believed to be the more certain, as in so innocent a subject there can be no chance of the preexistence of the disease. Upon the knowledge of this opinion the practice of inspecting the accused has often been resorted to; and sometimes the man has been acquitted, where marks of disease were discovered in the female, because no signs of gonorrhœa have been detected about himself. On the other hand, it must be admitted that purulent discharges from other causes do take place even in children; and that it may have been possible (considering the many blunders of a similar kind which might be quoted in medical history) that a discharge of purulent matter from an excoriated or lacerated part, might, (under implicit assumption of the above reason for the commission of rape) be deemed by an inconsiderate surgeon the specific consequence of gonorrhœal contagion.

Women have frequently been violated under cir-

cumstances rather different from the foregoing—in a state of insensibility, where no great force has been used, but still where the consent of the female has not been obtained. This insensibility may arise from disease, from syncope, or from intoxication—which latter is a mode of procuring female ruin, unhappily, too well understood. As it is not to be supposed that in such a case a woman can give a detail of the event, personal inspection seems to be the only way in which her evidence, as far as it may go, can be corroborated—but unless in the instance of a very young virgin, even this cannot be conclusive. If violence seems to have been sustained by the complainant, and the inspection is practicable quickly after the alleged outrage has been committed, it may be productive of corroborative proof to examine the accused also—for where much physical injury has been suffered by the one, the other can hardly be imagined to have escaped without a share.

With regard to females suffering this outrage in a state of natural sleep, without consciousness on their own part, it may (under circumstances that will readily suggest themselves) be considered possible; though we should, perhaps, hesitate before subscribing to the decision of the faculty of Leipsig—"Dormientem in sella *Virginem* insciam deflorare posse *."

* Valentinus. Novellæ Medico-Legales. Cas. I.

CLASS III.

The third class of questions of a Medico legal nature comprehends those that relate to disqualifiations on the part of an individual for performing all or any of his social or civil functions.

If we were to consider these in every possible bearing, we should have a very copious department to deal with indeed; yet, though some topics of the last importance are to be discussed, they are not, upon the whole, worthy of the elaborate attention many writers have bestowed upon them; nor in this country do many of them call for investigation so often as to attract much attention. A considerable number may therefore be esteemed more as matters of curiosity than of real practical importance. Upon these I shall touch very lightly; while of the others I can pretend but to trace the *summa vestigia.*

They might be divided according to the causes that require their consideration, or the nature of the circumstances upon which they have an influence. Thus I might separate them into disqualifications that prevent the *general* exercise of civil or social functions, and those that forbid *particular* connections or employments; as mental alienation, that necessarily unfits a man for the duties of citizenship, and at the same time assigns to him no responsibi-

lity for actions that in another would be criminal; and corporeal reasons for preventing or dissolving the marriage contract, or that exempt from military, and other service. I shall adopt however, the following arrangement.

Section I. *Mental* disqualifications, connected with physical considerations.

Section II. Disqualifications strictly *physical.*

Section III. *Pretended* disqualifications.

Section IV. Miscellaneous questions.

SECTION I.

MENTAL DISQUALIFICATIONS.

Much curious speculation has been hazarded concerning the influence of the physical state, and of the moral principle on each other, in matters that cannot possibly be discussed here. How far the temper may be modified by the original constitution, or the transient changes that characterize the physical system, or how, on the other hand, this may be acted on by the qualities of the mind, it would be by no means appropriate here to enquire. The temper and the affections are not to be contemplated as causes of legal process—or if they were, it would not be our province to decide upon their state.

There is but one subject, though a very important one indeed, that falls to be taken notice of under this section; one upon which writers have gone into great length, but upon which I shall confine myself to general observations.

Mental Alienation.

This unhappy condition disqualifies by law for the discharge of every civil function, even to the management of one's own estate, and the care of one's personal safety. By universal consent also a person in this situation is considered unfit for social intercourse, and is not held responsible for criminal acts. It is therefore a subject of very great importance, and which frequently calls for judiciary enquiry.

By mental alienation is to be understood a disordered state of intellect, not depending on bodily disease, such as the aberrations of delirium in fever —or of a temporary nature, as that caused by intoxication—and admitting of subdivision into *Mania, Melancholia,* and *Fatuitas.*

§ 1. *Of Mania.*

By Mania is meant that deranged state of the intellect which is denoted by ferocity in the language and deportment of a person formerly mild, or in the habit of conducting himself according to the usages of civilized society.

In addition to this general ferocity, or outrageous deportment, the following physical peculiarities are very remarkable: a wildness in the expression of

the eyes—resistance, and insensibility to cold, to sedative and other applications that generally exert a powerful influence on the system—frequent neglect of food, and fasting long endured without any apparent inconvenience. If proper observation is paid to the maniac, it will be seen that these are continued for a length of time that simulation cannot maintain—added to which there is great and *inimitable* watchfulness. But while the long fasting is a characteristic of mania, we must not omit to observe, that an unusual voraciousness, and propensity to swallow indiscriminately whatever may come in the way, is also an occasional mark of this disease. In their discourse, maniacs generally betray a great want of coherence; more or less frequent and remarkable, according to the degree of the disorder.

The forensic duty required of a medical man in all cases of insanity must be to prove or disprove the reality of the state in an individual to whom it may be imputed, or in whom it may be suspected that it is pretended, or simulated. No illustrations can be requisite to shew why either of these may be the case. The annals of equity furnish many instances of attempts to wrest property from the possessor, or to remove a person from situations to which a greedy eye has been cast by others, on the score of mental incapacity for administration; and criminals have often attempted to elude the penalty of the law by setting up, or allowing to be set up, the plea of insanity. Instances are on record,

where the person himself has disavowed this plea, when urged on his behalf by his friends *.

It has been questioned whether medical evidence to prove insanity be not inferior to that of other people who may have had opportunities of observing the individual, where the same opportunities have not been in the power of the practitioner. A recent writer on this express subject states "that no mem- "ber of the medical profession would directly state "an individual to be insane, without being able, "satisfactorily to his own reason and conscientious "feelings, to exhibit from his conversation, his ac- "tions, or his writings, unequivocal proofs of his "derangement†" The question irresistibly presents itself—Can no one do this satisfactorily but a medi-

* This was the case in the instance of Lawrence, Earl Ferrers, who was executed for murder in 1760. When it was enquired of the prisoner, at the bar of the House of Lords, what he had to say why judgment of death should not pass upon him according to law?—the following was part of his reply. "I am extremely sorry that I have troubled your Lordships "with a defence that I was always much averse to, and has "given me the greatest uneasiness; but was prevailed on by "my family to attempt it, as it was what they themselves "were persuaded of the truth of; and had proposed to prove "me under the unhappy circumstances that have been ineffec- "tually represented to your Lordships." Still, however, his Lordship seems to have insisted upon a temporary insanity. In a letter of the Hon. H. Walpole, dated the day after the execution, he is described as a *lunatic*.

† Medical Jurisprudence, as it relates to Insanity, &c. by John Haslam, M. D. page 5.

cal man? And the author now quoted, very shortly adds, that—"Patient enquiry, daily communication "with deranged persons, and attentive observation "of their habits, confer the means of judging on "medical practitioners;"—and it must be argued that men professionally conversant with these maladies must be better judges of their existence than those who have derived their notions in some abstract way, as by reading, or from popular and ill defined notions about madness, melancholy, &c. The popular bias on this score, finds its way into our courts; and juries, who, though of the sensible classes, are *never* of the medical order, would be constantly deciding upon the most inconsistent grounds, were professional opinion in these cases to be overlooked.

I cannot presume to teach those who are conversant with mental alienation, the considerations that are to influence them in forming their opinions; but I should be apprehensive that unless opinions are required from those who have really made such maladies their particular study, or have had ample opportunities of observing the individual about whom there is question, the authority of their conclusions would often be contested, even though in other respects they might be men of high professional estimation.

In a case which has been quoted by several legal authorities, viz. that of Edward Arnold, who was tried in 1723, for shooting at Lord Onslow, a number of

persons declared that they looked upon the prisoner as insane—but these were either his relations, or friends of his family; and it appeared that though they brought forward a number of alleged facts in proof of his derangement, they had never taken the proper precautions with regard to a person in the state in which they represented him to be. In the account of the trial it does not appear that any medical witnesses were examined. A verdict of *guilty* was returned against him; but some belief of his being *non compos mentis* was established; for in place of being executed, he was detained in prison till he died, at the distant period of more than thirty years.

The conclusions in this instance were drawn from outrageous conduct frequently repeated, although it was not so fair a case as many others, on the score of contrast with previous mild behaviour—this man having always been a wild, ungovernable, good-for-nothing character. But in other instances of occasional, and even frequent exuberance of impetuosity in words and actions, where violence committed under occasional impulse of that nature has called for judiciary investigation, the subterfuge of insanity has not been allowed—and persons decidedly disposed to insanity have been held responsible for deeds committed by them, in what has been termed lucid intervals, or even when insane at the moment of perpetration, where it has appeared that the design had been conceived, or the preliminary steps taken during the exercise of reason.

With regard to furious mania, the danger of giving a wrong opinion, on the part of a medical man, at all acquainted with the characteristics of that degree of the disorder, cannot be very great, as far as regards the existence of it. It is surely unnecessary to lay down any formal diagnosis between the ebullition of an ill-governed temper, the extravagance of intoxication, or mere bodily excitement from other causes, and violence of deportment arising from intellectual derangement. It may be feigned by a person of sound mind; and professional acumen, aided by experience, may be necessary to discriminate in such a case; but should there be no readier means of decision, the impossibility of keeping up the assumed character to the pitch, and during the period of genuine mania, will in a short time be its own detection.

There is a description of cases, however, more likely to perplex than the foregoing. Insane persons are very apt to convey erroneous ideas to those who are either unacquainted with the nature of mental aberration, or have not sufficiently observed the person labouring under it. They are often mischievously disposed, and at the same time extremely cunning—so as frequently to deceive and throw completely off their guard those whose duty it may be to prevent their excesses. This is particularly remarked with regard to those unfortunate sufferers who adopt the determination of making away with themselves. They often contrive, in the most in-

genious manner to elude observation, and to baffle the most careful precautions—providing themselves with the means of accomplishing the end in view, in some dexterous or extraordinary way.

Besides these, however, we have frequently to deal with maniacs, respecting whose insanity there may be well-founded doubt. It is generally understood that persons may be insane upon some particular point, and capable of reasoning not merely correctly, but with great force and ingenuity upon others. In such cases we may be deceived as to the real state of the person's mind, as we might not in the course of repeated interviews be able to perceive the aberration. In these instances we must have some previous knowledge of the patient, in order that we may "become acquainted with his prevailing opinions, "and also with his propensity to act on them, to "ascertain his capricious partialities, and un-"founded resentments; and whether he meditates "his own destruction, or seeks to take away the "life of another *."

* Haslam on Medical Jurisprudence, &c. This author further observes, that a successful examination "is not to be "effected by directly selecting the objects of his delusion, for "he will immediately perceive the drift of such enquiries, and "endeavour to evade, or pretend to disown them: the pur-"pose is more effectually answered by leading him to the "origin of his distemper, and tracing down the consecutive "series of his actions, and the association of ideas: in going

A strong exemplification of what is here alluded to, occurred under the particular observation of a friend of mine, who has favoured me with an account of it, which I shall give in his own words.

" ——My poor brother seems to have fallen a " victim to a morbidly keen sensibility, aggravated " by disappointments. The natural delicacy of " his own feelings had created in him the tenderest " regard for those of others: indeed he would not " have injured the meanest reptile. In all his tran- " sactions he was scrupulously conscientious, and, " as the superintendant of an extensive manufac-

" over the road, where he has stumbled, he will infallibly " trip again." The following remarks, which form a continuation of the foregoing, are highly important. " If, in a " case of actual insanity, the medical practitioner, from in- " attentiveness, mistake, or want of experience, should fail " to expose the real condition of the patient's intellect, and " he should be found not lunatic, he would be set afloat, to " pursue the dictates of his perilous volition: he might un- " controlled dissipate his property, and reduce himself and " family to beggary: if his life were insured, if he subsisted " on an annuity, or held a commission in the naval or military " service, he might wander and destroy himself, and thereby " deprive his successors of their immediate support, or ex- " pected benefit: or he might commit some outrage, for " which he would be arraigned in a criminal court. The record " of having been found not lunatic, by a jury legally consti- " tuted to enquire into the state of his mind, would be the " strongest bar to a plea of insanity in a criminal court, who " after such proceedings, would be little disposed to credit " the theories of medical metaphysicians." pp. 68, 69.

" turing concern, he had displayed great intelli-
" gence, mental energy, and activity. The few
" hours which he could snatch from business were
" devoted to literature, philosophy, and science,
" especially mathematical science, and metaphysics.

" Being on a visit to London, six years before
" his death, he complained severely of having ex-
" perienced neglect from those who ought to have
" been his friends, and spoke of private enemies;
" but no irrational sentiment escaped him, except,
" perhaps, his avowal, that having been all his
" life incredulous on the subject of supernatural
" appearances, he at last fully believed from *ocular*
" *demonstration,* in evil spirits and apparitions *.

" On his return to the metropolis, two years af-
" terwards, he strongly and anxiously asserted the
" existence of a foul conspiracy, extensively rami-
" fied, against his reputation and happiness. Al-
" most every person with whom he had the least
" intercourse was a conspirator, and even the pas-
" sengers in the streets were agents or abettors.
" He could not enter a house without meeting a foe;
" and at all hours of the day and night he was an-
" noyed in his apartments, which he was obliged
" to change seven or eight times in the course of a
" few months. He had frequent quarrels with
" strangers, who were constantly assailing him, as

* The reader may contrast this with the account given by Dr. Ferriar, and quoted in Dr. Haslam's little work above mentioned, of the case of Nicolai.

" he fancied, with taunting gestures and language.
" His character, conduct, and motives were so ma-
" lignantly impugned, that he found it expedient
" to shew his own sense of his integrity by adopt-
" ing the motto '*mens conscia recti,*' and having it
" engraved on his seal. If he proposed an excur-
" sion to any part of the environs of London, he
" was compelled to relinquish the design, in conse-
" quence of his indefatigable persecutors having
" become acquainted with his intention; and from
" every place of public resort he was debarred by
" their malicious interference.

" He expressed a desire to consult the late Dr.
" Colquhoun, the magistrate, and Sir Samuel Ro-
" milly, as men of virtue and discernment; but
" finding the odium against him to have assumed a
" NATIONAL character, he secretly embarked for
" America!

" So little apparent was his malady, that he ob-
" tained a respectable situation at New York.
" Thither, however, he was pursued by 'the gang,'
" 'the infernal crew,' and he re-crossed the Atlan-
" tic, and returned to ———shire; where in 1820,
" nature sunk exhausted, according to his own
" prediction, that his case must terminate fatally.

" During the whole progress of the disease, his
" reasoning faculties remained unimpaired; he con-
" versed agreeably on a variety of subjects; and
" could argue ingeniously, forcibly, and correctly.
" With reference to himself, while he admitted

" the improbability of such a system of persecution " *à priori,* he maintained the impossibility of re- " sisting that strongest of all evidence, the evi- " dence of the senses—' what I see and hear must " be true.'

" The above are a few of the circumstances " which occur to my recollection.——I have felt " the greatest difficulty in putting them on paper. " I enclose, by way of elucidation, three of his " letters."

The unfortunate gentleman here alluded to was one of several brothers remarkable for their mutual attachment, and yet he was so completely under the influence of this delusion, as to suspect even the writer of the narrative of having some concern in the imaginary plot. On this point there seems to have been a hard struggle between his morbid impressions and his natural feelings and better reason. In one of the letters he writes thus: " What am I " to think of you? Am I to believe that you act in " conjunction with those rogues and strumpets that " have conspired to ruin me? Heaven forbid that " a son of the * * * * * * * and my brother should " be such a villain." In another, after some correct observations on a matter of business, he goes on in this manner. " In a short time I may hope " to escape out of this country, where it appears " to be a settled point that the laws of human inter- " course are, with regard to me, to be suspended, " and that I am to be hunted down without mercy.

" Had I a few thousand pounds, I would gladly " expend one thousand in endeavouring to bring " some of my adversaries to justice, and I am " very confident that I should succeed; for not- " withstanding the prejudices that have been " so industriously excited against me, I do not " believe that the course of public justice would " be wholly obstructed. Considering how much you " see of the world, and other circumstances unne- " cessary to mention, I do wonder that you should " declare your ignorance of a conspiracy which " has nearly ruined me. I do not however accuse " you of deceit. I leave your own conscience to " condemn or acquit you, and I am sorry if I have " at any time done you injustice."

With regard to the question of recovery, in these disorders as in others, we must take into consideration the cause or causes. They are of two kinds—predisposing and exciting. Among the former are hereditary dispositions, of which we can have no other means of judging *à priori*, than knowledge of the fact that insanity has appeared in the person's family—injuries received in certain parts of the body affecting the brain—and certain bodily diseases.

Of hereditary disposition, it may be remarked that as to complete, or permanent recovery, our expectations must necessarily be slender. Here the disorder may not only be occasional, but even slight; it will be constantly liable to break out; and the great principle of prophylaxis must of

course be to ascertain the exciting causes, and as far as practicable to avoid exposure to them. Although there are certain influencing circumstances that are to be estimated as exciting to insanity in all cases where there exists a predisposition; yet it will be found that in almost every particular instance, there will be some peculiarity which observation alone will enable us to discover and to guard against.

It may sometimes occasion perplexity as to the hereditary source of the disposition to this disorder, that the existing members of the person's family have not shewn any symptoms of the disease, and that both his parents may have passed through life without any suspicion of the kind. It may however lie dormant in one generation, and break out in another, as we find to be the case with gout, scrophula, and other complaints that are well known to be entailed on families. There may be a disposition which fortunately has never been subjected to the influence of exciting causes, but which would readily manifest itself if acted upon by these.

Injuries about the head often lay the foundation of future derangement of intellect. Perhaps these belong with equal propriety to the class of occasional or exciting causes. A blow on the head, where hereditary disposition is supposed to exist, is often the exciting cause—but on the other hand, persons who had not only been uniformly sane during the prior part of their lives, but of families that

had never shewn any disposition to the disorder, have become permanently deranged for the remainder of their days, in consequence of fracture of the cranium, or other injuries to the cerebral organs. In such cases, organic derangements have been discovered after death. With regard to diseases predisposing to insanity, we need not stop to make any particular observations. The removal of the cause here may be supposed to remove the symptoms, and this among the rest. Besides which, the propriety of classing this sort of mental derangement with the insanity now under consideration is more than questionable. It may however be added, that the pre-existence of mania is often the only discoverable ground for apprehension of its appearance in the same person.

Among the exciting causes may be mentioned whatever produces mental uneasiness. People are in quaint but significant language, said to be "driven mad" by misfortunes. Bodily pain is also said, though erroneously to *madden;* for the furor here is merely over-excitement, not perversion. Apprehension of death, has often "turned the "brain;" but rarely in the ordinary contemplation of it. This has generally happened when the accompanying circumstances have been connected with peculiar and terrific events. The horrible scenes of the French Revolution produced permanent intellectual derangement in numerous instances.

The use of intoxicating liquor to a person dis-

posed to insanity is almost uniformly pernicious. How frequently do we meet with those, to whom in their ordinary deportment these remarks are inapplicable, who when under the influence of strong drink, become maniacs of the most formidable description! Such derangement as this would not be admitted as a plea for exemption from punishment. The mischief actually perpetrated may indeed be done under the impulse of derangement, but that impulse was called up by a voluntary act on the part of the individual—which act being in itself criminal, all its consequences must necessarily be held so.

Among the exciting causes of mania, the suppression of accustomed evacuations must be considered; and the restoration of these often removes the mental affection.

In taking the causes of insanity into account for the purpose in view, we are to draw the proper inference from the probability of their removal, and *vice versa*.

But, in estimating the likelihood, or actual degree of recovery in a case of insanity, there are other considerations to be attended to; as, for instance, the violence of symptoms, under which may be ranked the expression of the eyes and countenance: the state of the natural functions, as regards sleep, appetite, evacuations, &c. the greater the derangement among these, the more unfavourable must necessarily be the prognosis; in like manner, resistance to the ordinary effect of medicines indicates

an obstinate state of derangement, in proportion as the resistance is strong: the occurrence or want of remissions—in other words, the intervention of lucid intervals is always an important matter; for in proportion to the frequency, duration, and steadiness of these, are we warranted to think favourably of the issue—it being always a good sign when the rational state is not easily disturbed. Recent cases warrant better expectations than those of long standing; and the age of the patient must also go for something; insanity, *cæteris paribus*, being more curable in early than in advanced life. Convalescence will be confirmed in proportion as the recovering mind can endure intellectual application without any tendency to relapse.

§ 2. *Melancholia.*

In this description of mental complaint, there is also a perversion of the reasoning faculty, exerting, however, a different sort of influence upon the unhappy subject of it. Great apprehension is the common characteristic, plunging the individual into the most gloomy state of mind, accompanied by indifference as to his personal comfort, or urging him forcibly to self-destruction. It unfits him for the discharge of his social functions and the management of his own affairs, from the extreme apathy it induces with regard to every object but the paralysing

one, (if I may so term it) of his fears; and renders restraint necessary, from the apprehension of danger to himself rather than to others. A maniac may not only have much satisfaction, but even enjoy great happiness in the commission of mischief; his delusion frequently excites to activity, and urges him to perform the most culpable deeds, under a perverted idea of duty, and even of merit.

The chimera that distinguishes "the melancholy mad," entirely engrosses them. The mind of the maniac, we have seen, will frequently escape from his delusion, and he will feel and act under different impulses for a longer or shorter time, though eventually the incongruity recurs. The other unfortunate being broods intensely over his imaginary evil, is incapable of admitting any other impressions; and the whole tenor of his conduct corresponds with this state of his intellectual faculties: he evinces none of that cunning which the maniac will frequently employ to deceive as to the existence of his disorder—if, on the contrary, he is roused to conversation, it is confined to his unhappy state; and all that he desires of those about him is to leave him to his own thoughts.

Melancholia, though not confined to persons of the melancholic temperament, generally occurs in them; and in addition to what has been hinted as to the conduct of those suffering under it, we may remark a general torpor and inactivity, a languor of countenance, not confined to the mere expression

of the eyes, or other features, but a general collapse there, conveying a piteous impression to the minds of others—this, though it may be feigned to a certain degree, at last reaches a state of alteration that bids defiance to imitators. It is also characterized by immoveable steadiness—external objects causing no more variation than the settled state of the internal perceptions. Here also physical influences lose their force; and the frame of the unfortunate individual resists the inroads of hunger, watching and exposure in the manner already noticed with respect to maniacs, though seldom to so very great a degree.

With regard to diagnosis, there is less occasion here to lay down rules of discriminating between real and pretended melancholia, or between that disorder and the preceding, than between it and another that is more particularly connected with a certain deranged state of the bodily organs—I mean hypochondriasis.

It may not be usual now to quote from an author to whom modern physic is eminently indebted—nevertheless I shall venture to refer to some articles of diagnosis laid down by Dr. Cullen, although the work is in every practitioner's hands. He characterizes hypochondriasis in this manner. "A languor, listlessness, a want of resolution and activity "with respect to all undertakings; a disposition to "seriousness, sadness, and timidity; as to all future "events, an apprehension of the worst or most un-

"happy state of them; and therefore, often upon "slight grounds, an apprehension of great evil. "*Such persons are particularly attentive to the* "*state of their own health, to every the smallest* "*change of feeling in their bodies*, &c*." He further (in distinguishing hypochondriasis from dyspepsia) remarks, that the latter often appears early in life, whereas the former is more usual in advanced years, and when it has once taken place, goes on increasing as life approaches to old age. When treating of the disorder now under consideration, he has the following remarks.

"Hypochondriasis I would consider as being al- "ways attended with dyspeptic symptoms: and "though there may be, at the same time, an anxious "melancholic fear, arising from these symptoms; "yet while this fear is only a mistaken judgment "with respect to the state of the person's own "health, and to the danger to be from thence ap- "prehended, I would still consider the disease as a "hypochondriasis, and as distinct from the proper "melancholia. But when an anxious fear and de- "spondency arise from a mistaken judgment with "respect to other circumstances than those of "health, and more especially when the person is at "the same time without any dyspeptic symptoms, "every one will readily allow this to be a disease "widely different from both dyspepsia and hypo-

* First Lines of the Practice of Physic, 1222.

" chondriasis."—" As an exquisitely melancholic " temperament may induce a torpor and slowness in " the action of the stomach, so it generally produces " some dyspeptic symptoms; and from thence there " may be some difficulty in distinguishing such a " case from hypochondriasis. But I would main- " tain, however, that when the characters of the " temperament are strongly marked; and more " particularly when the false imagination turns upon " other subjects than that of health, or when, though " relative to the person's own body, it is of a ground- " less and absurd kind; then notwithstanding the " appearance of some dyspeptic symptoms, the case " is still to be considered as that of a melancholia, " rather than a hypochondriasis*."

I shall add nothing on the verification of melancholia. The foregoing observations convey the necessary hints as to the considerations that should influence the mind of the practitioner.

With regard to the question of prognostics, as to the hope or period of recovery; the causes, severity, and duration of the disease itself, and the family history and constitutional temperament of the patient must be taken into account; together with the effect of remedies employed for the purpose of cure, which would lead to a view of the subject, from which I must abstain.

Mania and melancholia not unfrequently alternate.

* First Lines, 1587, 1588.

§ 3. *Fatuitas.*

There is a well-established distinction between the present description of mental disqualification and those preceding.

For the most part it is a congenital disorder, consisting not in a perversion, but in a defect of the intellectual powers, and is known in common language by the term *idiocy*. It is sometimes induced in after life; and something allied to it frequently appears in extreme old age, when the vigour of the mind decreases, and the rational as well as the bodily powers totter under exertion.

Where it exists, it legally unfits the individual for the management of his own affairs, for entering into any social connection, for executing the duties of a citizen—and exempts from responsibility for certain actions—though in general the deportment of such persons is marked by a timidity that guards them from mischievous attempts either upon themselves or against others. Idiots are commonly inoffensive; and where restraint is required on the score of safety, it is to prevent them from becoming involved in circumstances of accidental danger, from which their slender portion of judgment and experience might be inadequate to protect them.

Legal interference, in cases of property, is often requisite to assign the management thereof, and the

care of the idiot to proper persons—and the evidence of medical men *may* be required to verify the existence of fatuity. Those who have been most conversant with the individual must be the best judges of its existence, whether of the medical profession or not—though it may happen that these are interested in the alienation of the property, and therefore improper to be received as witnesses.

If a medical man's opinion be therefore resorted to, he will be at no loss to perceive the existence of fatuity, and even to ascertain its extent; nor should I think it very easy to impose the simulation of this state upon the belief of a person furnished with even an ordinary share of penetration, particularly if aware of the possibility of the attempt, which may be always suspected, from the nature of the occasion. It will be necessary to ascertain whether the fatuity has existed *de nativitate*, or has been subsequently induced by occasional causes; for a knowledge of this distinction is not only of importance in verifying the existence of the imbecility, but with a view to estimate the probability of recovery.

In a case of congenital fatuity, there can be little danger of mistake. The ordinary means of bringing it on in the course of life are the following—intense mental application, by which it has been induced in minds originally of unusual vigour; diseases; great bodily evacuations; severe mental uneasiness—it

has often followed melancholy events in the person's history; and organic derangements in the brain, of which we cannot be aware during his life.

I need not describe its physical characteristics. Occasionally, perhaps, from a paralytic affection of certain organs, but more generally I should suppose from the original weakness of the intellectual powers, and among others of the imitative faculty, we find such persons incapable of exercising certain organic functions beyond a limited degree. There is commonly a want of vigour in their muscular powers, giving them an awkwardness in their movements, and frequently a degree of incontinence as to some excretory discharges—particularly of the saliva. They are apt to become dirty in their persons and clothes; but what remarkably characterizes this debility, is an imperfection of speech—and the degree to which that exists may perhaps be taken as an index to the defective state of the mind.

A disposition to obesity, and a lethargic state often characterize accidental fatuity. Idiots, like the insane, may have their lucid intervals, or, more properly speaking, their alternations of excitement to a pitch of intellectual vigour.

SECTION II.

DISQUALIFICATIONS STRICTLY PHYSICAL.

These may be either for the general purposes of citizenship, or for some particular office or function. Of the first there can be but rare occasion to take up the consideration; and in our country the only application of the latter may be reckoned military service, and the matrimonial connection. In the Roman Catholic Church, I believe there is a necessity for taking certain circumstances of this nature into account with regard to the priesthood. I shall divide this section according to the subjects just alluded to.

CHAPTER I.

Disqualifications for general Purposes.

The perfect use of the senses might *à priori* be deemed essential to the state of a citizen. If speech is necessary to man, the want of that faculty might be considered inimical to the discharge of his social

functions—and so with seeing and hearing. If an individual were from his birth deprived of the use of all his external senses, possessing no faculty of hearing, seeing, tasting, smelling, or discrimination by touch, he would perhaps amount to no more than a growing mass of organized matter, as respected his relative situation in life : but having once exercised these, and losing the power of doing so afterwards, his intellectual vigour and experience would in all probability enable him to carry on his social functions to a greater or less degree. We see many remarkable instances of superiority in point of exertion on the part of those who are afflicted with such a privation to a partial extent. The blind, for instance, attain a wonderful degree of discrimination through the medium of other senses ; and since the blessed undertaking of educating those interesting individuals of our race, to whom the access of knowledge seemed debarred by the want of the ordinary channels through which it flows, we have been gratified by the contemplation of astonishing success.

To schools for the blind have been added those for the deaf and dumb. Born deaf, these unfortunates could not acquire the exercise of their organs of speech, for it is through hearing and imitating others that we naturally derive the power of uttering determinate sounds. The ideas of such individuals must be few ; and the embarrassment attending on intercourse with them, exceedingly great.

Accordingly, but a few persons could convey to or receive from a deaf and dumb individual even a scanty portion of information—though their physical defects were by no means connected with intellectual imbecility—as the result of instruction has amply proved.

How far such unfortunate beings should be considered amenable to justice, has been matter of consideration; and I shall supply any formal consideration of the subject, by the following account, which is of no little interest, and may suggest all that is necessary to be considered on the present occasion. Our assistance will never be called for but in a case of *pretended* deafness or dumbness.

"High Court of Justiciary, Edinburgh, July, "1817. The court proceeded to advise the infor- "mation in the case of Jean Campbell, alias Bruce, "a deaf and dumb woman, accused of drowning her "child. The Judges delivered their opinions at "considerable length.

"Lord Hermand was of opinion that the panel "[prisoner] was not a fit object of trial. She was "deaf and dumb from her infancy—had had no "instruction whatever—was unable to give infor- "mation to her counsel—to communicate the names "of her exculpatory witnesses, if she had any, and "was unable to plead to the indictment in any way "whatever, except by certain signs, which he "considered in point of law to be no pleading "whatever.

" Lords Justice Clerk, Gillies, Pitmilly, and Res-
" ton were of a different opinion. From the evi-
" dence of Mr. Kinniburgh and Mr. Wood *, they
" were of opinion that the panel was *doli capax*
" *quoad* the actual crime she was charged with.
" It was true that this was a new case in Scotland,
" but in England a case of a similar nature had oc-
" curred. One Jones was arraigned at the Old
" Bailey in 1773, for stealing five guineas. He
" appeared to be deaf and dumb; a jury was im-
" panelled to try whether he wilfully stood mute,
" or from the visitation of God: they returned a ver-
" dict 'from the visitation of God'—and it having
" appeared that the prisoner had been in the use of
" holding conversation, by means of signs, with a wo-
" man of the name of Fanny Lazarus, she was sworn
" an interpreter. He was tried, convicted, and
" transported. In the present case the panel had
" described to Mr. Kinniburgh most minutely the
" manner in which the accident had happened to
" her child; and from the indignant way in which
" she rejected the assertion that she had thrown it
" over the bridge, it was evident she was sensible
" that to murder it was a crime. It was also ob-
" served by Lord Reston, that it would be an act of
" justice towards the panel herself to bring her to
" trial; for if the court found she was a perfect

* Gentlemen connected with the Deaf and Dumb Institution of Edinburgh.

" *non-entity*, and could not be tried for a crime, it " followed as a natural consequence, that the un- " happy woman would be confined for life; whereas " if she was brought to trial, and it turned out that " the accident occurred in the way she described " it, she would immediately be set at liberty. The " court found her a fit object for trial."

Perhaps, in strict propriety of arrangement, the simulation of this afflictive state should be referred to the next section. It is inconvenient, however, to recur a second time to the same topic; and as there is little to be said upon it, I shall add it here. We ought to carry in our minds the distinction between mere deafness, acquired in some incidental manner in the course of life, and congenital deafness, which involves incapability of speaking. Where the latter is real, the nature of the person's situation imposes upon him a peculiarity of deportment and gesticulation that it may indeed be possible occasionally to mimic, but hardly so to maintain in the uniformly characteristic manner of the real deaf and dumb person: besides which, the infinite variety of occurrences by which an impostor will be thrown off his guard, (and that frequently in the most simple manner) gives every chance of detection sooner or later. Foderé has rather a curious remark on this subject. He observes that women perform the part of impostors in this respect better than men— " the sex," says he, " most addicted to talking, feigns to be dumb the best." He gives at some length a

remarkable instance of a counterfeit of this description, who, in order to exempt himself from military service, endured for four years every species of trial, in various countries; until at length (according to his own confession) he had forgot his hearing. He seems to have been a most accomplished impostor. He at length however overreached himself in pretending to have been a pupil of the celebrated Abbé Sicard, that he might have the opportunity of communicating his ideas in writing. The Abbé however denied the possibility of his having been deaf and dumb from his birth, because he spelt like the common people, and wrote in the manner of language which one *hears*; whereas the real deaf and dumb write by the language they *see*.

In a case of suspected simulation, if a medical practitioner be called upon to ascertain the real state of the case, he must be guided rather by circumstantial considerations than by the physical state of parts. A few hints on this subject will be offered under the head of Pretended Disqualifications.

CHAPTER II.

Disqualifications for Military Service.

These evidently refer to two circumstances—viz. admission to the service, and continuance therein.

In this country every regular soldier is a volunteer. He may, however, have been initiated into military habits against his inclination—as by ballot for the militia service, many were compelled to assume the character of soldiers contrary to their wishes: still by habit and by other means, our militia soldiers frequently became partial to military life, and the ranks of this useful and respectable force, were a great source of supply to our fighting armies abroad—furnishing them from time to time with voluntary draughts of ready-disciplined troops.

But whether voluntarily offering himself, or compelled by the operation of the militia laws to serve in the ranks of the national army, no man could be received who laboured under any disqualification for effective service; and accordingly it has been the universal rule to submit recruit and *conscript* to medical examination before suffering him to be enrolled among the defenders of his country. Exemptions were frequently pleaded among those who were *drawn* for service; and volunteers have been frequently rejected on account of defects,

although they may have either attempted to conceal them, or maintained that they produced no inconvenience.

The instructions given by authority to army surgeons as to the admission of recruits, are the following. "It is the duty of the regimental surgeon "to inspect and examine recruits before final ap- "proval*:—he is to be careful not to certify to any "man's fitness for service whose state of health he "has not minutely investigated.—The recruit, at "his examination, is to be stript of all his clothes, "in order that it may be ascertained that he has no "mark of punishment†; no rupture or scrophu-

* Final approval refers to the time when the recruit joins his corps. He may have been enlisted in some distant part of the country, examined, approved, and sworn at the time: but on reaching the place where he is to be formed into a soldier, he must be examined anew by the commanding officer and surgeon. Should he be then disapproved of, on the ground of physical disqualification, enquiry will of course be made whether the disability existed at the time of his enlistment, or was contracted afterwards. If the former be the fact, censure would be due to the person who made a careless inspection, and probably an action might be the consequence in the case of a civil practitioner, to recover the bounty, subsistence, and other expences incurred on account of the recruit; or, if he has been in the first instance improperly approved of by an army surgeon, this person would not only be liable for the expences, but think himself fortunate, perhaps, if allowed to escape without animadversion into the bargain.

† The mark of punishment refers to military corporal punishments, appearances of which implicate the conduct of the

" lous affection of the glands; that he has the per-
" fect use of his eyes and ears *—the free motion
" of every joint and limb; that he has no sore leg,
" nor mark of an old ulcer, with adhesion of the
" skin to the bone; no varicose veins, nor diseased
" enlargement of bones or joints:—he must neither
" be consumptive, nor, so far as can be ascertained,
" subject to fits: with any of these defects, the
" man is to be reported unfit for service †." To this I may add that no surgeon would pass a recruit who is manifestly deranged or imbecile in his intellects—and that, unless under great emergency, no man *deformed* in his limbs should be considered fit for the service. There are likewise remains of disease very different from those enumerated in the above list, that are equally unfavourable to the discharge of a soldier's duty; and which it is the business of the medical inspector to ascertain, and where present to consider as a cause of rejection. Such are internal organic derangements—as enlargement of the spleen, liver, &c. which at no

individual; and would render enquiry into his history necessary, the probability being that he is a deserter from some other corps. The detection of this appearance necessarily falls within the province of the surgeon; who, by the bye, is not unfrequently desired by a considerate commanding officer to examine whether a man sentenced to corporal punishment, bears the marks of having received it formerly.

* To this should be added the faculty of speech. A dumb man cannot be an efficient soldier.

† Instructions for the regulation of army hospitals.

great distance of time may be considered certain to interfere with the efficiency of the soldier, though at the moment he may pretend that he suffers no inconvenience, and may really appear perfectly fit for his duties.

Acute, and curable diseases require no animadversion; but it is a fact, of which I have seen repeated instances, that men suffering under chronic and incurable complaints try to get into the army, for the sole purpose of having the benefit of that professional treatment with which the King's service is supplied in so distinguished a manner. The medical officer is not the administrator of a public charity, into which people have a claim to be admitted on the ground of distress and commiseration. Humanity may, and often does prompt him to administer, as he can, to their relief; but he would be extremely unfit for the trust reposed in him, were he, in obedience even to honorable and amiable feelings, to misapply the resources that are provided at his country's expence for his country's servants. Great caution should be observed as to pulmonary complaints in particular, however slight they may appear; and the general appearances of health and vigour should be taken into account. Men of leucophlegmatic appearance are in general rendered so from disease, and they ought to be considered (to use a well-known military phrase) "sus-" picious bargains."

With regard to the discharge of soldiers from the service, on the score of physical disqualifications, it may be observed that most of those defects that prevent their entrance must of course either occasion their dismissal, or their retention for some other purpose than that of an active soldier. Some of them however are not of this nature. Although it be improper to admit men with incurable complaints, it would be worse to turn them out of a service in which they may have contracted them—at least as long as medical aid can be of advantage—unless by their own desire. In many cases even of this nature it may be impossible for a man to do his duty as a soldier, and yet to earn a livelihood in a comfortable manner in private life. A person with an incurable hernia is unfit for a dragoon, for the very state in which his military existence must be carried on, exposes him to the risk of his life by a tendency to excite strangulation—and so with other complaints. A man after a wound about the head, may be perfectly well as long as he wears a soft cap—but compel him to wear his helmet, or defensive military head-dress, and he becomes dangerously affected. To such men it is but justice to allow them to shift for themselves—and humanity, (upon which the rules of the service do not frown,) to procure for them, if practicable, some assistance from the public purse. The pensions to British soldiers are on a scale of liberality without example

—and loss of health in the service is (after a certain term) a plea as valid, as a disabling wound received in action.

It is to be observed that there are circumstances in military affairs, that influence considerably the principle of discharging soldiers. More circumspection is necessarily required in time of war than in a period of peace; and in the former, according to the activity with which operations are carried on. Men are also more valuable in proportion to the difficulty of obtaining them—a principle that must operate powerfully on free, small, and scantily populated states—or in distant expeditions. Under certain circumstances of this nature therefore, men may be retained, notwithstanding defects that on other occasions would render it highly desirable, if not imperious, to dismiss them. A soldier may lose an eye, and yet be able-bodied; or he may be more seriously disabled, and yet be fit to perform a duty that is necessary to the service as well as an able man, who would otherwise be abstracted from the field for that purpose. Accordingly those who are conversant with military economy, know that where there is a choice, the least effective soldiers are selected for hospital attendants, and for garrison duty; whereby the active and able troops are rendered more effective for the field.

No complaints that are curable should be received as valid grounds for discharging soldiers. In civil life a person may remain sick if he chuses—there

being no law to compel him to employ a physician. It is not so in military economy. When a soldier is found to be sick, it is both the inevitable duty of the medical officer to take him under his care, and of the sick man to submit. If the latter refuses to conform to the instructions given him, the person who has the charge of his health will be warranted to employ force, if necessary, for effecting his salutary purpose—provided the means be fairly adapted to the end in view. Thus, for instance, if a refractory patient in a civil hospital, chuses to walk about contrary to the injunctions of his physician, or to indulge in irregularities of any kind, all that can be done is to turn him out from participation of the benefits of the institution. But it is different with regard to the military practitioner. He is at liberty, and it is his duty, to *compel* his patient to lie in bed if necessary, to make his room his prison, and *to know*, not only that he receives the prescribed diet, but that every article of treatment is carried into full effect. Disobedience is a military crime, and punishable accordingly. The surgeon is responsible for the recovery of curable cases; and refractory conduct on the part of a patient would not be received as an excuse for unsuccessful treatment *. It is not to be inferred from

* The intelligent reader will discriminate readily between the cases here alluded to, and such as may require surgical operation; whereby instead of being restored to the service, the patient is saved from death, at the expence of his future

this statement that the medical attendants on the sick of our military establishments are licensed tormentors, *secundum artem*, of the suffering and the dying. The sound mind is never at a loss how to temper authority with humanity, nor slow to reflect whether the end is likely to be good or evil. In dealings with sick soldiers on a very extensive scale, and during long and diversified opportunities of observing the conduct of our medical officers, I am warranted to bear the amplest testimony to an almost universal tact of gaining the confidence and goodwill of their patients; whereby harshness is rendered a comparatively rare occurrence, towards the real sick.

After what has been said in the former part of this chapter, and the observations just offered, it is unnecessary to make a formal enumeration of the common causes of a physical nature that warrant discharge from military service. In the application of general principles to particular exigencies, there can be no difficulty. A few more hints may in all probability be gathered from what will fall to be said in the next section.

effectiveness. Certain minor operations, where no risk can be taken into account, are of course comprehended under the observations in the text; but when the abstraction of a limb, or an operation of equivalent magnitude is in question, the subject can only be *counselled* to submit; and should be treated in the same manner as a patient in civil life.

CHAPTER III.

Disqualifications for the Matrimonial State.

Besides the well known *moral* impediments to the union of the sexes in the sacred bond of matrimony, there are a few considerations strictly *physical* which are tacitly implied in all such connections; and the settlement of which when called in question must of necessity require the aid of the physiologist.

The ostensible end of this compact has ever been the continuation of the species; and though, perhaps, during the prior steps in matrimonial engagements, this may be comparatively seldom the immediate impulse, yet after the connection is actually formed, should this conseqnence not follow, the happiness of the connubial state would, in most instances, be impaired; and it has been matter of so serious a nature as to urge individuals to seek the dissolution of their connection, in order to form another, by which the desired object may be accomplished.

Persons, however, frequently enter into this connection, not only without any view of obtaining the happiness of personal offspring, but seriously desirous of escaping such a consequence. Interest; a wish to avoid solitary existence; the desire of those attentions which none but a near female connection can bestow under impaired health—and a

variety of other motives which I may spare the trouble of enumerating, not unfrequently lead men into the matrimonial state, when there is neither the wish nor the prospect of offspring. How far, under such circumstances, marriage is approved of in the eye of its founder, belongs not to me to enquire. But where the known state of the parties warrants the anticipation of unfruitfulness, theologians have loudly disapproved of the engagement, as being incompatible with the intention of the divine institute; while others have allowed it on the plea *fornicationis evitandæ.*

To come, however, to the details upon which we have to enter, the physical impediments to the matrimonial connection resolve themselves into three kinds—*impotence, sterility,* and *diseases.*

§ 1. *Impotence.*

This is simply incapacity for the performance of sexual intercourse. It may exist on the part of the man, or of the woman; but in the great majority of instances on record it has been alleged against the former; and though, not a very frequent event in either sex, we must still suppose it to be comparatively rare in the female. Let us advert to its existence first on the part of the male.

We shall assume it to be necessary that the act of coition must precede procreation. To effect this on the part of the male, he must possess all the

organs of generation, and they must be capable of performing their functions. Admitting this, it follows, that a man without a penis, or without testes is *ineptus ad coitum.*

A well known term for such persons (who have been sufficiently numerous to furnish ample means of illustration) is that of eunuchs—and these are commonly considered as necessarily *inepti quoad matrimonium.* But even among them there seems to have been considerable difference of powers in respect to the function in question. Every body knows the important part they have played in eastern economy from the earliest ages; being selected for the care of the females, and, as the natural consequence of their situation, occupying places of high trust and honour about the courts of Oriental Sovereigns. Males being preferred to women for this trust, it was deemed a necessary precaution to render them incapable of contributing to the irregular indulgencies they were destined to prevent; and they were accordingly deprived of those organs that constituted the faculty of *procreation* at least, if not of sexual attempts of a less perfect nature. In the first instance, we are informed that the masculine efficiency was destroyed by bruising the testes (a method of castration still pursued in some places with regard to animals) and destroying their functionary powers along with their organization. Instances of generating, however, seem to have occurred among eunuchs made in this manner, and are ex-

plained on the supposition that part of the testes, continuing uninjured, was still capable of preparing the necessary secretion, and furnishing it to a certain extent. Recourse was then had to total extirpation ; but even this, did not prove satisfactory ; and whether from such an inference regarding the office of the testes as that drawn by Aristotle*, or in order to prevent the indulgence alluded to by Juvenal †, the custom was resorted to of abstracting the penis also.

I presume it would be a legal plea for the dissolution of marriage that a woman had been deceived into it with an eunuch. It may therefore become our duty to verify the want of testes by inspection. If they have been abstracted, there will be little difficulty in ascertaining that fact: but under the allegation that they have never existed, and the discovery that there is an empty and imperfect scrotum, what is to be our conclusion? Certainly the probable one would be that they have never descended from the cavity of the abdomen ; an event of which there are many instances on record. In such a case, I presume we are more likely to be consulted by the person himself before

* Aristotle having observed a bull perform the function of generation, and impregnate after castration, denied the necessity of the testicles for that purpose—not being aware that if performed immediately after their removal there would be a sufficient deposit of fluid in the vesiculæ seminales, perhaps even for more than one attempt.

† Satire V. line 365, &c.

marriage, than in consequence of any process that might be instituted on the part of a female afterwards. There certainly have been instances of great apprehension in the minds of young men who have been situated in this manner; and one which led to the death of the individual by his own act, is pretty generally known among those who have studied surgery of late years in London. In this instance it is the opinion of eminent authority that the apprehension as to impotence was not well founded. In such a case the criterion that suggests itself is obvious; and practitioners must be guided in their suggestions by the nature of circumstances, and their own moral views, together with those of the individual *.

Three things are necessary to consitute the act of copulation on the part of the man—*erectio ac intromissio penis, cum emissione seminis.* If there be no secretion of semen, as where testes are totally wanting, emission of course cannot take place—therefore the want of these organs constitutes impotence: but it must be the absolute, the total

* Foderé, in such cases, lays stress upon the general state and appearance of the individual—such as being vigorous, active, manly, furnished with the beard, &c. He also observes that persons in whom the testes had never descended, have been remarkable for vigour and prolific virtue; "these organs" says he, "appearing to derive from the warm bath in which "they lie, greater power of secretion, than when descended "out into their ordinary situation." I. §. 244.

want of them. Disease (unless of such a nature and to such an extent as to require their extirpation) will not establish the plea of impotence. It may not only be partial, but curable; or, even where generally affecting the organic structure, we cannot well, without the aid of corroborative evidence, declare that the function of secretion is for ever stopped. It is also unquestionable that a *spado*, a person with one testicle only, may perform the functions of fecundity without any imperfection deducible from the result; and it should be observed, that where no special event has deprived a man of one testicle, and one only appears *in scroto*, the other may be in the abdomen.

The distinction as to the force of the plea for dissolution of matrimony on the score of testicles being *removed*, or in more general terms, a man *becoming* impotent *after* marriage, is no part of our business. The relations of the event must be proved by other evidence than that of anatomical inspection.

Impotence may be connected with the state of the penis. In the first place, this organ may be altogether wanting. Where this is the case, there can be no hesitation as to the disqualification being complete. It may have been removed, or it may never have existed, and yet the other machinery of the generative system be perfect, and the sexual inclination strong; but as the intromission requisite

to accomplish the generative act is impossible, no compromise can take place.

Exception may also be taken against the dimensions of the penis. It is agreed that mere diminutiveness alone, where other accessaries are not wanting, can hardly be received as a constituent of impotence. But extraordinary length and thickness, especially the latter, have been explained by authors to constitute, if not real impotence on the part of the male, a just ground of complaint on that of the female, inasmuch as she must be subjected to great suffering and even danger to her health by attempted intercourse. But such cases as these can very rarely happen, and require no elucidation here.

Impotence may be the result of malformation of the penis. I shall confine myself to the urethra. There never can be question of absolute closure—for were a child to come into the world in this manner, some opening must have been speedily established to relieve the calls of nature with regard to the urinary discharge. But the orifice of this passage is occasionally formed in a very capricious and inconvenient manner. It sometimes opens in the perinœum—sometimes on the dorsum of the penis, termed *epispadias*, but most frequently, where there is a deviation from the natural structure, beneath this organ, termed *hypospadias*.

To decide whether the mere opening of the urethra at an unnatural part of the penis constitutes

impotence, requires, I apprehend, more accurate acquaintance with the mysteries of impregnation, than we can boast of. Setting aside other notions that have prevailed on this subject, I shall confine my attention to the two that are now most prevalent. On the one hand, it has been argued that in order to produce impregnation, the excitement of the venereal orgasm is requisite on the part of the female, and the injection of the semen masculinum through the os uteri into that organ, whence it passes to the ovaria by the way of the Fallopian tubes. I shall merely observe that no established function of *vital* œconomy is here required; the operation thus performed is a mere mechanical one—and is effected in a manner contrary to mechanical principles. On the other hand, it has been argued that the mere application of the semen to the parietes of the vagina, and that without exciting the sensation or the action above alluded to, will produce impregnation. In favour of this opinion strong arguments have been drawn from the structure of the organs of generation in both sexes, and especially in the female; from what really takes place at and subsequently to the act of copulation—all which has been demonstrated; and from numerous well-established instances of impregnation, where intromission, much less direct entrance of the *fluxio seminalis* by the mouth of the uterus, was impossible. The only deduction not founded on actual observation here, is perfectly consistent with the laws of

the animal œconomy—viz. the absorption of the impregnating principle from the surface of the vagina, and its transmission to the ovaria in the first instance by another channel than that of the uterus*.

Which of these opinions is right I shall not attempt to assert. To return to the subject in question, we know that impregnation has often taken place where the urethra has opened in an unusual place—provided that the orifice was in a part of the penis that entered the vagina; and we are bound to conclude, from well-established facts, that whether the *orificium urethræ* can communicate with the os uteri or not, *emissio seminis* within the vagina is the essential act of impregnation on the part of the male.

There are certain diseases in and about the urethra that create incapacity for sexual intercourse. They require merely to be enumerated. Strictures, schirrhous enlargements about the neck of the bladder, enlargement of the prostate gland, and whatever impedes the exit of the semen from the vesiculæ, whence it should pass to the urethra at the time of coition.

* A small work on Impregnation, by a practitioner in the north of Scotland, of the name of Couper, and which I read a good many years ago, seemed to contain many satisfactory statements on the process by which the impregnating substance reaches the ovarium. I regret, not only that I cannot refer now to this work, but that I do not recollect the title accurately.

Impotence has often been alleged, where no visible defect could be discovered; and this has given rise to some very strange and disgusting investigations. It should be premised that the parts may be perfect, and apparently in due proportion and vigour in the quiescent state, but that impotence may, nevertheless, exist through incapability of being roused from this condition to that required—in other words, from inability for erection. This may be the effect of constitutional coldness, paralysis, or some occult defect in the organs. The evidence of testimony may be the only means of deciding here. But much litigation has arisen where a charge of impotence has been brought on one side, and denied on the other. Some most curious circumstances have been recorded of cases of this nature, and we have not been without examples in our own country. In France, however, they excited at one period an extraordinary degree of eclat: to which I shall make a short allusion.

A *moral* impotence is by no means a rare occurrence. Excess of emotion, surprise, disgust, and various other circumstances that affect the mind, may deprive a man of the capacity in question for *a time*—but in married life this must wear off. It must also be allowed that men have been impotent with one woman and not with another: for besides the fact of persons who had lived in matrimony without offspring, and being, after divorce, remarried, and both having families, (which may be ob-

jected to as mere presumptive evidence) there have not been wanting positive confessions, and even ocular demonstration to this effect!

In former times this sort of impotence was frequently referred to the influence of magic; and some very curious stories are on record, connected with that subject. In the time of James I. a case occurred in this country of a very strange nature. The wife of the Earl of Essex had transferred her affections to the Viscount Rochester, (afterwards Earl of Somerset, already alluded to *) and being desirous of a divorce, adopted, at the suggestion of Lord Rochester, the resolution of avoiding connubial intercourse with her husband. For this purpose attempts were made, through the pretended agency of a rogue named Forman, (who gave himself out for a conjurer,) to produce impotence in the Earl of Essex; and a claim for divorce was afterwards set up on the plea that he was impotent. The lady accordingly made oath that, for the space of three years, she and her husband had lain together, but that, although she was willing to submit for the purpose of procreation, he had never been able to effect carnal copulation with her. It was also set forth that the Earl, both before and after his marriage, had been able to deal with other women, though not with the said lady; who represented her-

* As implicated in the murder of Sir Thomas Overbury. See page 198.

self to be a woman fit for the purpose, and at the time remaining a virgin; which was attested by midwives, who inspected her. The husband admitted his own want of inclination towards his wife —but *thence* drew the inference that she was not the fit woman she was represented to be. After much discussion, in which the theological monarch took a conspicuous part, the divorce was allowed, with permission to both parties to marry again *.

In France, during the 17th century, a strange, a disgraceful, and certainly of all others the most inadequate method of verifying or disproving an allegation of impotence, was resorted to. This was no less than a solemn and deliberate appeal to *deeds* in the presence, or at least under the inspection, of judges expressly appointed to verify the state of the case. It was technically denominated the "Congres." If a woman laid a disqualifying charge of this nature against her husband, three years were enjoined as a period of probation †; and when these expired, if the cause of dissatisfaction remained, and the husband chose to demand the *Congres* as a dernier resort, a certain number of matrons and

* This curious and amusing affair, (out of which, however, arose the serious business of the murder of Sir T. Overbury) is given in various collections of State Trials. It took place in 1613.

† This period of probation was enjoined by the Canon Law, and was observed (if I mistake not) in the Essex case.

medical men were appointed to decide as to the fact of carnal intercourse being effected or not*.

In our country we have had comparatively few exemplifications of these allegations being brought forward in a public manner; though there have been some. It would be to the last degree flagitious for a man, conscious of his inability to perform the natural functions of a husband, to deceive a woman into the married state. The injury done to her would be manifold; and yet to reclaim against the engagement necessarily involves such disagreeable consequences as would lead a woman of virtue and delicacy to

> "———— pause,
> And make her rather bear those ills she has,
> Than fly to others that she knows not of."

Among other causes of impotence, on the part of the man, obesity has been mentioned. Some writers on the subject have quoted the case of Martin, King of Arragon, predecessor of Ferdinand, who was so extremely corpulent, that no means could be devised, either medical or mechanical—not even the

* A full account of this disgusting, and at the same time ridiculous process, is given in Bayle's Dictionary, under the article "Quellenec." In the IXth vol. of the Causes Celebres is a grave defence of it: and a very severe censure was bestowed upon it by Tagereau, which was probably the real cause of its abolition.

help of men and women—to aid him in the accomplishment of the undertaking.

Impotence may also be ascribed to the female. Strictly speaking, there is but one way in which this can take place—and that is through incapacity of the vagina to admit the penis; which may be of two kinds. The vagina has been found altogether impervious; both by unnatural closure, and by the integrity of a hymen of unusual strength and thickness. Children are sometimes born without any opening of the vagina, whereby an artificial one is rendered necessary, in order to allow the passage of the urine in the first instance, and that of the catamenia at a future period. The impediment of the hymen to this latter evacuation may be sufficiently removed for the intermediate purpose, and yet remain an obstacle to copulation. Even here, however, it can hardly be supposed to occasion absolute impotence, being most probably curable. It has been found necessary to divide it during parturition, and strange stories have been connected with the fact of impregnation taking place under such circumstances.

Sometimes the parietes of the vagina adhere together; either originally *de nativitate,* or through adhesion, from subsequent inflammation; and even where nothing of this kind is the case, the natural dimensions of the organ may be so contracted as to render it impossible to gain the necessary access.

Sometimes the vagina opens preternaturally. A

communication has not unfrequently been discovered between it and the rectum; while it has also occurred that the passage has terminated in the latter.

§ 2. *Sterility.*

The distinction between this state and that just explained, essentially consists in aptitude for the act of intercourse, without the consequence of procreation. The distinction is of material importance, although it has not been always observed. It is likewise necessary to consider it as existing in the female alone; for where no charge of impotence can be established against a man, it would be vain to talk of his sterility. His part in the generative process is confined to the act of intercourse; and if that be performed, no farther question can be made as to the influence derived from him. Some fanciful writers have pretended to judge of the qualities of the semen; but we have not yet attained to such knowledge of our own secrets as to accomplish this; nor is the natural obscurity of the subject the only impediment to the exercise of such a discriminating power.

Considering sterility, therefore, as confined to the female, it may be remarked that it is of two kinds; constitutional, and morbid. The first is known merely by the event of unfruitfulness in the married

state, without any known cause, or any concomitant derangement or inconvenience, under continued good health, with desire and enjoyment of connubial intercourse. Indeed, some authors have maintained that both men and women of cold constitutions are more prolific than those who are much inclined to sexual intercourse.

This sort of sterility will endure for many years, and at length recede; while on the other hand, women will cease to be fruitful after having borne a child or two in the beginning of their married life; and it not unfrequently happens that having been fruitful they become barren for many years; after which the power of conception will return, and they augment their offspring at a considerable distance of time, having cohabited all along with their husbands. It must also be admitted that women who have been barren with one husband become fruitful on marrying another, which certainly argues for the existence of sterility in the male sex—while the same thing has been observed in the case of the husband. I could refer also to instances of divorce after sterility, and even on the ground of impotence, where both parties on marrying again had families.

In certain circumstances we have had examples of divorce on the ground of constitutional sterility; but it is a plea that can be but rarely admitted, and is certainly one that cannot be affected by medical inquiry.

Morbid sterility may be curable or incurable. Of the former may be reckoned certain deviations from the natural formation of parts not amounting to impotence, but probably affecting the power of conception. Occlusion of the *os uteri* has been considered an impediment to conception. I have lately seen a case in which this appeared to have existed. A young female reached the age of puberty without menstruating, and began to suffer severely from retention of the menstrual flux in the uterus. A practitioner of my acquaintance was consulted, who being satisfied in his own mind as to the state of the case, introduced a trocar—the immediate consequence of which was relief, by the evacuation of a large quantity of menstrual fluid. Accident, or carelessness, or probably both, was the cause of the obstacle being renewed, and a return of suffering in the former manner. It again appeared necessary to resort to surgical relief; and on this occasion I accompanied my friend. An attentive examination of the parts satisfied us that the impediment was not offered by the vagina; and the *os tincæ* was distinctly ascertained to be about the center of the fluctuating tumor, the *cervix uteri* being obliterated. The puncture was again made in the direction, and as accurately as could be ascertained in the situation of the *os uteri,* and a discharge of retained menstrual flux took place immediately, to a large extent. Precautions were taken to prevent its entire evacuation at once, and a

canula was secured *in situ*, in order to prevent the adhesion of the orifice again. The practice was at this time perfectly successful, for the patient has now regularly menstruated for about a year and a half. It may be urged that this proves nothing as to sterility; and that if the theory of impregnation by vaginal absorption be well founded, it might occur in such a case. Authors, however, have asserted that sterility accompanies occlusion of the os uteri, and I have recorded this instance as one in which that impediment was removed.

Imperviousness, and obliteration of the passage of the Fallopian tubes (a case that cannot be verified but by examination *post mortem*) has also been considered a cause of sterility. The consideration of this subject would lead to some curious speculation; and throw us back upon the œconomy of conception. That the ovum is impregnated, or prepared for fecundation in the ovarium, there can be no doubt, and also that it passes into the uterus through the Fallopian tube. It is therefore evident that if these tubes be impervious, they cannot transmit the ovum. For the same reason, if the impregnating substance goes to the ovarium by this tube, its imperviousness must prevent that process also. It may therefore become matter of enquiry, whether something of this nature may not be a cause of extra uterine conception; and if so, through what channel the ovum (which could not pass the impervious organ

now mentioned) received the impregnating substance?

The sequel of the dissection in the case of the strangled woman, mentioned at page 229, is connected with the present subject. The Fallopian tubes were larger and thicker, and more fleshy than usual. They opened into the uterus at their smaller extremities, but at their fimbriated ends they had neither any opening nor the appearance of ever having had any; nor were there any *fimbriæ*. The woman, however, had had two children—one of them five years before her death. Littre supposed that the tubes had either not been closed originally, or that, if one had been, the other had become so by subsequent accident. One was full of bloody serum, and the other of a yellow serous fluid.

Certain diseases of the uterine system prevent conception, and there are others which virtually produce sterility, by causing the separation of the ovum at an early period of pregnancy. Such are hydatids, dropsy, schirrhus going on to cancer, leucorrhœa, and other derangements which may or may not be curable.

§ 3. *Diseases.*

The contract of matrimony may be one of the general purposes for which parties are unfitted

by mental alienation; and the peculiar consideration of the matter in this relation does not fall within our province: nor is it necessary to add to what has been already said upon it with any particular view of this nature.

But there are bodily infirmities, which though they may not unfit for the general duties of citizenship, or ordinary social functions, may disqualify for matrimony, or at least render it a serious misfortune to the other party to be contracted to a person labouring under any of them: and though, perhaps, the privilege of divorce might not be accorded on such a plea, we may be called upon to verify the state of the case and give our opinion, under circumstances of almost equal importance. In the preliminary observations at the beginning of this work, I hinted that questions might be *privately* put to us, which it will be our duty to consider as seriously, as if we were to solve them in a public court *.

In this way, therefore, we may expect to be consulted, (with a view to the propriety of matrimonial engagements) as to hereditary diseases or constitutional defects and peculiarities. Certain complaints are of an hereditary nature, and prudent persons will naturally wish to avoid the misery of intailing them on their offspring. Such are insanity, gout, scrophula, pulmonary consumption, &c.

* Page 11.

We may be required to verify, or disprove the tendency to, or existence of any of these in an individual—to state the probability of their occurrence; or of their eradication where understood to exist—and such appeals may be made in circumstances extremely embarrassing to the practitioner. Under this disagreeable exercise of duty, his own good sense, and prudence, and principle must guide him. The great variety of situations that may occur, and the moral rather than the scientific grounds on which it must frequently be our duty to act, preclude the possibility of laying down rules. The general principle is well understood, and neither admits nor requires elucidation here.

Other bodily conditions, both curable and incurable, are enumerated by writers on Forensic Medicine, as rendering the dissolution of marriage warrantable, and which at all events may be received as entitling either party to a separation *a mensa et thoro,* and consequent suitable provision. Such seem to be for the most part of a loathsome, or communicable nature. Both, on account of the improbability of an erroneous judgment being formed when submitted to the consideration of an intelligent practitioner, and the extreme rarity with which they afford matter of judiciary enquiry, I shall pass them over.

SECTION III.

PRETENDED DISQUALIFICATIONS.

This title refers to a subject of much interest and of considerable diversification. Imputations as to the existence of some of the disqualifications already treated of are frequently alleged against individuals in an unfounded manner; but more commonly we find that they, together with some that have not yet been noticed, are pretended for various purposes, where they do not exist. Of insanity, and a few others that have respect to particular circumstances of general or judiciary import, enough has already been said; but in the multiplicity of ordinary occurrences, we now and then meet with simulations whose nature and objects cannot be ranged under any of the preceding heads, and occasionally indeed belong to no general view whatever.

The chief objects, however, to which impostors of this kind seem generally to address themselves, are exemption from punishment and labour; to excite compassion, to receive alms, and for other occasional purposes. I now confine myself to the consideration of disqualifications that have no real existence; having already said all that appeared

necessary, or admissible concerning those that are well founded.

Of the first of these there remains only the question of pregnancy to be considered, as exempting women, capitally convicted, from suffering death, until the period of parturition is over; the law not subjecting the innocent fruit of the womb to extinction on account of the crime of the parent—accurately recognizing the existence of that distinct personal identity on the part of the embryo, which was formerly maintained. But as there are several bearings of the question of pregnancy whether imputed, pretended, or connected with mistakes, under circumstances that obviate either of the first considerations; and as there are collateral questions connected with the subject of gestation that cannot well be separated from it in the consideration, I shall reserve it for the next section, where its relations in respect to simulation will necessarily come under view.

The diseases that are, or that may be feigned, are extremely numerous; though experience has shewn that some are more generally selected than others, at least with the view of obtaining a livelihood at the expence of humanity, thus dishonestly excited in the minds of spectators. Certain states of the system have been assumed for the purpose of gain, through which other feelings of weak minded persons have been acted upon—such as pretended extasies, and divine inspiration, with all the

farrago of spurious powers laid claim to in the majority of cases by designing rogues; though perhaps in some instances the indvidual may have been under the power of illusion himself. The credulity of mankind is a powerful agent, and has often been admirably managed for important as well as sinister purposes. These cases however I shall leave to be dealt with according to the good sense of society in general, which is more proper to cope with them than medical skill, and confine myself to the questions of disease that may require professional interference for detection or verification.

Although the great variety of simulations of this nature may bid defiance to attempts to treat of them in detail, yet before coming to particulars it may be advantageous to record a few general principles in the detection of pretended maladies that may be applied to most cases.

Much has been written on the subject, and many facts have been quoted to illustrate the nature of these deceptions, and their detection. Perhaps there is hardly a reader of these pages that could not, from his own recollection, add some stories of an interesting nature to the mass already recorded. It is my desire however to dismiss the subject as briefly as possible; for after all that might be written on it, particular cases will require some particular exertion of ingenuity, for which no instructions could previously provide.

The diseases pretended may be external or in-

ternal; and it has been generally admitted that the latter are more easy of simulation, and more difficult to detect than the former. In external ailments our senses are at our command: but where the seat of the complaint is hidden, or not well defined, judgment (which is liable to err) and experience, which all do not possess or profit by equally, must be our guides.

When suspicion is excited, which, in a case of deception, is almost certain to take place sooner or later, one great step towards a successful result is to conceal it. We must then commence the part of dissemblers ourselves. I have frequently been entertained with the success of a plan to eradicate a pretended disease, while the subject was persuaded that I had all along been his dupe.

Where we are not certain, however, as to the fact of simulation, one great means of coming to the truth is by encouraging the patient to talk of his complaint—to describe the symptoms, and its seat, the manner in which it had been induced, the effect of remedies, &c.; in which, if there is no truth in the matter, we cannot fail to perceive incongruities, unless the patient is of the medical profession, or, what would do as well, prepared to play his part by previous study. He will pretend a disease of a nature, or in an organ, which should lead to very different symptoms—or he will refer it to a cause which pathology cannot acknowledge—or he will ascribe effects to medicines that they are not

likely to produce; and to this it may be proper to lead him by incongruous questions. We should also take into consideration the circumstances of the patient, his age, sex, temperament, habits of life, employment, and previous history as far as we can obtain it—while the progress, and pretended changes of the disorder must confirm our surmises; especially if remedies that should in other cases produce certain effects, should in this cause either the opposite or none at all; or if effects are ascribed to articles that should have none, and are given with a dissembling intention. In military hospitals of magnitude, I have seen wonderful cures effected by a *panacea*, that went under the mysterious name of *mistura diabolica;* and the action ascribed to this *excellent* medicine was of every imaginary description. It consisted, as will be imagined, of every article of the laboratory that was repugnant to the organs of taste, and at the same time so much diffused as to be capable of very little direct efficacy —a composition of salts, aloes, assafœtida, or gum ammoniac, &c. in solution; and the principle of administration being strictly *pro re nata*, a very small quantity was given at a time, but so frequently repeated as to keep the taste continually in the mouth. Few sturdy impostors could endure this discipline beyond a few hours, especially when aided by the *comforts* of a blister, and food of the least inviting description. We certainly used to see surprising recoveries.

Impostors of this description are for the most part in reality reluctant to take remedies, however they may pretend to submit with cheerfulness to the means of recovery. The ruling principle in such cases, with regard to the administration of remedies is to secure their application *bona fide*. I grant that we may be baffled here; as pretended inability to swallow medicines, or to retain them when swallowed, may be with difficulty distinguishable from that genuine repugnance which we often meet with, and which the strongest determination even on the patient's own part cannot subdue. We therefore must trust to the circumstances of particular cases for the necessary suggestions. Such impostures will call for an exertion of talents that no study can impart. Some men are more adroit in the means of detection than others—as some are less suspicious, and more easily imposed on.

If however, we enquire into all the proper bearings of the case, with merely a pathological view, incongruities as to symptoms cannot fail to strike us. Certain complaints must be connected (if they are genuine) with certain palpable states of the system —for instance, where there should be fever, if we find no indication of that state, our suspicions will be at once excited as to deception; and so in other cases. I was told of an extraordinary system of deception that was detected among the sick at an hospital station in Portugal. Particular complaints requiring different articles of diet, it is no unusual

thing for patients to attempt the gratification of their own fancies by bartering with one another, if they have opportunity. It seems on this occasion that certain articles allotted to the dysenteric patients were coveted by men who had other complaints. To obtain the objects of their desire it was necessary to feign the same disorder; but to satisfy the doctor that they had really contracted dysentery, certain appearances in the alvine evacuation were necessary. These were procured in the simplest manner possible—by purchasing, with part of their comforts, the commodity in question from those who really had the disease *.

Of particular complaints that we meet with among impostors, perhaps one of the most common is *epilepsy*. It is one of the most afflictive disorders to which we are liable; whether we consider its effects on the system as to immediate suffering and ultimate destruction, its frequent incurableness, its unfitting for almost every occupation and enjoyment, or the danger of accidental death to which the subjects of it are exposed. It is at the same time

* The following story (though not exactly of the same kind) will shew what ingenuity may accomplish in the way of deception. In the ward of a general hospital where I was doing duty myself at the time, and which ward was an open church, containing about 120 beds, a soldier, really confined between the sheets, with some surgical complaint that did not much affect his general health, contrived to coin part of his pewter utensil into counterfeit Spanish dollars—which were passed in the town by an accomplice!

peculiarly adapted to the purpose of impostors. It does not require the constant attention, and unremitting caution that some other complaints exact for successful imitation; nor is it necessary to assume it but at convenient times; it being perfectly consistent with the nature of the disorder to be quite well in the intervals, which may be longer or shorter at the impostor's pleasure. There is one symptom of this disorder which cannot be feigned; viz. the incontractility of the pupil when exposed to light. The foaming at the mouth has been repeatedly detected as being produced by a piece of soap contained within it.

Other fits may also be pretended—as *hysteria;* which, when real, assumes such a variety of appearances as to afford peculiar facilities for imitation. *Syncope* is another; and as allied to these, (the whole in their real nature partaking more or less of the common characteristic of insensibility) may be mentioned *paralysis* and *catalepsy*. The *shaking palsy* is a frequent plea on the part of an idle beggar; and is always suspicious, especially where the person appears to be otherwise in an ordinary state of vigour. This ingenious order however understands the art of mimicking wretchedness too well not to have the details of their appearance in some degree of keeping. A man of the name of Drake, in the Royal African Corps, assumed an appearance of total insensibility, under which he resisted every sort of treatment.

At the end of several months he was removed to Hilsea Hospital, in a state of apparent natural sleep. At this time an attempt being made to open his mouth forcibly, the temporal muscles were thrown into violent action, and the jaw remained firmly closed. He resisted even the shower bath and also electricity; but on a proposal being uttered in his hearing, to apply red hot iron, his pulse rose; and on preparations being made to remove him to Bethlehem Hospital, an amendment began to appear immediately. People have gone farther than this —imitating even death itself—the very pulse becoming imperceptible. Such cases are at least reported*; and the story of Colonel Townshend, who, in the presence of Dr. Cheyne and other professional men, put on all the appearances of death, and was resuscitated of his own accord, has long been notorious. In this instance neither pulse nor respiration could be perceived for more than half an hour. He died in reality, however, the same evening.

With regard to the impostors above mentioned, sudden and violent applications have generally been the most successful in detecting the deceit, such as effusion of cold water—which however might have a salutary effect in cases of reality. The actual cautery

* One is given in Monti's Letters to Haller, and is quoted by Camerer in a tract "de Signis Mortis Diagnosticis," published at Strasburg, 1785. See also, Dr. Male's Elements, page 238.

has been more generally recommended, for, if the case be one of imposture, we shall find the subject decline the experiment, or at least be unable to withstand the application when made. I recollect an instance of a soldier who had long bidden defiance to detection, being suddenly cured by a drop of boiling water clandestinely let fall upon his naked back, under pretence that a surgical operation was necessary, which he had made up his mind to undergo, in the hope no doubt, of being able to ring the changes for some time longer on the consequences of it.

Hæmoptysis has been frequently feigned; but the trick is one that can deceive the extra-professional only; the appearance of the blood will always be of importance—that which comes from the lungs being frothy and light coloured; and though the former appearance may be in some measure imparted to blood sucked from the gums, cheeks, &c. or artificially conveyed into the mouth, yet the other peculiarity cannot be communicated; besides which, detection must be insured by careful inspection of the mouth and fauces, and observation of the individual. Stories are also told of people swallowing bullock's blood, and other coloured substances, for the purpose of pretending *hæmatemesis*. Of course the complaint will cease when the supply of *the cause* is cut off.

People often affect *blindness;* and it might appear very simple to ascertain the truth by examina-

tion of the eye, or by placing the individual in circumstances of danger. Mahon records the case of a conscript who baffled every attempt to find him out. He was even placed on the margin of a river, and desired to go forward—which he did, and fell into the stream. Boats however were provided to pick him up, and no doubt he was aware of this. He afterwards acknowledged the imposture upon receiving his discharge *.

Of the deaf and dumb I have already spoken; but sometimes either the one state only is feigned, or the other. In the former case, a little ingenuity alone may detect the imposture—such as making matters that interest the individual strongly, the subject of conversation, and watching its effect on the countenance or on the pulse. As to wilful mutes, who are not deaf, we know that the power of articulation seldom leaves a person without adequate or even manifest cause. We ought perhaps to be satisfied with the want of a tongue; yet cases are on record where persons did very well without that organ—although the muscles belonging to it were in all probability present. One is very satifactorily reported by Jussieu the botanist, of a Portuguese girl, aged fifteen, who had been born without a tongue †.

* Med. Legale. I. 360.

† Memoires del 'Acad. Royale, &c. Jussieu refers to another case of the same kind recorded eighty years before by a surgeon of Saumur. In this instance the subject was a boy,

As to surgical ailments, ulcers, ruptures, fractures, luxations, or total want of organs, they cannot be supposed proof against an examination by those acquainted with the natural structure of the body; and were I to enter into the tricks that are resorted to for the purpose of making and aggravating sores, &c. I should be justly chargeable with trifling *.

I shall take no notice of such ridiculous cases as that of the woman who was delivered of rabbits; of another who brought forth large stones †, and seems to have imposed even on medical men; of the delusions of Joanna Southcott; of the incomprehensible deception of Miss M'Avoy, the blind lady at Liverpool; nor of many other notorious events, which for various purposes have from time to time been pretended. Such things teach us that success has ever followed roguery, however absurd; and I fear that the bounds of credulity are not sufficiently defined to warrant us to deny that whenever similar impostors may chuse to start again, they will have their due share of dupes and partizans, as in times past.

who had lost his tongue by gangrene, and yet could perform the functions of it tolerably well. A similar case (with references to others) is recorded in the Philos. Trans. for, or about 1742.

* Those who chuse to peruse the case of Phineas Adams, a soldier in the Somerset militia, which was detailed in the Taunton Courier, and other publications towards the end of Sept. 1811, will find a master-piece of apparent imposture.

† Medical Commentaries. vol. IV.

SECTION IV.

MISCELLANEOUS QUESTIONS.

I COME now to the concluding part of the work, the title of which refers to a few, and but a very few subjects that do not exclusively belong to any of the preceding heads. The topics to be treated of here are *Utero-gestation, Sexual Ambiguity* or *Hermaphrodites*, and *Personal Identity.*

CHAPTER I.

Utero-gestation.

I prefer this designation of the subject now to be considered, as being of more comprehensive scope than the term *Pregnancy,* which in all its bearings is included under it. It has a plurality of relations, some of which belong to the former section; for the pregnant state may be pretended. It is more frequently necessary to consider it, however, as an article of disqualification; and one that it is of im-

portance to conceal, as when illegitimate. The subject of its duration also involves questions of vast importance, the legitimacy of birth often depending upon the settlement of this point—as in the case of posthumous children; and there are some considerations of a Medico-legal nature connected with its termination, or consequences.

The treatment of the subject will be facilitated by observing something like this order.

§ 1. *The Phenomena of Pregnancy.*

In the pregnant state the changes that take place in the uterine system are highly important, particularly in the uterus itself. It may be proper however to state, in few words, how the organs concerned in gestation are disposed, and what relative connection they have to each other.

The unimpregnated uterus has been compared in shape and in size to a flattened pear, with a cavity capable of containing a split almond. It is divided into three parts, the fundus, or body, the cervix, and the os tincæ, or mouth. It is of muscular structure; lies in the cavity of the pelvis, and is supported *in situ* by membranous ligaments. From each side of the fundus proceeds a convoluted duct, called the Fallopian tube, whose uterine extremity is very small, while the other is wider and fimbriated, floating loosely in the pelvis. At each side of the

uterus is an oblong-flattened body, termed the *ovarium*, vascular, and containing small substances resembling sacs, which are understood to be the ova—retained there until the operation of impregnation takes place. For our immediate purpose, it does not seem necessary to be more particular in this reference; nor to enter on a description of the external parts.

In whatever way the impregnating matter or influence is conveyed to its proper scene of action, whether directly through the channel of the uterus, or by the circuitous route formerly hinted at *, the action commences in the ovarium. Upon a subject of such obscurity, it is advisable to speak with caution. Some discoveries, however, have been made, which satisfactorily prove that a change takes place in the ovum previous to its introduction into the uterus, whither it is conveyed through the Fallopian tube. In the case of death from laudanum, recorded in the Transactions of the College of Physicians †, the uterine system displayed the following appearances. The blood vessels in the broad ligaments were remarkably distended, and in much greater number than in the natural state of these parts. The uterus was larger than it is generally found in the unimpregnated state, &c. The Fallopian tubes were enlarged and remarkably twisted, while within

* Page 449.

† Quoted at page 166 of this volume.

the cavity of each was a number of loose floating processes, formed by folds of the inner membrane, extending from the fimbriated extremity to within an inch of its uterine termination.

The left ovarium was considerably the largest, and at its posterior part was a rounded prominence, distinct from the general fulness. Upon dividing the membrane, over the middle of it, a distinct cyst was exposed, containing an ovum *.

" M. Littre," says a report in the Memoires de l'Academie (so often quoted) for 1706, " on one " occasion, saw the most secret part of the mystery " of human generation, and that in the operation of " which it is most difficult to surprise nature." In dissecting a woman, twenty-five years of age, who died four months after the birth of her second child, he found the fimbria of the right Fallopian tube attached throughout its circumference to the ovarium of the same side, and embracing an ovum, three lines in diameter, a portion of which was out of the ovarium. That which was yet within it was contained in a sort of calix, full of blood-vessels throughout, and composed of two different substances, the internal being glandular, and the external muscular.

It is conjectured, (and the opinion has been deduced from experiments) that the ovum is detained

* I have given but a very imperfect abstract of this curious and illustrative case, (to which I shall have to refer again) and would recommend its perusal to those who have not yet met with it.

some time in the Fallopian tube. This may be necessary to open for itself a sufficient passage—the un-dilated opening at the uterine extremity not being larger than to admit a hog's bristle. After its admission to the uterus, the ovum commences the process of increase; that cavity increasing in a peculiar manner along with its contents. The pregnant uterus is closed by gelatinous matter, which seals its mouth, and which was in a state of formation in the case dissected by Mr. Stanley.

It has been asserted that women are conscious of a peculiar sensation at the moment of conception. Whether conception be the work of a moment or not, we cannot deny that there may be a sensible impulse conveyed by the excitement into which the uterine system appears to be thrown. At the same time women are very apt to imagine that they have conceived, after sexual intercourse, particularly if that consequence be either a very desirable object, or one to be dreaded. The matter can be of no practical import, and may therefore be waived in this discussion. The first mark of pregnancy, upon which any reliance can be placed, is the disappearance of the catamenia at the usual period. This goes on throughout the time of gestation. Of itself, however, we must not take it for conclusive proof, especially in the early weeks. The menses are often withheld by other causes; and their suppression will produce other disorders that resemble certain signs of pregnancy, as sickness at the stomach,

irritability of temper, depravation of appetite, enlargement of the mammæ, &c. Women, too, who marry late in life, are particularly apt to construe the disappearance of this discharge, after their matrimonial adventure, into a sign of pregnancy; though the same change would have taken place had they remained a little longer in the state of celibacy. On the other hand, a notion has been entertained that the state of pregnancy may go on, and the menstrual flux be continued. This has arisen from the observation of an occasional draining from the vagina during gestation. The catamenia decidedly flow from the cavity of the uterus; and besides the closure of the os uteri, already alluded to, its cavity is lined throughout with an impervious membrane.

Along with the disappearance of the catamenia we generally find those derangements just alluded to, of the stomach, temper, &c: and in the early period of pregnancy, this is the amount of our means of judging of the fact—an amount far from being satisfactory in cases of grave import, or for judiciary purposes. We can never pronounce with any degree of certitude until matters are so far advanced as to indicate the state of the case upon external examination. It is therefore unnecessary to have recourse to this until about the fourth month.

In the mean time the abdominal tumor has been forming, and becoming larger. At the end of the fourth month the uterus reaches a size larger than

that of a Florence flask, and may be felt through the parietes of the abdomen, in women who are not fat or deformed. In the fifth month the belly swells somewhat like a ball, the skin becoming tense. As the abdominal tumor advances, it assumes a peculiarity: the umbilicus is drawn down, and a *flatness* is perceptible, or imagined to be so, in the abdomen, which in France has given rise to the proverb—

"En ventre plat, enfant y a."

The tumor is longer concealed in tall women than in those who are short; and it has been remarked that the pregnant uterus does not rise directly upwards, but generally inclines to one side—most commonly to the right *.

About the sixth month the cervix uteri begins to shew an enlargement and shortening, in its progress to obliteration before the termination of the period.

We must here observe, however, that abdominal enlargements take place from various causes, and that mistakes as to pregnancy have been the frequent consequence. Even *ascites* has been confounded with the pregnant state. Avenzoar has left a confession that he was deceived about his own wife, whom he treated as dropsical, though she had passed the fourth month. Pregnancy and ascites

* Hamilton's Outlines.

may exist together; and in this state women have borne several children.

The ovaria are subject to enlargement, and among other causes from dropsy. Pregnant women have been killed by the mistaken application of the trocar. Along with dropsy of the ovarium, the functions of menstruating and even child-bearing may go on. A famous case of mistaken charge of pregnancy and child-murder is on record, where ovarian dropsy seems to have existed to an extreme degree*.

Sometimes the abdomen enlarges without any known cause, and where there is no question as to pregnancy. Women in easy circumstances are often disposed to obesity; and those who have had large families are liable to enlargements of the abdomen, and consequent mistakes. Tumors also form in the uterus itself; and these may arise either from extraneous substances, or retention of the menstrual flux †.

Connected with the increase of the abdominal tumor is the sense of motion that becomes perceptible ‡. Deceptions, however, may take place even with regard to this. Flatus in the intestines, pulsation of the large vessels, nervous irritation, and the force of imagination may readily impose on the

* That of the demoiselle Famin, published in a separate form at Berlin and Paris, by Valentin, Maitre en Chirurgie de Paris, 1768.

† As in the case already noticed, page 458.

‡ See page 294.

woman herself. Nor must we too easily credit the reports of unqualified persons. A man declared that his wife was pregnant, having himself distinctly felt the motion of the child—which turned out, however, to be the pulsation of the woman's heart.

As pregnancy advances, a change is manifested in the breasts, which is generally of a conclusive nature. They enlarge, and the nipples are not only distended, but are surrounded by a dark colour. This discoloration of the areola, accompanying enlargement of the mammæ, has generally been considered a strong presumptive sign of pregnancy; though simple enlargement of these glandular bodies can hardly be taken into account, when unaccompanied by other proofs. It may be effected by various circumstances—as merely handling them; and by disorders in the uterine system, between which and the mammæ there is an intimate sympathy. The deepening colour of the areola, however, is esteemed of consequence by good authority. It becomes more or less dark, according to the complexion of the woman, never recovering its natural hue after child-bearing, and growing still darker in every succeeding pregnancy. As pregnancy advances, a fluid may be obtained from the breasts; which, towards the termination of that state, becomes real milk.

But even the state of these organs cannot be implicitly relied upon. After the developement of the mammæ, it is easy to obtain milk from them. Several

instances are recorded not only of virgins, and superanuated women suckling children, but even of men performing this function *. The fact with regard to women is noticed by Hippocrates †.

The verification of the pregnant state cannot depend on the importance due to any *particular* sign. It must depend on the existence of several. For private opinion, the statements of the female herself may sometimes suffice; though for important purposes examination will be requisite; and even upon this we are perhaps not warranted to rely with certainty till about the sixth month. At the end of this period we may be able to determine positively from personal examination. Where delicacy is not required, as in examinations instituted by judiciary authority, this delay may be dispensed with; and the inspection should be conducted in the following manner.

* In the Causes Celebres. vol. 8, there is an account of a girl who, though in the virgin state, suckled an infant. I have found a MS. in the collection of Sir H. Sloane, that gives an account of a woman, at the age of 68, who had not borne a child for more than twenty years, nursing her grand-children, one after another. The case of a man who suckled his child, after the loss of his wife, is given by the Bp. of Cork, who examined the subject personally: Phil. Trans. 1741; and in Humboldt's Personal Narrative, we have a similar story. Such facts are neither so rare nor incredible, as persons unaccustomed to consider the subject have supposed.

† Aphoris. 39. Lib. v.

The bowels of the subject should be emptied the day before; and the urine should be evacuated previous to the examination. Let her be first laid on her back, with the knees well drawn up, in order to relax the abdominal parietes. We are to examine through these for the tumor, particularly directing our attention to the centre of the space between the pubes and umbilicus. Let her first change to one side, and then sit up, in the former case ascertaining whether the tumor falls to the lower side, and in the other, whether we can perceive it above the brim of the pelvis. This will generally be the case if she be five months gone. After the sixth month the motion of the child may be felt by dipping the hand in cold water, when, by applying it to the abdomen, the fœtus will start. But unless we perceive the tumor, any sensation of motion will of itself be unsatisfactory.

If it be necessary to extend our examination *per vaginam*, the woman must be laid on her left side, and the fore and middle fingers of the right hand are to be introduced, while we are to feel the abdomen with the left, in order, as it were, to embrace the tumor. Between the fifth and sixth months it feels like a globe, with a neck appended to it—and as pregnancy farther advances, the shortening and obliteration of this neck will be perceptible.

Belloc gives the following criterion as one that never deceived him. "When a woman has suppression of the menstrual flux, along with other con-

comitant signs of pregnancy, we may consider her situation as yet uncertain, because these signs are common both to pregnancy and amenorrhœa. But if, about the third month, while the suppression still continues, she suddenly recovers her health, and the incidental circumstances disappear, her appetite, plumpness, and colour returning, nothing can better prove the existence of pregnancy: for if impaired health, and the accompanying symptoms had been caused by simple suppression of the catamenia, the derangement would continue and even increase during the continuance of the cause *." This is a sound observation, which ought not to be overlooked.

§ 2. *Of the Termination and Consequences of Utero-gestation.*

At the end of the usual period of gestation, the uterus ceasing to enlarge, a contrary action takes place, and a powerful disposition to contract terminates in the expulsion of its contents.

When we consider that in the progress of gestation the uterus, from being of the small size described in the unimpregnated state, enlarges so as to occupy, as it were, the whole cavity of the abdomen, being filled in great measure, with a solid mass—and when we reflect that although this increase had been the gradual process of many months, the change to the opposite state is produced

* Cours de Medicine Legale.

in a few hours at the utmost, we should conclude *à priori* that there must be circumstances connected with such a change that merit consideration. The progress towards the state of parts in which we have described them previous to impregnation, now demands some short attention.

I pass over the process of parturition. We shall suppose that the uterus is emptied of its contents, and that we are to ascertain whether a delivery has taken place or not.

If we are called immediately, there can be no possibility of mistake. Merely placing the hand upon the abdomen will satisfy us that some considerable evacuation from that cavity has taken place. It will be lax and enlarged. But as this may be the effect of other circumstances, we are not to rest satisfied with what we may discover by that means only; nor indeed is it to be imagined that our discoveries can well rest there; for even if no other attempt were purposely made, it would be difficult not to perceive other signs of what has taken place.

In an early examination we shall be able to feel the uterus contracted like a round body within the loose folds of the abdominal parietes; and a very slight attention will enable us to ascertain that the vagina is enlarged and flabby, and that a fluid is issuing from it. This is technically termed *the lochial discharge*, which, immediately after parturition, consists of blood. It becomes

paler, and diminished in quantity, as the vessels contract, and turns at last to a whitish colour and serous consistence—being characterised also by a peculiar odour, which an experienced practitioner cannot well mistake.

A woman who has been recently delivered of a child is generally weak, pale, and languid. Some, however, are comparatively exempt from the sufferings of their sex; and in them we must rely upon local signs. These, also, sooner recover that state of parts in which it would be vain to seek for elucidation; and in all cases the longer time we suffer to elapse, the less certain must be our conclusions. Along with the criteria already mentioned, we must not forget the state of the mammæ. Some stress has been laid upon certain white spots on the surface of the abdomen, that are formed after great distension of that cavity, and are caused by lacerations in the epidermis, which resists extension. They are deceitful, however, as the same effect may be produced by dropsical enlargements, and even by obesity. The previous history of the case may assist us; should we have occasion to examine at such a distant period as to render these appearances of importance.

Michael Albertus mentions the hair falling off from the pubes as a sign of delivery. Lacerations and cicatrices about the perinæum are of more consequence. We may suppose them not unlikely to

happen in solitary delivery, as the support generally afforded, and deemed necessary in labour, is here likely to be omitted.

It has been supposed possible to ascertain at any future period, not only whether pregnancy had taken place, but how often—by inspection of the body *post mortem*. Upon examining the ovaria appearances had been discovered in women who had borne children, which were ascribed to the removal of the ova. In the place from which one of these bodies had been conveyed, a cicatrix was formed, which received the name of *corpus luteum*. It is now however generally admitted, that the rupture of ova and the formation of corpora lutea may take place not only without impregnation, but even without coitus, having been found in females who never had sexual intercourse ; the ovaria being supposed capable of excitement by strong desires alone. They have also been found in the female quadruped after a state of periodical lasciviousness, where no copulation had taken place *. Mr. Stanley remarks, in the paper alluded to †, that the corpora lutea of virgins may in general be distinguished from those that are the consequence of impregnation, by their smaller size.

* See papers by Sir E. Home. Philosophical Transactions, May, 1817, and January, 1819.

† Transactions of the Coll. of Physicians.

§ 3. *Of the Duration of Pregnancy.*

It is indispensably requisite that on this important subject there should be precise ideas, if such are really to be furnished by the state of our knowledge. Nine calendar months form the natural and usual period of human pregnancy. In some authenticated instances it has exceeded this; and in many it falls short of it. The former deviation however must be received with caution, and under considerable limitation. It has been admitted that a woman may carry a child to the eleventh month. Some authors, among whom is Joubert *, deny that any determinate period is assigned for the duration of human pregnancy. It is the case, however, even in quadrupeds of the same kind, although deviations are sometimes observed among them. The deviations in our own species are much more circumscribed than has been imagined, and much admits of rational explanation; though perhaps it is well for society that some irregularity should really exist, or even that more should be admitted. It is for us to concern ourselves with the fact as to the course of nature.

In this country the usual time of birth is considered to be two hundred and eighty days after

* Erreurs populaires touchant la Medicine.

conception, making a period of nine months of thirty days, and ten more. "It may be hastened "or prolonged by accidents—so that a child hath "been allowed legitimate nine months and twenty "days after the death of the father; but when the "child was born eleven months after the death of "the husband, and it was proved that the father "could not enjoy his wife within a month before "his death, it was adjudged a bastard *."

The French law seems to allow about twenty days more to the legitimate period of gestation than ours. I am of opinion, however, that *real* excess beyond nine months is by no means frequent, and certainly never great. If we take into consideration the fallacy of a woman's sensations as to the period of conception—the very great probability of her mistaking in the first instance to the extent of about three weeks, by reckoning conception from sexual intercourse immediately *after* the last appearance of the catamenia, while in reality it may not have taken place until just before they should have appeared again—and if we add to such a case, (what often happens) the real commencement of a disposition to expel the contents of the gravid uterus some days before active labour takes place, we have a *ten* months' pregnancy explained at once. But greater mistakes in reckoning may be accounted for on the same principle. The menstrual flux may

* Williams's Justice, and Burn's ditto. Art. Bastard.

cease from other causes, and conception take place during their influence.

Irregularities, or apparent irregularities in menstruation will also explain some supposed *curtailments* of the term of pregnancy. I have already hinted that a discharge of blood may take place from the vagina, even after conception—nay, in cases of imperfect closure of the os uteri, it may even come from the uterus itself; and this is one cause of abortion. Care and other circumstances, however, may preserve the embryo; and pregnancy going on, the female is surprised long before her reckoning is out.

The law considers the husband as the father of all children born in wedlock. Many causes may contribute to circumscribe the period of gestation within nine months. Where the case is very glaring, it may be presumed that the husband must have been acquainted with the fact of pregnancy, at or soon after marriage.

Joubert fancies that the duration of gravidity is influenced by sexual indulgence—allowing the usual period of nine months where moderation is observed; and that excess of intercourse will accelerate, while abstinence after conception will retard the time of delivery, even to eleven months.

§ 4. *Supplementary Observations.*

A few remarks may be made upon the period of life during which a woman is capable of conceiving. The law of nature ordains that a female must attain a certain state of physical maturity before this takes place. In other words, no female can conceive until the age of puberty; which is denoted by a certian change that occurs in the system. The organs of generation are developed; those intended for the nutrition of offspring assume the appearance of perfect formation; the organs of gestation are also prepared to perform their functions, which is shewn by the appearance of the menstrual flux; and the moral characteristics of the individual undergo a change. This state occurs at different periods in different countries; being much earlier in tropical than in northern climates. In the temperate regions, and therefore in our own country, it generally happens about the age of fourteen; though it varies in different individuals, and its range has been assigned between the ages of twelve and sixteen. It may come on with more or less rapidity — being in some a discernible process, and in others an unexpected occurrence.

Exceptions to this rule have not been rare. Very young females, whom it might be erroneous to call children, have at a much earlier age exhibited all

the signs of puberty. Conception even has taken place under ten years *. To this I shall merely add that corresponding instances of precocity have occurred in our sex.

Women cease to bear children when they verge towards the fiftieth year of their age. Greater latitude occurs as to the period of losing this power than in assuming it. From the forty-fifth to the fifty-fourth year is the range during which they cease to menstruate, in this part of the world. The disappearance of this condition occurs much sooner where it appears at an earlier period than among

* In the notes to Metzger, some instances are given; and Joubert, in a work already alluded to, states that he saw a woman at Lectore in Gascony, who had been married between seven and eight years of age to a man of twenty-five, and given up to the will of her husband. She bore her first child at nine; a second at eleven; a third at fourteen, and another at sixteen. The second child (a daughter) lived and had children; and the family grew up as others do. She had her menses regularly, but was never pregnant after her twenty-first year, though she continued to live with her husband nineteen years afterwards. When Joubert saw her she was forty four, little in stature, and of middling corpulence. This author does not attach any greater wonder to such cases than to precocity of judgment so often met with; and hints that many females at this time of life might conceive were the experiment to be made. He disapproves of early marriages however, even at puberty, as likely to cause a degeneracy of the race. Schurigius, in his curious work, Gynœcologia, mentions a Flemish girl who astonished her friends, by bringing forth a fine large son, when nine years old.

us. Exceptions take place here, however. Women do not always go on so long; and there have been instances of remote fecundity. I have seen in a Magazine for 1775, a story of a peruke-maker's wife in Poland-street, who was in her 54th year, had been married for thirty years, without having had children, and now produced two sons and a daughter, "all of whom were likely to live." The reader may attach to this what degree of credit he pleases.

The questions of extra-uterine conception and super-fœtation have not been noticed. The former undeniably takes place, and is more a matter of curiosity than of any practical import here. The mysterious bearings of the latter I am unable to clear up. It has had its advocates and its opponents. Among the former may be reckoned Foderé, who enters into the merits of the subject, and adduces both facts and arguments in its favour *.

CHAPTER II.

Sexual Ambiguity.

An erroneous idea has been entertained that a monstrous combination existed in the same indivi-

* Med.-Legale I. § 299.

dual, enabling such a being to hold intercourse with either sex! This mistake, it is probable, no longer exists. But that cases occur in which certain peculiaries of conformation, distinctive of the sexes, are found in one individual, cannot be denied; and the appearance, at least, of these has not been a very rare occurrence. Medical men, too, have been repeatedly required to verify the nature of the case in such instances.

That a real participation of the nature of both sexes ever takes place, will admit of question; though some extraordinary approaches to it are well authenticated. These notions have been principally founded on irregularities in the organs of generation, which in some instances, (as in that of the being who was exhibited lately in Paris, and also in this country *,) have been combined with other associations of a mixed nature—certain parts of the body resembling the female, and alternating with others belonging to the male structure.

In general, however, such instances are occasioned either by a preternatural enlargement of the clitoris on the part of the female, or a division in the scrotum of the male, conveying the appearance of labia pudendi, in the centre of which a shallow cavity has sometimes been detected, which might strengthen the notion as to the existence of a vagina. The mistake with regard to males has been farther

* A particular account of whom is given in the London Medical Repository, and Medical and Physical Journal for June, 1818.

encouraged by the want of testes in the scrotum; and the idea of a scrotum with such contents in a female, has been created by enlarged labia, and perhaps by herniæ.

The exuberance of the clitoris in some countries occurs in females generally; and it is asserted that this organ (as well as the nymphæ) being inconveniently long, requires abscision. In temperate climates it is rarely so large, and therefore more apt to excite attention, and to give rise to mistakes—the more especially as it is capable of erection, at least to a certain extent. Those in whom it is so constructed, are reported to have very strong passions.

In all female fœtuses the clitoris is developed early; and if not overtaken in growth by the neighbouring parts, or if it should continue to increase along with them, it may occasion perplexity as to the sex of an infant. Mistakes of this nature have not unfrequently occurred, giving rise to the awkward consequence of naming and baptising in the wrong sex. Where this is all, the matter would admit of rectification at a future period. Sometimes, however, it has been held unlawful for a person to assume the garb and character of their real sex, after they had been assigned to the other. We are told, in the Causes Celebres, of a female, twenty-one years of age, who had endured a *prolapsus uteri* from infancy, but falling sick at Thoulouse, the physician at the Hotel Dieu disco-

vered her ailment, and pronounced her forthwith to be an hermaphrodite! A decree of the magistracy ordained her to assume the dress of a male, and to change her name, and character, contrary to her instinctive inclinations, corporal structure, and appearance in other respects. Having found her way to Paris, and shewn herself to the celebrated Helvetius, a cure was effected; and by a royal ordinance she was restored to her proper sex.

In almost every case where due examination has been made, such persons have been found to belong decidedly to the one sex or the other. Notwithstanding the dissection reported by Petit *, in which a soldier, aged twenty two, not only had the testes in the abdomen, but also a womb and nearly the whole apparatus of female organs of generation, we cannot but conclude that things have been called by wrong names. Nor does the case described recently by Mr. Ring †, seem of a nature calculated to overturn our incredulity.

Hermaphrodites have been considered under the class of monsters; a subject which has occupied the attention of certain authors to a considerable extent, and which has found a distinct and conspicuous place in many works of this nature. It is not my intention to prosecute the consideration of it. Monstrous productions of our species are

* Hist. de l'Academie Royale, &c. 1720.

† Lond. Med. Repository, Vol. XIII.

human beings, and no more than human beings. There can be no doubt that, if they are capable of action as individuals, they have the same rights as other persons. Where the anomaly in their formation is very great, it commonly interferes with their *viability*, and such beings seldom attain an age that may give rise to questions of a Forensic nature. Redundancies of structure are more consistent with the continuation of life than deficiencies; and these latter most commonly occur.

CHAPTER III.

Personal Identity.

Not a few important events have turned upon the question whether a person be really the individual he pretends or is supposed to be. Some impostures of the greatest consequence have been maintained on the foundation of personal resemblance to the pretended individual, and which for a time have confounded the best informed and most judicious. Persons have also been arraigned for crimes, and have pleaded that they were not the individual in question, while witnesses have maintained the contrary, on the ground of personal appearance. Some years ago, a man named John Hoag was indicted for bigamy at New York. He

denied the charge, and said his name was Thomas Parker. Mrs. Hoag, however, and several of her friends, all credible witnesses, insisted that he was John Hoag — the woman positively swearing he was her husband. An equal number of witnesses of like credibility swore, on the other hand, that he was Thomas Parker—and Mrs. P. came forward to claim him as her husband. Several points as to his person were alluded to, which coincided with that of the prisoner—even to a particular scar on the forehead. At last Mrs. Hoag stated that her husband had a particular mark on the sole of his foot, which Mrs. Parker allowed that her husband had not. Recourse was had to the foot, and although there was no mark, the ladies were still unsatisfied ; when a justice, from the place where the prisoner had been apprehended, came into the court and identified him as Thomas Parker, whom he had known for many years. But by what *secret*, unknown to the man's wife, a magistrate contrived to identify him, we are left to imagine*.

In January, 1817, the body of a woman was found tied to a boat near Greenwich Hospital, and an inquest was accordingly held ; but adjourned on account of vague evidence. At the second sitting an old man declared the deceased to be his daughter, who had been the wife of an out-pensioner, and

* I believe a mistake as to the identity of a prisoner occurred very lately at the Old Bailey, in the case of a man of colour.

between whom and her husband a fight had taken place, with sharp insruments, in his presence, which he had with difficulty quelled. Soon afterwards both the parties left his house, and he had not heard of them since. Other witnesses supported the statement, that it was the body of the old man's daughter.

A second adjournment took place. The constables in the mean time had sought in vain for the husband, though they had found the wife alive and hearty, who was produced accordingly. The coroner reprimanded the witnesses, though the strong likeness between the living and the dead woman was allowed to be sufficient to impose on better judges.

Between two individuals there may be many points of resemblance so close, that mistakes might happen among persons not so intimately acquainted as members of the same family—especially after long absence of the person; and it may be admitted that it is possible not to be able to discriminate readily in some cases under *any* circumstances. This difficulty is sometimes very great with respect to dead bodies, especially where the death has been violent, accompanied with disfiguration and loss of parts, and still more where the putrefactive process has been going on. Circumstantial evidence must be trusted to under such circumstances—for how can medical men judge?

That the subject is one of real importance no one will deny; but that we possess peculiar means of

throwing light upon it, is more than questionable. In the case of bodily peculiarities, which are the real characteristics of one individual, and, for the purpose of imposture may be pretended or assumed by another, I grant that we may be useful in proving or disproving their *reality;* perhaps in ascertaining their *cause,* or in detecting them to be of short standing—but the principle of this duty has been already alluded to.

Those who wish to pursue the subject may derive amusement from the Causes Celebres, in which there are several details of impostures; and in the earlier works on Forensic Medicine there are cases enough in which recourse has been had to the medical faculty: but the information which even that source appears to have afforded in general, has been of a nature perfectly within the reach of every person of philosophic research.

In a case where Louis was consulted, and which Foderé formally analyses, "as the best matter that could be offered on the subject," the following were the questions—the last only of which bears upon the professional acumen of the physician. 1. Is it possible to mistake a man of sixty years of age for one of forty-six? 2. Are spots, known by the name of *mother's marks* [Nævi Materni — in the original, *envies, desirances*] capable of establishing a distinction? 3. Is it possible to be deceived with regard to the marks of resemblance which pervade the whole body of this person and those of the other?

4. Are the cicatrices observed in this person from the same cause as those in the other?

The minuteness with which Foderé has treated this subject, as well as the space occupied by other topics of no greater professional importance, both by this excellent author, and many, (I should perhaps say, *most*) who have preceded him, cannot be imitated here. I should now proceed under the discouraging impression that every additional sentence would be but a make-weight to a book, that has already exceeded the limits within which it was my original intention to have comprised it. If to this intention I have been unable to adhere, I console myself with the hope, that the most voluminous portions will not be considered the least important.

FINIS.

FORMS, *referred to at Page 340.*

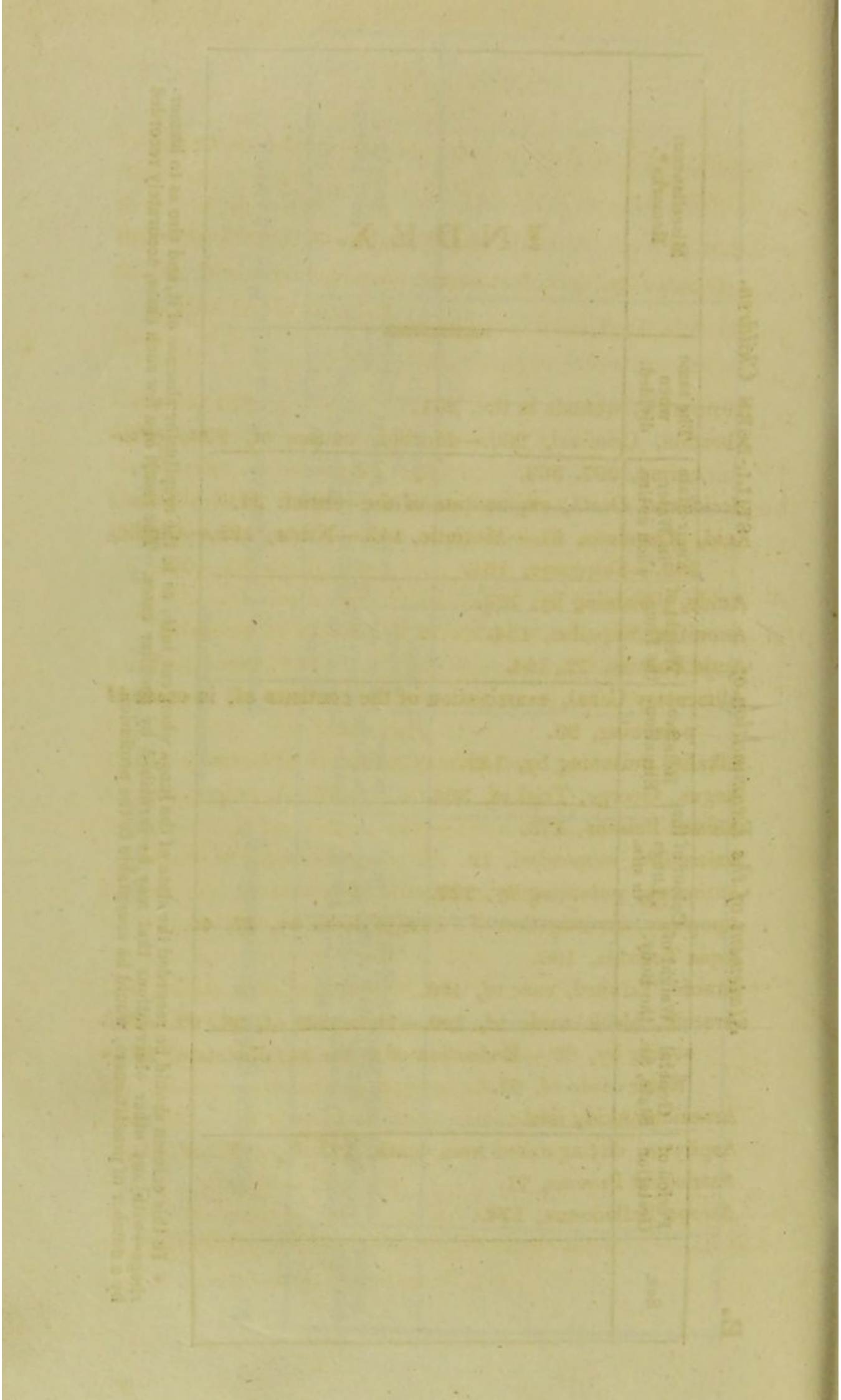
A. *Statement of the Examination of* *new-born Children, who died* AFTER RESPIRATION.

Sex of the Subject.	Period of Gestation when born.	Duration of Life, after Birth.	State and Appearance of the Subject.	Weight of the whole Body.	Colour of the Lungs *in situ*.	Relative Situation of the Lungs as to the Pericardium.	Weight of the Lungs alone.	Their State as to Buoyancy in Water while entire.	The same when divided.	Miscellaneous Remarks *.

B. *Statement of the Examination of* STILL-BORN *Children.*

Sex.	Period of Gestation.	General State, &c.	Weight of the Body.	Colour of the Lungs *in situ.*	Relative Situation.	Weight of the Lungs.	Their State in Water when entire.	The same when divided.	Miscellaneous Remarks *.

* In this column should be recorded the state of the lungs when cut into, as to the crepitus or absence of it, and also as to hæmorrhage—with any other observations that may be furnished by peculiar cases. The result of a few such cases, accurately recorded by a number of practitioners, would be acceptable to the profession.



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