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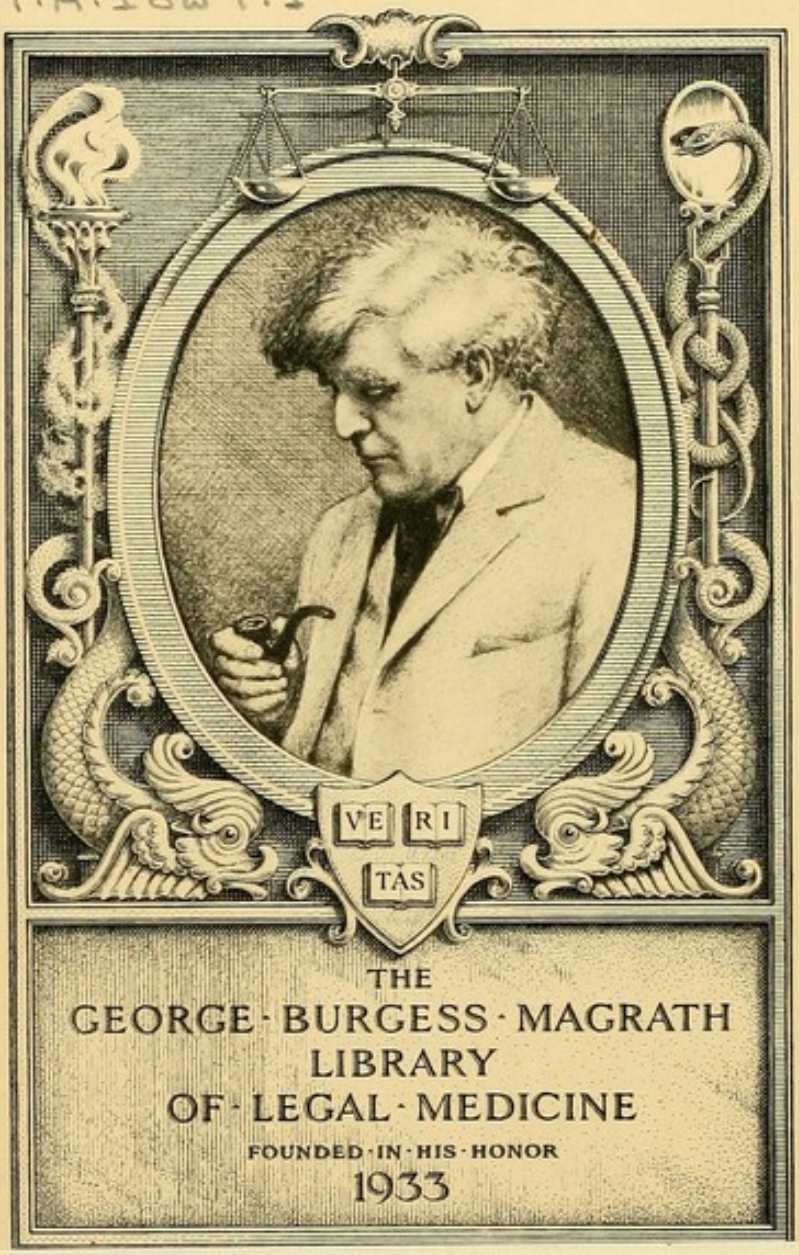

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THE

PRINCIPLES

OF

FORENSIC MEDICINE,

SYSTEMATICALLY ARRANGED,

AND

APPLIED TO BRITISH PRACTICE.

BY

JOHN GORDON SMITH, M.D. M.R.S.L.

LECTURER ON STATE MEDICINE AT THE ROYAL INSTITUTION OF GREAT BRITAIN,

&c. &c.

THIRD EDITION.

LONDON:

PRINTED FOR T. AND G. UNDERWOOD,

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TO THE

RIGHT HONOURABLE

CHARLES, BARON TENTERDEN,

Lord Chief Justice of the Court of King's Bench,

&c. &c. &c.

THIS VOLUME,

DESIGNED TO ASSIST

THE TRIBUNALS OF GREAT BRITAIN

IN THE

INVESTIGATION OF MATTERS DEPENDANT ON MEDICAL TESTIMONY,

IS

(WITH HIS LORDSHIP'S PERMISSION)

MOST RESPECTFULLY DEDICATED,

BY

THE AUTHOR.

PREFACE

TO

THE SECOND EDITION.

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

It has reached a second edition within as short a period * as the warrantable expectations of the author could have anticipated; and he is now enabled not only to present a greater collection of facts, but to hope that other improvements will also be manifest.

The former edition was submitted to the pub-

* Little more than two years.

lic under no small apprehension that the hopes he had suffered himself to entertain concerning its acceptability might not be realized: for the subject was one that had by no means received such attention in this country as to put a writer in previous possession of the state of public opinion concerning it. Such uncertainty was calculated to excite a two-fold apprehension both as regarding the choice of the subject, and the more usual one relating to the merits of the work.

As to the former, all pretence for uneasiness is now removed. For in addition to the humbler claims of these "*Principles*," the extensive and united work of a distinguished physician and barrister has since become the subject of attention, and has probably done all that is at present necessary to establish the pretensions of Political Medicine to the share of public notice to which it is truly entitled *.

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* *Sic in orig.* These pretensions have been recognised by all classes except the "guardians of the public health." Witness the opinions that have been delivered from the Bench, and the course of examinations at the Bar—witness the alacrity with which lectures on the subject have been received at the Royal and the London Institutions—and then turn round and witness—the apathy of certain corporate bodies.

With regard to the other cause of apprehension, it may not be impertinent to acknowledge that, under the very favourable and encouraging notice which the first edition received, and the consciousness of what has been done in the present instance, the Author trusts that the additions he has made to his labours will not diminish their utility. He is, by no means, disposed to be of opinion that his book has been superseded; but, on the contrary, while there was ample scope for a more copious work on the subject, and which it is matter of congratulation to receive from the hands that have done it such justice, he himself feels, and believes it to be the sentiment of many, that a comprehensive manual, comprised within such limits as the present, would still be acceptable to the practitioner.

On the present occasion, the same arrangement has been followed, under certain modifications which, though advantageous (it is hoped) in several respects, do not in the least interfere with the principle at first adopted *. By some

* I beg to return my grateful acknowledgements to all my reviewers, assuring them that I forgive them their trespasses in consideration of the many they have forgiven me. But

alterations in the typography, a larger quantity of text has been assigned to each page; and a great portion of illustrative matter has been introduced under the form of an Appendix—so that the volume has not been needlessly augmented.

Nor does the Author consider that it will be quite fair to complain of his having so much enlarged this edition, by the introduction of new matter, as to render the former, comparatively, defective. It has not been in his *power* to adhere to what might have amounted to little more than a reprint; the advance of the subject has been great, and the acquisition of additional matter unavoidable. In fact, every assize circuit affords more or less instruction of the best kind: viz. that which is practical.

The *changes* have been principally in the arrangement: of the *original* matter there has

---

should certain *quondam friends* again condescend to report my progress to the public, I hope they will not double the truth of the matter by saying that a book was sold in *five* years which went off in less than half the period. At the same time I acknowledge the gratification their decided approbation of the *arrangement* has afforded me. They have said (and they are competent judges) that it is upon the whole the best that has yet made its appearance.

been but little alteration. On almost every point of importance he has been confirmed in his general views, so that instead of rejecting *principles*, he has rather, perhaps, augmented their number, and greatly extended their exemplification.

PREFACE

TO

THE THIRD EDITION.

I HAVE been applied to for the revision of this work, at a time when it is out of my power to give it all the consideration I could desire. I am happy however to perceive that although the subject of Forensic Medicine has attracted great notice since the publication of the former edition, there is little of a very material nature either to be added to or corrected in it. I hope the "PRINCIPLES" will maintain their place among the useful volumes that more particularly concern the duties of the medical practitioner, but are occasionally resorted to by the judge, the barrister, and the magistrate, when matters of life and death come under their consideration. In point of accuracy, as far as my labours have gone, there has been satisfactory and sufficient testimony that the book may be relied on; and I think that were I now to give the volume a

thorough revision, I should be inclined to abridge rather than enlarge its dimensions. On the present occasion I have made little alteration, in this respect, and consider that in an index to innumerable sources of detailed information on particular points, brevity and condensation have their advantages. The cases that occur in actual practice are often of a nature that preclude research; and a ready help to recollection, or a brief suggestion may sometimes be more useful than diffuse and elaborate dissertation.

I would take the liberty of saying that this has, on the present occasion, been particularly manifested on the subject of the *detection of arsenic*—upon which too much has been said, and in regard to which I trust it will be found that our business is now greatly simplified. Although I am ready to admit that there is not much in the science of Forensic Medicine which medical men in general may not be acquainted with, I still must contend that the relations of this science, or, in other words, its particular *principles*, are not matters of daily contemplation, or of very easy discovery: and in order to obtain a competent knowledge of

the subjects treated of in a book of this nature it would be necessary to consult numerous works, some of which are not commonly seen, while the attempt would require an expense of time and labour which it would not be in the power of many to bestow. It is to be hoped that those who choose to read the following pages will derive considerable satisfaction without any great cost of either; or at least that they will be put in a way of research, which may be elsewhere prosecuted with greater advantage.

INTRODUCTION.

THE Science, of which it is proposed to treat in the subsequent pages, though one by no means familiar among us, has long been cultivated with assiduity and success in other countries—with assiduity, as respects not only the parties concerned in the labours it exacts, but also as regards the encouragement it has met with on the part of authorities; and with success, as respects the benefits imparted to the public in general, and the medical profession in particular.

When the Author of the present work looks back to the state in which he found Public Medicine at the time he first turned his attention to it, and considers the progress which has since been made, he cannot help congratulating his countrymen on the improvement that has taken place in a very interesting department of necessary knowledge, and himself, in some measure, on having been instrumental in promoting that improvement. Without meaning the slightest disrespect to authors who preceded him, and without intending to cast any reflection upon their attempts to draw attention to this study, he may fairly say, that until *The Principles of Forensic Medicine* made their appearance, little or no attention had been bestowed upon it; while from the publications that have since emanated from various most respectable quarters, either in the form of separate works that

have come out under names of high repute, or the multiplicity of papers, facts, and allusions that have been continually presented to the public, through a variety of channels, he may well infer that he himself has not laboured in vain. The treatises are in the hands of the judges, magistrates, and counsel; and their influence is constantly manifested by the mode in which important trials, depending upon medical testimony, are now conducted. Medical men go into courts of justice (which, till lately, were places of real as well as of ideal horror,) with greater confidence, because they are better qualified for the discharge of their duty as witnesses; and any one who may have taken the trouble to inspect the proceedings, or peruse the reports of proceedings on such occasions, must be satisfied that we acquit ourselves much better than lately we were *wont*, or, perhaps it may be said, were *able* to do.

It would be almost superfluous at this time of day to point out the precise nature and objects of what is commonly termed Medical Jurisprudence, still less to premise any formal account of the nature and importance of that branch of which we are now about to treat. If, however, this be a desideratum on the part of any one who may open the present volume, a glance at the contents, or at the index, will convey more information than could conveniently be afforded in any other manner equally brief—to these, therefore, such are referred. But there are several topics which in an introductory, and rather distinct portion of the volume, require some notice, in order to the perfection of the volume itself: to these the attention of the reader is requested before he enters on the subsequent details.

I would begin by observing, that as the Science

of Medicine, in the common acceptation of the term, is understood to refer to the treatment of diseases, that which we are accustomed in this country to call MEDICAL JURISPRUDENCE, refers to the preservation of the health of the community at large, and to the detection of injuries inflicted in an unnatural or violent manner upon the individual members thereof. I confess I am by no means satisfied with this general designation; and doubt, notwithstanding the countenance it has received from tolerably good authority, whether it should not be restricted to denote a branch of what is meant to be comprehended under it. I certainly prefer the titles of STATE, PUBLIC, or POLITICAL MEDICINE; and would separate this extensive department of medical study into FORENSIC MEDICINE and MEDICAL POLICE. It is to the former that the details of the present volume will strictly and exclusively belong: a work on *Medical Police* is yet wanted in the English language. Probably the fact may be, that we possess more accurate knowledge on the particular topics that compose this branch than we did of the other before it was brought into a digested form, and its multifarious details are thereby rendered of easy access; and I imagine that the materials for producing a tolerably complete work of this nature are already in existence, though the hand of a master might be required to put them together in a symmetrical and available shape.

I shall not offer any account of Medical Police in the present place; intending, if it may please God, on a future occasion to present my contribution to the literature of Medicine in the shape of a separate work on that subject: nor shall I introduce any formal history of either branch of State Medicine, in

which I presume there can be no doubt that the Forensic one claims priority as to date, if not importance. We may indeed, in the oldest of all existing writings, in the books of Moses himself *, find scattered precepts for the maintenance of public health; but these were not dictated by medical science, which itself had not yet begun to dawn; nor were they the suggestions (as we are bound to believe) of any class of *men*, whether physicians or lawgivers. At a much later period, and in a very different quarter, arose the science of State Medicine, the first beams of which were directed to the illumination of the public tribunals—whereas the *Politia Medica* is more the affair of the senate.

We date the origin of the study, as it is now cultivated, from the reign of the Emperor Charles V., who having profited by the example set in the code promulgated by George Bishop of Bamberg, made it prescriptive in the celebrated constitution which bears his name†, to call in the aid of medical men, in several cases therein set forth. Among the first attempts to improve medical knowledge in this bearing, we have to enumerate the commentaries to which this code or constitution gave rise; but, from that period, the labours of authors have been advancing in a progressive ratio, until the amount of productions in a department of Medicine, unknown almost by name in this country ten years ago, has reached many

---

* The following passages are among those which contain the precepts alluded to. Leviticus vii. 23, &c.; xiii. xiv. and xv: at the 17th verse of chap. xxi., however, are precise instructions respecting a subject of *Forensic* Medicine, that will be noticed under the head of "Disqualifications." Numbers v. 1.

† "Constitutio Criminalis *Caroli*, vel Carolina," which I have somewhere seen translated, *The Criminal Constitution of Carolina!*

thousand separate volumes, besides papers in Journals and scientific collections, almost innumerable *.

After this allusion, it would be superfluous to point out the comparative *antiquity* of this branch of medical education, were its antiquity any real claim to favour: and yet it will appear curious, if set before the reader in the following light—which is literally the fact. Chairs for instruction in *State Medicine* were absolutely founded before the study of *Anatomy* met with any encouragement; before *Chemistry* had an existence, much less an endowment; before the idea of such a useful and indispensible member of the profession as an *Accoucheur* was conceived; and, it may be added, before there was any such thing as a *Medical* school at all!! Nor is it merely one of the most *ancient* branches of medical study which has been extinguished by the advance of science and the progress of improvement; forgotten as trifling, or superseded as useless or antiquated: it has been cultivated, and kept in a state of advancement in the more celebrated seats of learning on the Continent, until (through the neighbouring kingdom of France) it seems at length to have reached our own country. There has been a professorship in the University of Edinburgh for more than twenty years; and, as soon as the true interests of the profession and those of the public shall appear as they are, to be united, and a liberal view of medical

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* In Wildberg's *Bibliotheca Medicinæ Publicæ*, which comes no lower than 1819, and is even defective as far as it pretends to go, there are 2,013 separate works in Medical Police; and 2,980 in Forensic Medicine, of which the titles are given. If we average these at no more than two volumes each, the amount will be 9,986, which I am satisfied is below the real mark.

education shall prevail in the proper quarter, we shall have qualified teachers elsewhere.

The mere antiquity, however, of a study is by no means the best argument to advance in its favour. Greater regard is now very properly had to its utility. Upon this a great deal might be said with respect to Public Medicine, and that branch of it in particular which is now to come under review: but perhaps it might not be prudent to say much; nor do I feel inclined to enter fully into the merits of the question. The great object to be accomplished is the qualification of medical men for appearing as professional witnesses. It is conceded on all hands, that a practitioner of mediocrity is a dangerous person; he who knows but little of the nature and treatment of diseases is considered unworthy of confidence; *ergo*, he who knows but little of the nature of those casualties on which his opinion is sought in cases of life and death before the tribunals must be unworthy of credit. It is no answer that the occasions are rare. They may or may not be so, just as it happens; the question is, are they important when they do occur? We are not comparing the number of times which any member of the profession may be called upon by a public officer with those he may be required by a private patient. It is not whether midwifery or a coroner's inquest is the *more* pressing matter; but is the latter pressing when it takes place? We are always in a certain state of preparation for the discharge of duties that occur daily and hourly. The discharge itself takes care of that; but we are in danger from rare and unusual events; and really it is melancholy to see how many appear either to have been frightened out of their wits at the prospect of giving evidence,

or have compromised their own reputation, and the interests of the profession, by the figure they have cut on these occasions. It is the duty of a man in whom confidence is reposed, to be prepared for all emergencies that can arise in the exercise of his calling. But I conceive that the utility of the study before us is acknowledged by all liberal and intelligent minds; and as for the old leaven of prejudice, it will expire with those who cherish it.

Among the great improvements that have taken place in Medical affairs, may be recorded the recent regulation promulgated by the Royal College of Surgeons, as to the course of study to be hereafter required on the part of candidates for diplomas. It has at length been enacted, by those to whom this most important business of regulating the education and pretensions of so great a number of the practitioners of England is confided, that they shall study *Chemistry* and *Midwifery!!* Will it be believed by foreigners—would it be believed by sensible Englishmen—that up to the present hour, two lives have been at the mercy of any ignorant pretender whatever, who chose to meddle with this last-mentioned and most arduous and hazardous line of practice? Is it not a fact that the health and lives of the community are ordinarily committed to the charge of the general practitioners—the surgeon-apothecaries of this kingdom? And is it not equally notorious, that if these gentlemen did not practise Midwifery, they would, without exception, be precluded from practising any thing else? And even now, this learned body adopts a tardy regulation, less, it is to be apprehended, from conviction of its propriety, than from a view of the necessity, arising out of the practice observed by all conscientious

students of acquiring the knowledge necessary to enable them to discharge this branch of their duty with propriety and advantage. For such compulsory laws may not be necessary; but it is the duty of those who try the merits of candidates for admission to the discharge of professional avocations, to examine them on all subjects to which their attention may afterwards be directed; and it is to be hoped that the necessity of qualification to maintain the respectability of the profession in the eyes of the public, and the safety of the public themselves in all matters connected with professional knowledge, will not be much longer overlooked; that due provision will be made in the medical schools of this country for imparting correct and systematic views of Forensic Medicine, which can in no other way be taught with effect; and that the universal reproach against medical witnesses will ere long be removed.

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—	4—*for* investigation *read* investigator
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PRINCIPLES,

&c.

THERE have been nearly as many schemes for the arrangement of FORENSIC MEDICINE as there have been treatises on the science itself. But this matter of arrangement has ever been considered one of peculiar difficulty; so much so, that some authors have declined making any attempt of the kind whatever. There is one division of the multifarious topics, comprehended under the general title, into which they almost naturally separate *themselves*, and which is, in point of fact, the basis of most arrangements, in whatever manner the details may afterwards be pursued—into topics or questions, to wit, that concern the living, and those that relate to the dead. I had thought of avowedly adopting this method, on the present occasion; but as it would not supersede the necessity of further classification, and as the plan formerly announced has been commended in a flattering manner *, it may, upon the whole, be as well to adhere to it. I shall, therefore, still consider the details of our subject under the four following heads.

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* For this commendation, the reader may more particularly refer to a review of the former edition of this work in the Edinburgh Medical and Surgical Journal for July, 1824.

CLASS I. Questions relating to the extinction of life.

CLASS II. Questions arising from personal injuries, not involving a fatal issue.

CLASS III. Disqualifications for the discharge of offices, or the exercise of social functions.

CLASS IV. Miscellaneous questions.

Under the first class we shall endeavour to comprehend all cases of *death*, in which there may be question of violence, criminal interference, or any unnatural or unusual cause.

The range of the second is necessarily limited; the juridical relations, which formerly comprehended many interesting questions, being annulled by recent improvements in our criminal jurisprudence. The only important question now coming under this head being that of *rape*.

Under the third, however, we shall have to review points of the deepest interest, many of them demanding attention on the part of those who are neither of the medical nor legal profession:—

And the last will comprehend a few important topics which cannot, with strict propriety, be assigned to any of the preceding classes.

CLASS I.

We are here to consider whatever relates to the extinction of life; which we propose to do under the following subdivisions.

I. Of *death*—without manifest cause.
II. Of *death*—where there is question of agency, or Homicide.
III. Of *death*—by spontaneous agency, or Suicide.
IV. Of the *death* of the unborn and newly born, or Prolicide.

SECTION I.

OF DEATH WITHOUT MANIFEST CAUSE.

This necessarily implies *sudden death,* or the occurrence of that event in the apparently healthy state; for, if it be the last of a chain of events, it must of course be preceded by disease, whether this be manifested by one sort of changes or another. Some diseases derange functions, others discompose the structure of organs, and some do both; and not unfrequently these deviations from the perfect or healthy state are unmarked by indicative signs or symptoms during the life of the party; though an accurate examination of the body, after death, will seldom fail to throw light upon the nature, or to discover the cause and seat of the derangement. In the present place, we are to consider this event as occurring without evident cause, and shall divide the subject into two chapters—one on *apparent* death, and another on its *reality;* the cause, however, though obscure and uncertain, being still a natural one, and as yet unconnected with criminal interference.

CHAPTER I.

OF APPARENT DEATH.

From very early times the imaginations of men have been prone to dwell upon certain horrible anticipations as to mistakes regarding the reality of death; and many sensible people have made their lives miserable by an idea of resuscitation in the grave. That mistakes upon this point have now and then occurred, I cannot help thinking there is satisfactory evidence, and therefore that the absolute incredulity that some affect to maintain, is by no means warrantable. On the other hand, I do not see (in this country at least) that there is much reason to dread their recurrence, in a single instance, for reasons that hardly require to be mentioned.

I hold the popular apprehension of coming to life in the grave, as they say, to be altogether a bugbear. The circumstances under which persons are conveyed thither, will at least ensure the extinction of a life, whose spark must have been indeed in a hopelessly feeble state ere such a mistake could have been possible. There can be nothing favourable to its re-illumination, while, on the contrary, there are many reasons why a sure termination must be put to a doubtful existence by the process of interment. On the other hand, it is impossible to read such stories as those of Rigaudeaux *, Phillipe Peu †, the Abbé

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* See Appendix I.

† This was a French accoucheur, who being called upon to perform the Cæsarean section in the case of a woman, supposed to have died in labour, and whom he himself had tried by the usual tests, before proceeding to use the knife, after all, was (according to his own account) too hasty. See his "Pratique des Accouchemens," Lib. II. chap. ii.

Prevôt *, and others, cannot well be doubted, although wrong inferences may have been drawn from them.

I should quote a few of the best authenticated, did I consider the subject as one of real importance; but persuaded as I am, that in the hands of medical men, a due share of caution will ever be observed, and that where this is the case, there can be little cause for apprehension, it may be more proper to inquire in what this caution consists, and to recommend its observance, than to swell the list of awful stories which the reader will find elsewhere †.

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* Prevôt d'Exilés, flourished during the first half of the last century, and was celebrated for eccentricities and literary eminence. He translated Richardson's novels into French. His death, which made a great noise, took place in 1763, in the following manner. Walking in the forest of Chantilly [1], he was seized with a fit of apoplexy, and taken up for dead. The public authorities desired that the body might be opened, in order to verify the cause of death: but at the first stroke of the scalpel, the unfortunate subject uttered a cry, which announced him to be still of this world. I cannot imagine, however, that he would have experienced any indications of reviving consciousness had he been left alone, or laid in the tomb.

† In addition to the cases already quoted, I may allude to the long list adduced by Winslow, Bruhier, and Louis: these were sensible, though perhaps credulous men, (the two first in particular). As for persons who have lately added this sort of lore in our own language, some of their imaginations seem to have been absolutely disturbed by the dread of *posthumous* consciousness. I have several specimens of this trash in my possession, utterly beneath notice, and beyond the reach of criticism; one in particular, entitled, "The Thesaurus of Horror," &c. was humourously reviewed in Blackwood's Magazine for June 1819. The subject has seldom been discussed *professionally;* the greater part of those who have heaped together legends of this description, having been either catch-penny scribblers, or persons whose sanity appears to have been doubtful. Speaking, as I now do, of books in the English language, the one of

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[1] I believe some accounts say Boulogne—but the point is not material.

Before, however, proceeding to this, I would remark, that while the regulation of interments, comprehending, of course, the prevention of hazardous precipitation in this matter, belongs rather to *Medical Police* than to *Forensic Medicine*, it may not be improper to observe, that there is some danger of leaving a person prematurely to die, where perhaps there might be good reason for persevering in the application of restorative means. Bruhier, in his commentary on Winslow's Thesis on the uncertainty of the signs of death *, complains that many lives have been lost, which might otherwise have been saved, by the Roman-Catholic rite of *Extreme Unction*, which, being administered to persons in the last extremity, no subsequent interference is permitted with the dying person. I have myself been debarred from the exercise of my professional duty, by means of this very act, where, had the religious profession of the patient been different, there would have been no reason to suppose that the continued administration of remedies was either improper or utterly hopeless. How often have we seen in that exhaustion which accompanies many diseases, every superficial indication of death dissipated by sedulous care and judicious applications, and recovery to health and vigour take place! And in certain times of public sickness †, during the confusion of a battle, or under a dread of speedy putrefaction, possibly we might encounter practical illustrations of that ap-

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greatest pretensions is that of the *Reverend* Mr. Whiter, who seems to have laboured under one mistake, from the title-page to the concluding paragraph.

* Vol. I. 322.

† Allusion is here made more particularly to certain accounts of the melancholy scenes that are recorded, as arising out of that awful visitation, the plague.

prehension which in ordinary circumstances must be considered chimerical.

Asphyxia, or suspended animation too, is often undistinguishable from recent death, and from ignorance of the real history of the case, it may be feared that the means of resuscitation are sometimes withheld, or but indolently employed, where judicious practice and adequate perseverance might be crowned with success.

The late Dr. Ferriar has left a paper on the treatment of the dying, which is well worthy of perusal; but which requires to be read with attention, in order that it may not be misunderstood, and what is intended to serve a humane purpose be converted into a source of mischief. In discountenancing certain attempts "to prolong the flutter of the pulse for a few more vibrations," the author has in view cases in which death is *foreseen*, and judged to be inevitable. In such cases the physician does little more, perhaps, than torment the dying person by exciting a mobility in the fibre that may be exhibited after death itself: but certain practices have been in vogue upon such occasions as were calculated not merely to accelerate the fatal event, but even *to cause* it when it might by other means have been averted. Nurses, in particular, have entertained strange and superstitious notions as to the state of a dying person, and upon these practices have been founded of the most indecent and cruel description; such as, a vulgar persuasion that a person could not die on a common bed, in consequence of which it has been considered necessary to drag the bed away, and place him on a mattrass: nay, in some countries there have been refinements even upon this.

In cases of sudden death, it is almost always ne-

cessary to inspect the interior of the body; and most assuredly there have been instances in which this has been done rashly. There have been resuscitations in the schools of anatomy; though I do not know that any risk of this nature lies in the way of the English dissector *. Attempts have been made to resuscitate criminals; but although I have examined the evidence adduced to support stories of this nature, where the attempts are said to have been successful, I think there is much reason to doubt †. We now and then hear of persons supposed to have died, even after a protracted disease, retaining the appearance of a living individual in various respects, so strongly, and for such a length of time, as to give rise to doubt and uneasiness on the part of friends. The course for them to pursue is to resort to the opinion of professional men, who ought to be capable of resolving doubts without giving a shock to the feelings, or even the prejudices of the uninitiated. It is now, therefore, time to enter on an enquiry as to the evidences we may take into account when

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* In the Appendix (No. II.) will be found a sad story of a girl, who was consigned to Professor Louis, from one of the hospitals in Paris, under an idea that she was dead; and whose life was saved by accidental circumstances. I am told, that in the dead-rooms of these places now there are rings, communicating with bells, placed on the fingers of the persons laid out in them, by which, in the event of a resuscitation, the necessary alarm would be given. But the origin of these mistakes is perhaps in the hasty removal of the supposed corpse, and the adoption of censurable proceedings, for which the reader may consult the paper already mentioned, in the third volume of Ferriar's Medical Histories and Reflexions.

† There is a quaint story in *Brassbridge's* Autobiography, of one Dr. Glover, who had saved the life of a man after execution, that was ever afterwards a plague to him, on the plea, that as the Doctor had brought him into the world again, he was bound to support him.

under the necessity of deciding in cases of this nature.

§ i. *Of the Evidence of Death, as offered by the state of the body.*

"Vitality," it has been remarked, "is one of those subjects which are more easily known than defined, and usually, indeed, rendered obscure, rather than illustrated by an attempt at definition. Its effects are sufficiently manifest, and ascribable to peculiar powers only *." We may say of death that it is identified with the extinction of these powers, and not with the mere suspension of their effects.

Life again has been defined to be "the amount of the functions that resist death;" and the author of this definition (who, as a physiologist, ranks high †,) represents living bodies as constantly exposed to the destructive influence of every thing around them, and to which they would speedily yield, but for the reaction of the vital principle ‡.

Physiologists have separated the functions of the animal body into distinct classes, the conjoined operation of all which is necessary for the continuation of life, though it may endure for a time, and even for a considerable period, without the actual exertion of the whole. Those functions which have been denominated the *natural*, by which the processes of digesting and assimilating the food, carrying off the

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* Blumenbach.

† Bichat, Anatomie Generale.

‡ Dr. Hardwicke Shute has expressed some ideas upon this subject in a clear, though somewhat tedious manner.

superabundant or unsuitable parts of it, conveying away the waste of the body, and even furnishing the means of producing new beings of the species, may be long inactive without destroying life. The *animal* functions of sensation and voluntary motion are interrupted regularly, during a great portion of existence, in the natural state of sleep; besides being frequently more or less disturbed by disease, while life continues, and other functions go on, with little or no declension of vigour. The third set of functions has been termed *vital;* and when they cease to act, life itself may be said to be at an end. *Respiration*, which has been considered synonymous with *life*, and *circulation*, the continuance of which is the great and essential stimulus, or moving power to keep all the parts of the system in activity, are so intimately allied, that the interruption of the one is promptly followed by that of the other, and such interruption terminates speedily in death.

The author last quoted has simplified this arrangement, with considerable success, in the following manner. Considering the degree of vitality as dependant on the power of the external agents, and the degree of resistance within, he points out two remarkable modifications in which it exists—the one characterizing both vegetables and animals—the other being the exclusive property of the latter. The former he denominates *organic* life, by which the individual is nourished, augmented, and maintained in existence; the latter is *animal* life, by which he exists beyond himself, feels and perceives what is around him, reflects his sensations, acts in obedience to their impulse, and frequently, by the agency of voice, can impart his desires and fears, his pleasures and his pains.

According to this view, the laws by which we *receive* existence are separated from those by which we *maintain* it; and both animal and organic life comprise two sets of functions; the first of the former proceeding from the exterior of the body towards the brain, and the second from this organ towards those of loco-motion and voice. In organic life one set of functions is constantly forming, and the other as constantly occupied in decomposing the animal. Thus the brain is the centre of animal life, and the sanguineous system the mean or middle of organic.

This is a simple and precise modification of the older arrangements; and if we contrast it with these, we shall find that the *natural* functions may be inactive and remain so for a time, or even deranged, without extinction of life. Bichat even remarks that the *organic* principle may remain after the *animal* is extinct, while this is so intimately dependent on the other, that it cannot remain after its interruption. An illustration is afforded by the case of apoplexy, in which the patient may live internally for several days after he has ceased to exist beyond himself. We must therefore confine our own enquiries to the signs of *organic* death, the cessation of these functions by which the system is supported, increased, and relieved of its superfluities, including, in particular, circulation and respiration.

The following quotation on the cause of death may be perused with advantage before we proceed to identify the event. "More than a hundred experiments on living animals have satisfied me," says Richerand, "that the intestines are always the *last* part in which the traces of life may be discovered. Whatever may be the sort of death by which they

are destroyed, peristaltic motions are still continued in this canal, while the heart has already ceased to beat, and the rest of the body is all an inanimate mass." The corollary from this position is obviously the propriety of applying stimulants to the intestinal tube, in cases of suspended animation.

But while there is a possibility of restoring the energies of vitality, the body, however it may resemble a cadaverous one in other respects, will retain this distinction—the putrefactive process will not come on; whereas manifestations of this nature put all possibility of doubt quite out of the question.

To describe either the appearances or the progress of putrefaction is quite unnecessary, in order to enable any one to recognise and identify it. Many of the brutes are able to do this; and there can be no human being whose organs of sensation will not give warning of its approach. It is at once conclusive as to the fact of death; but it may not always be proper or convenient to await it; and, therefore, although some writers have maintained that no other circumstance is to be relied upon with confidence, there are several which, taken together, amount to certainty sufficient, without the necessity of venturing on a disgusting, and sometimes (in its accompanying circumstances) a hazardous proof.

The dead body is characterised by total absence of motion, insensibility to all stimuli*, coldness, pallor, a fixed and inexpressive state or dimness of the eye, rigidity of the members, and relaxation of the sphincters; but not one of these appearances taken singly can be relied upon; we often, too, meet

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* I say *all* stimuli; for galvanism acts on the contractility of the muscular fibre, and not on the *sentient* organs.

with a state of the countenance, termed the *facies hippocratica*, which is commonly a precursor of death, when this event is the termination of a course of suffering *.

Passing over the superstitious practice of conclamation, &c. †, we may enumerate those tests or applications which have maintained a place among later writers, though more out of respect to their opinions of their importance, than from any conviction to this effect on our own part. Thus we read about the placing of light floculent bodies at the nostrils or on the lips, the approach of a candle to the outlets of the breath, and placing on the breast a vessel containing water—by the agitation of which

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* This state of the countenance has been described (although description is hardly adequate to convey an accurate idea) in the following manner:—"A wrinkled and dry brow—hollow eyes—pointed nose, bordered with a black discolouration—a depressed, hollow, and wrinkled state of the temples—elevation of the ears—the lips relaxed and pendant—cheek-bones sunk—the chin wrinkled and pointed—the skin dry and livid, or lead-coloured—a dull white powder on the hairs of the nostrils and eye-brows—the whole contributing so to alter the physiognomy of the individual as to render him irrecognisable." Foderé Med. Legale, tom. ii. § 498. It has been observed, however, where recovery has taken place; and the author here quoted states that it is sometimes produced suddenly by the near aspect of danger; has been observed in criminals proceeding to the scaffold; and when the last rites of the church have been administered, it has suddenly come on, where till then it had not made its appearance. We cannot rely upon it; and, probably, its presence or absence (for it is often absent) should not be taken into account. But as it has been recapitulated by almost all writers on this subject, I have thought it necessary to introduce this account of it.

† A practice among the ancients of bawling in the ear of the person just departed, and not yet exploded among the barbarous natives of the sister isle. Mr. Tully, (not Marcus Tullius, &c.) in his Memoirs of a residence at Tripoli, gives a curious account of a Moorish custom, to which I have more particularly alluded in the Appendix.

it was supposed that the continuance of respiration would be manifested, and by their stillness and immobility on the other hand, it would be warrantable to conclude that all was over. These are now rejected, both as liable to great deception in the management, and at best proving nothing, whatever might be the apparent result. It is also certain that a mirror may be tarnished if held near the surface of a dead body, and remain unsullied by the living. Upon such applications as these it would be superfluous to enlarge. In favour of the employment of stimulants it may be said, that where there is uncertainty, (and persons do not in such cases seek barely for knowledge of the fact,) if they are judiciously employed, the proper means to resuscitate the smothered spark of life belong to them; but in cases of suspended animation, where they are successfully urged, it is often necessary to persevere long in their application; so that the unanswered repetition of the attempt is not of itself sufficient evidence of the reality of death.

We read of surgical tests—such as thrusting sharp pointed instruments into the skin, blistering, burning moxa, applying red-hot iron, &c. They may be sanctionable where roguery is suspected, but in all other cases it would be difficult to convince persons of reflection as to the warrantability of such practices. From their primary inertness we might not be authorized to decide upon the impossibility of resuscitation, and as to their continued application, the absurdity of such an idea must condemn it, without calling other considerations to our aid. M. Foubert, an able surgeon of Paris, recommended a very conclusive test of this nature, prior to venturing on the dissection of bodies; and Foderé advises its

adoption in hospitals, " where the delay, prescribed by the regulations, before carrying the subjects to the theatre is rarely observed *." The test consists in making an incision between two ribs on the left side, and passing the finger to the heart in search of pulsation. I shall attempt no comment on this project; but if it be true (according to recent reports) that an English provincial surgeon has succeeded in tapping the pericardium †, it might not be very sage to condemn it.

When pulsation is not perceptible in the usual places, we have been recommended to try others; and Dr. Paris lays more stress on the perceptibility of respiration, however feeble, than would seem applicable to doubtful instances. Cases, however, may become so from inexpertness on the part of observers, or want of patience and minuteness in their examination. The perceptibility of motion in the abdominal parietes will be at least doubtful, and often deceptious in extreme cases ‡.

Great stress has been laid upon a certain appearance in the eye, which has been considered at some length by Louis §. This organ not only loses its brilliancy, but becomes the seat of a glairy mucus, which forms in the cornea, and has been the subject even of vulgar observation. The eyes of the dead also collapse, and in a few hours become soft. " As long," says he, " as the globe of the eye maintains

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* See note to page 8, *supra*.

† New Monthly Mag. April, 1827.

‡ The reader may compare the opinion of my very learned friend, (as given in the second vol. of his Medical Jurisprudence, page 11,) with the remarks of *Nysten* in his *Recherches de Physiologie, &c.* section v. article iii.

§ Lettres sur la Certitude des Signes de la Mort, &c. Lett. iv.

its natural firmness, we cannot decide that the person is dead." Others have not considered this mark so conclusive, having met with it in cases of asphyxia, especially from drowning, in which recovery afterwards took place; but there is little danger of confusion between cases of this nature, and such as are the immediate subject of consideration.

The stiffness that occurs after death has also been considered a very important diagnostic. In common talk we are accustomed to hear of a cold and stiff corpse: but the stiffness in question is not necessarily combined with cold. Dead bodies may be stiff, and yet warm—nay, they may be warmed, while the stiffness is retained. This is another sign upon which Professor Louis makes a decided stand *. From the examination of more than five hundred subjects he drew the conclusion, that at the moment of death this stiffness commences, even before the diminution of natural heat. To this Mahon objects that the stiffness may be confounded with tetanus, and that in the bodies of those who die after putrid diseases, rachitis, &c. it does not exist †. Granting this, such exceptions can never embarrass us in forming our estimate, as when they do occur they will full surely be taken into account. But a highly respectable author, who had paid some attention to the subject, states that this stiffness takes place constantly in dead bodies, even in those which have perished of jail fever and all other putrid disorders ‡.

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* Lettre IV.

† Med. Legale, II. p. 193.

‡ Nysten. "Recherches de Physiologie et de Chimie Pathologiques, pour faire suite à celles de Bichat sur la Vie et la Mort," sect. v. article iii. This author proposes another test of the reality of death, viz. dissecting a portion of a superficial muscle of locomotion,

Louis, in according great weight to the circumstance of stiffness, enjoins the propriety of examination by a medical practitioner, and discriminates between the stiffness of death and that (from other causes) with which it might be confounded, in the following manner.

" In mere apparent death, accompanied by convulsions, the stiffness of the limbs will be a primary occurrence, and will shew itself at the same moment as the false death; whereas, on the contrary, the stiffness in real death will come on after the event *." On this point the author of a very well compiled work says rather more clearly, that in all nervous affections, where the limbs become stiff, the body is still furnished with a certain degree of heat, very perceptible to the thermometer, and that the nervous stiffness, moreover, uniformly precedes the state of apparent death; whereas the stiffness of the corpse does not come on for a longer or shorter period after the annihilation of the vital functions †. Louis has further observed, that when a muscle is convulsed, its contraction is hard and unequal: thus if the fore-arm be bent, the biceps is in a state of stiffness not perceivable in the antagonist muscles. In real death, muscles producing contrary actions are all in the same state; and it is impossible to decide that any of them is in a forced state of action. " If," says he, " the stiffness and inflexibility of the limbs arise from convulsion in the muscles, it will be extremely difficult, and often impossible, to force a limb to move in a direction opposite to that in which

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and exposing it to voltaic influence. Insensibility is to be received as proof positive of real death, and *vice versa*.

* Lettre IV. p. 133.

† Briand Manuel de Med. Legale, § 293.

it is fixed by the convulsive action of the muscles; and if we succeed, the limb will return with violence to its former posture. In the dead body the case is quite the reverse; as soon as the joint has been forced, the limb moves indifferently in any way, like all inanimate substances *."

A caution has been given likewise on the possibility of confounding this stiffness with that caused in a living body by congelation. In this case, according to Nysten, all the organs, even those naturally the softest, the most impregnated with fluid, will be equally hard, and their hardness will be proportionate to their mass—the abdomen itself will be very hard. Pressure with the fingers will leave a cavity much longer lasting than in œdema; and when a limb is moved, a noise will take place from the fracture of the little congelations contained in the parts displaced. In this, as in numerous cases that belong to Forensic enquiry, the history of the event will be a safeguard against mistake †.

Some stress in verifying death has been laid upon a smell peculiar to bodies in this state. It is better, perhaps, not to erect it into an article of much importance. At the most it must resolve itself into a result of the putrefactive process; and as it is a sign, of the existence of which every one must judge for himself on the evidence of his own olfactory powers, it is almost futile to enter upon description. It is said to be different from that of manifest putridity, from the earthy odour of persons in the advanced

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* Lettre IV.

† The section of Nysten already quoted, on this point, is worthy of perusal. He states that the stiffness may be unobserved, either from not having come on, or from having passed away at the time of inspection.

stage of certain diseases, and from that of gangrene. If any confidence is to be placed on it, it must be the result of experience only on the part of the investigation; and this is not to be taught by books*.

The last resource, in all these investigations, is the manifestation of the putrefactive process. This must put an end to all doubts, though perhaps at a high and unnecessary price. The conservation of putrescent animal matter under any circumstances is always disagreeable, and often dangerous; and these objections must be heightened where the subject has died of disease. It is of great importance, therefore, to avoid the experiment; and very rarely, if what has already been said on the subject be well-founded, can there be any necessity for this delay. In times when contagious disorders prevail, the retaining of corpses above ground could not be permitted; but the evil will in general correct itself to a certain extent; for there is a quicker progress to dissolution in those who die of such disorders, than in many instances where, with impunity, the burial of the dead may for a time be delayed.

Without yet stopping to make the application that properly belongs to this topic, and without entering on the question of the regulation of funerals, which forms an object of Medical Police, I would merely remark, that notwithstanding all that may have been written on the rights of sepulture, and the importance that for ages has been attached to Christian burial, the real origin of the disposal of the dead, must have been the safety or the comfort of the living.

The last thing I shall notice under this head is the

* It will be seen hereafter that it may be artificially prevented.

effect produced upon the contractility of the muscular fibre by the power of Galvanism. I am not aware that this experiment has been resorted to in any case of the human species, except in criminals who have been executed; and though in them the most violent motions have been excited within a short period of their removal from the scaffold, I question whether the surmise that has been hazarded, respecting the result of a different order in the experiment be well founded. Full respiration in the case of Clydesdale is said to have been excited *; but although the muscular action of the organs of respiration was produced even to a laborious degree, if we consider the state in which the blood must have been by the time the experiment was made, it is perhaps too much to expect that the living functions could have been restored. The activity of a muscle may be excited by this stimulus, when separated from the rest of the body. The hind legs of a frog are made to leap with great force, as a common illustration of the galvanic influence, and in some of the experiments on criminals, the subjects had been executed by decapitation †.

From this subject, which merits farther investigation, it may be inferred that mere muscular vibration, or contraction, is not of itself evidence of life; but that the excitability of the fibre derived from that mysterious source, is not in all cases instantly withdrawn when the supply ceases.

§ ii. *Of States of the living Body that may resemble Death.*

I am now to enumerate the varieties of apparent

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* Ure's Dictionary of Chemistry, article *Galvanism*.

† At Turin. Dict. *ut supra*.

death. It is necessary, however, to premise that this term seems to have a particular application, being much used as a synonyme of *Asphyxia*, and *suspended Animation*. I wish however to employ it in its ordinary signification of any state of the body that may resemble death, however imperfectly, or by whatever mistaken construction.

The state of the body most closely allied to death, is that in which vitality is actually inert. This has been termed Asphyxia, which literally signifies want of pulsation, and in our own language, suspended animation.

Whatever interrupts respiration, arrests the circulation of the blood; and this, when continued for a very short period, throws the body into a state in which many of the signs of death are exhibited. Respiration may be interrupted in various ways, all terminating in one phenomenon, which perhaps it is pardonable to designate the proximate cause of suffocation. Of this there will be occasion to speak at large when the varieties of death by the application of suffocation in various forms come to be considered under the head of Homicide *. We shall then, however, see the subject in a point of view somewhat different from that which at present demands our attention; for we shall have to ascertain in what way some individual cause of fatal suffocation has been applied: we are now to hazard a few observations on the subject of rescuing a person apparently dead from the occurrence of that event in reality.

In all cases of this nature the discrimination as to hopelessness of administering means for recovery is

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* Consult hereafter chapter II. of section II.

determined upon very simple grounds. It will be generally easy to learn either by the circumstances in which the body has been found, or the history of the event, to what exciting cause of Asphyxia it has been exposed; whether to an irrespirable atmosphere, to water, to mechanical pressure on the windpipe, or to some other form of suffocation; and it may be, that we shall learn how long it has remained under the influence of whichsoever of these causes is concerned.

But this would be an unsafe and unwarrantable principle on which to lean for guidance in the discharge of our duty. It will be more proper and more scientific to enquire whether, in the absence of all casual assistance of the above nature, there may not be discoverable in the body itself, certain signs or appearances indicative of the real nature of the case.

No satisfactory account of symptoms generally applicable can be given. Perhaps the following is all that can be warrantably said of the matter, under the circumstances we have at present to consider. The surface of the body may be either cold or warm, pallid or not. In the countenance there is either unusual lividity or redness, or a diminution of the natural colour, according to the cause, or to other circumstances various in their nature. The tongue is frequently pushed to, or even beyond the lips. The eyes are protruded in many instances of strangulation, and also suffused with blood. The pupils are commonly dilated, and insensible to the stimulus of the strongest light. Insensibility indeed pervades the whole system. The hands are generally clenched, as in the act of grasping, and excretory evacuations often take place. Of what has occurred internally we can have no positive assurance

until the efforts for recovery have been duly used in vain, and the complexion of the affair so far altered, that we confine our investigations to the *ratio moriendi*, for the satisfaction of justice—under which view of the subject we shall in their proper place have opportunities of considering more minutely all the phenomena, and assigning to each variety of this description of death, those which more especially characterize it.

Unless there be conclusive evidence, from the state of the body, as to the extent of violence exhibited by marks, or the presence of putrefaction, the circumstance even of hours having elapsed since the exposure to the noxious influence took place, will not of itself be sufficient to bar the application of the resuscitating process; nor will the want of immediate success warrant its discontinuance until hours shall have been occupied in vain *.

Between the state of Asphyxia, or animation merely suspended, and that of absolute death, the only satisfactory means of discrimination is the result of the proper application of the approved means of recovery. To introduce an account of these, though it might be constructively applicable to the purpose of this work, is not directly so; and were I to do the subject justice, I should be under the necessity of excluding other matters which more essentially belong to my present business. Practitioners are at no loss for authorities on this important topic, the imperfect discussion of which might be attended with inconvenient consequences.

Cases of the foregoing nature are connected with

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* Dr. Curry (" Observations on apparent Death, &c.") says ' at least six hours.'

some extraordinary or accidental event, that gives rise to alarm, and necessarily implies notoriety; but we shall meet with instances where persons are apparently dead in the seclusion of the sick chamber, or in the ordinary course of private life. That this appearance is often very imperfect, must be acknowledged; but as it not unfrequently causes the visit of a medical practitioner, it will be proper to make a short allusion to some of the states of the body which assume more or less of this aspect *.

Authors have improperly included Syncope and Apoplexy under Asphyxia. In the former we have paleness and insensibility, with impeded circulation and respiration; added to which, these symptoms frequently continue for a considerable time, notwithstanding the diligent application of remedies. Nor will the previous history of the case of itself always enable us to discover what has taken place. There are however some causes usually productive of this state; and in a case where the knowledge of such is connected with the appearances of Syncope, we may readily form a right judgment, particularly if the habits of the individual are known to us. But people faint under circumstances that do not, *prima facie*, imply the existence of an ordinary 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 example, one person may fall down and expire immediately; and from the same cause another shall fall in a similar manner, but in a short time will recover and rise uninjured. In the former case an aneurism

* A singular case of recent occurrence will be found in Appendix IV.

of the aorta will be found to have burst; in the latter it will be no more than a fainting fit.

The exciting causes of Syncope are very numerous, and are often resident in the nervous system, acted upon through the mind. Sudden emotions have caused paroxysms of this nature that have proved fatal; the verification of which belongs to another head. The loss of blood, by removing the stimulus necessary for the maintenance of the vital functions is a very palpable cause; and it is even produced by sudden change of posture, and a voluntary power which is to be acquired *.

The principle of discriminating, by the effect of remedies, as in Asphyxia, may be considered applicable also here; but that which refers to the history of the event must in some measure be set aside; for a sudden change of posture, in instances like

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* The late Dr. Gregory, of Edinburgh, when lecturing on Syncope, observed, that many young people, when they get very plethoric, become subject to Syncope from very slight causes, especially young *men* who grow rapidly, and are therefore weak. Such on sitting down, stooping, &c. as when reading, will faint when they rise up. The doctor himself was subject to this when about 14 years of age. He was then at Oxford, and one day was reading with the book on his knees, bending over it, when he heard the chapel bell. He rose, and stretched as high as he could to replace the book, but felt nothing until he found himself extended on the floor, and the bell giving the last chime. He afterwards (not being aware of the danger) tried the experiment often, until he began, on such occasions, to experience palpitation. The professor also mentioned, that this story, many years before the writer of this note heard it, became the subject of much conversation, and one physician having tried to bring on Syncope in the same manner, in vain, pronounced against the possibility of so doing. One day however, when not thinking of it, on rising before the fire, he was attacked with fainting, accompanied by palpitation, which alarmed him so much, that he never attempted the practice again.

those above contrasted, may either depend on extinction of life, or induce a paroxysm of Syncope. In respect therefore to the event that has caused the phenomena, we must look beyond the more recent occurrence to the previous state of the individual; whether he laboured 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 degree of muscular agitation.

Of *Apoplexy*, *Catalepsy*, *Hysteria*, 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 proper examination, aided by knowledge of what preceded or apparently caused the phenomena, will always enable medical men 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 some 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 be 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; and after difficult labours, the state of exhaustion is often very great, and has proved deceptive. The case of M. Rigaudeaux, related in the Appendix *, was of this description, and on one occa-

* Appendix I.

sion I saw a scandalous instance of precipitancy attempted as to interment, of a similar nature, which will be given also hereafter *.

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 cyclopœdias and scientific dictionaries, we are referred from the word *trance* to *ecstacy* or *lypothymia*, 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 fanciful, if not too extravagant to be entertained by the physician. We have no experience of a state in which the soul can for a time leave the body (to all appearance) dead, and return in the manner of 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 notice of uninformed observers.

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 many dramatic plots and romantic tales: a profound or a morbid sleep, is all that we can suppose to have been believed

* Appendix V.

in by Shakspeare, who has not disdained to make use of this very article of machinery *.

The story handed down by Dr. Cheyne †, has always been received as authentic; but though to all observation, the gentleman who was the subject of the phenomenon, exhibited no sign of life, it is manifest that the presence even of volition was a feature in the case ‡; and as it has been correctly remarked, the body may be alive even after mental phenomena have ceased. Stories are recorded of persons who by their friends were considered to be dead, and who retaining a consciousness of the preparations making for their own interment, were yet unable by any sign to put a stop to the awful proceedings for some time. It is hard, however, to believe any such thing without better evidence than that upon which these and similar wonders are communicated.

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* 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:
> 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.

† Appendix VI.

‡ In fact, this case, which has been so much *wondered at*, seems to have partaken of the nature of voluntary syncope, mentioned above.

§ iii. *The practical application of this Chapter.*

When entering on the subject of apparent death, certain powerful reasons for caution in the disposal of those in that state, were offered and elucidated. We must now carry the consequences a step farther, by observing that the reality of a person's death may become matter of Forensic enquiry.

It may become matter of enquiry, should either of the consequences first enumerated* take place. It is possible that a practitioner might be brought to account for abandoning a sick, exhausted, or injured patient prematurely; and culpability is perhaps a mild term for such conduct. It might however be construed into criminality. Medical men have been tried on a charge even of murder for *mala praxis*, and there can be little real difference between the error of withholding remedies, where there is a chance of success, and that of administering what is noxious instead of salutary†. Of dissecting persons alive, there is no occasion to speak; and premature interment can seldom be charged to *our* account, whatever may be the case as to resurrection.

The reality of death has been matter of legal enquiry in a variety of ways in civil process. Thus the question of survivorship, of which we shall have to take detailed notice hereafter, has turned upon very nice observation, and has been agitated upon some of the very principles that have been laid down.

Cases of imposture may also occur, and have been

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* See page 4.

† A very important case, in which the patient seems to have been neglected too soon, will be found in Appendix VII.

frequent enough. Others, as well as Col. Townshend, have possessed the power of imitating death very closely *. To detect where there is roguery, and to verify where the imputation is ill founded, belong necessarily to the duty of medical men.

Where insensibility is the immediate consequence of sudden violence, it may be of great consequence to the happiness and welfare of others, as well as to the subject of examination, to decide speedily, not only whether it is death or not, but to observe the order of events.

In this stage of the book it is impossible to be explicit without anticipating details that belong to other questions, which when discussed will manifest their applicability to the view of the subject.

The duty of the practitioner will be simple. It can consist merely in the careful examination of the supposed corpse, and in acquiring all possible knowledge of the event and circumstances connected with it—to put all clamorous suggestions aside, and taking his professional knowledge for his guide, and the responsibility of his situation for a monitor, to examine with care, and decide with judgment †.

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* This case is often alluded to, but rarely related, I have therefore copied Dr. Cheyne's account. Appendix VI.

† A fair illustration of the applicability of the preceding subject to practice, will be found in the Appendix, No. VIII.

CHAPTER II.

OF SUDDEN DEATH WITHOUT QUESTION OF CRIMINAL AGENCY.

SUDDEN death may occur under a great variety of circumstances, with or without suspicion as to criminal agency; but at present our object is necessarily confined to cases in which the primary investigation must discountenance any such belief. We suppose the person dead to have been previously in good, or apparently good health, and to have died in a manner that can be verified by circumstantial proofs—of which the examination of the body by a medical practitioner is that which *we* have to consider, and that which perhaps decides the question as to the *modus moriendi*.

We shall consider the rationale of the question, before proceeding to any practical application of it; and it appears to separate itself naturally into two heads; viz. cases where death occurs from causes intrinsic, or existing within the body—and those in which external but natural influences are concerned.

§ i. *Of Sudden Death from intrinsic or morbid Causes.*

If there be any ambiguity in this title, it will vanish as we proceed. Nor shall I stop now to illustrate the importance of opening the bodies of those who die suddenly, or unexpectedly, for the

sake of information, or the satisfaction of surviving friends. These inspections constitute so intimate a part of the researches incumbent on the profession, that they are indispensable adjuncts to practice. The present enquiry will show the necessity of acquaintance with morbid, as well as sound anatomy, in order 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 ought to be made. It is always alarming to find a corpse where, but a few hours before, a healthy person retired to rest, and even suspicious if a dead body be discovered in an unfrequented place, without knowledge of the history of the event. People having been found dead, who were known to have been in perfect health but a short time before, with marks of violence about them, has, in the first instance, excited suspicion of criminal interference; when upon due examination these marks have been ascertained to be merely incidental, and not the cause 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 may conclude that death has been produced by organic lesion, or morbid action. To the last of these the individual may either have been previously subject, or it may be the first time that he has been affected with it; and then in the prior instance, there will be a clue to the investigation; but 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 relalations of the whole to Forensic enquiry.

Before entering, however, on these details, a general remark may be offered on the history of the occurrence of death, or more particularly on the last or immediate cause of the event.

The causes of death baffle enumeration; yet they may be separated into those which act suddenly, and those which are more or less slow in their progress. Among the latter, is of course included every disease, a term which signifies necessarily an event, and therefore involves in its signification a measurable portion of time. These exert their influence both primarily and consecutively upon a variety of organs, and upon divers functions, so that the fatal termination may be owing to the cessation of one function in one instance, and of another in other cases, leading necessarily to the extinction of the rest.

Whatever acts upon either of the vital functions, viz. respiration or circulation, speedily affects the other; and whichever of these may be first arrested, the other must cease in a very short space. The exposure of the blood to the atmospheric air in the cells of the lungs is absolutely indispensable to the continuation of animal life; and the heart has been found to beat, and the circulation to flow on, when air was artificially introduced into the lungs, after

the powers by which they are naturally dilated, were incapable of acting.

But it is indispensable also, that the nervous energy should be in a state of excitability; otherwise, the blood, even if duly prepared for the purposes of the whole system, could not be applied with effect. Therefore whatever destroys this energy has likewise the effect of extinguishing life. The brain, and organs connected with it partaking of similar structure and influence, may also be the seat of the cause of death. Any influence of this kind, generally affecting the nervous system, or particularly exerted on the nerves of respiration, leads to the cessation of life, by arresting the progress of the circulating fluid, or cutting off the supply of arterial blood *.

In proceeding now to specify certain questions that may arise as to the cause of death, it must be observed that we shall have to introduce the mention of diseases; but in cases only where they have not been matters of observation, either from their sudden occurrence and fatality, or from mistakes as to the real nature of the event. The object being, from the appearances in and connected with the body, to draw the inference as to the real cause.

Beginning with the most common of these morbid causes of death, I shall mention *Apoplexy*. The phenomena of this formidable disorder are, for

* The flow of venous blood, even if kept up, is incompatible with the continuation of life. It has even been said that the arrest of circulation is not so peremptorily fatal as the propulsion of this blood into the brain; and on this principle the frequency of recovery from syncope has been explained.

the most part, well defined, and generally known; and where its attack is perceived, justiciary 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, 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 no professional assistance has been afforded.

In this disease, the brain is subjected to pressure, and the function of respiration is much oppressed, while perhaps the circulation continues for a time to go on nearly as usual. But very soon the unprepared state of the blood is manifested by discolouration in the countenance, while the vigour of its flow becomes less and less until it ceases altogether. On dissection, a turgid state of the vessels within the cranium is to be expected; or extravasations in the cavities or substance of the brain.

The practitioner is fully aware of the causes that excite this formidable disease; but it will be of importance to bear in mind the predisposing influence of a certain make of the body, and take into account the known habits of the person who appears to have thus come by his death. With regard to what has been termed the apoplectic make, although arguments have been adduced in order to show that it is without foundation, little more seems to have been proved than that apoplexy is not confined to persons of this description. When, therefore, we have 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 which bring the head low, ligatures, or tight clothes, whereby the circulation may be impeded, or improperly directed; excess in eating and drinking, the stimulus of which increases the determination of the blood, while the distended stomach tends to impede its return by pressing on the large vessels—the danger of which is increased by the recumbent and supine posture.

Epilepsy may, in various ways, lead to sudden death. In a paroxysm of apoplexy, it is possible that there may be question even as to the reality of death; an epileptic fit is palpably a state of the yet *living* system. But epilepsy proves fatal, occasionally by its more direct extinguishing influence; and very often under circumstances that belong to the third section of this chapter. It is not the disease of any particular temperament, form, constitution, or habit. When it leads to sudden death, it must produce this event either by injury done to some important organ, or by causing the exposure of the body to fatal agency in the same way that any other morbid influence might compass the same event—by depriving the individual of sensibility, or the power of voluntary motion, both of which are arrested by a complete epileptic fit.

Sudden, nay even instantaneous death occurs from a variety of other causes; some of which are altogether unascertainable, or even undistinguished by any signs or symptoms during life—and among these we have some of a chronic as well as an acute nature. The former may be discussed in few words. They consist in derangement of structure

in organs whose perfect state is not necessary to the existence of life, though their continued derangement must lead to its extinction, and that in an abrupt way. They are for the most part incurable, though often known to exist. Aneurism of the heart, of the aorta, or ossification in these very important organs, may exist long with perfect consciousness of their presence, and in the midst of ordinary occupation the subject may be carried off without any other warning. There are also well authenticated cases of rupture of the heart, and sudden death resulting, where though the parietes of the organ had been preternaturally weakened and rendered unusually thin, there could be no previous knowledge of that alteration. Softening of the heart likewise has been found in opening the bodies of persons who have died suddenly. In some acute diseases, whose first effects are followed by others of a protracted character, yet not the less formidable on that account, sudden death frequently occurs when the patient, as to pain, exhaustion, or apprehensiveness, shews no aggravation. Thus not seldom terminate Phthisis Pulmonalis, Pleurisy, Hepatitis, and other derangements in the structure and functions of important organs, under which the sufferer may have laboured long, without much perceptible declension in health or vigour. In Dropsy too, we often lose patients unexpectedly; and in extreme old age all ailments are in this respect formidable, while they may not always be apparent.

Of sudden attacks of disease, partaking of the acute character, and terminating fatally with rapidity, may be mentioned inflammation of organs essential to vitality. Inflammation is sometimes

transferred to the heart, or the stomach, and sudden deaths in rheumatic or gouty persons are in this way accounted for; and in all these and similar cases, the event may happen at a time, and under circumstances requiring careful investigation into the state of organs that may have been the seat of disease, or suddenly altered in structure, or impeded in function.

Violent emotions of the mind will sometimes occasion sudden death. Excessive joy, fear, or grief, has repeatedly killed. Dr. Paris quotes the case of a criminal who expired on his way to the place of execution; and there is a very singular story in the recent work of an elegant writer of the present day *, of a person condemned to lose his head, but for whom a pardon was issued. It being intended, however, to conduct the prisoner to the last act of the tragedy before his good fortune should be announced, he ascended the scaffold, went through the preparatives, and laid his neck on the block, expecting the fatal axe to descend upon it. Cold water was substituted, and the spirit fled! On examination, the tragedy was found to be real.

§ ii. *Of Sudden Death, by external influences.*

Here must be included the cases of persons who lose their lives, not from disease, or lesion of organs, but by the interference of certain agents which are unconnected with crime. Such are death by lightning, exposure to noxious gases, to cold and

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* D'Israeli, New Curiosities of Literature.

hunger, by the immoderate use of spirituous liquor, the imprudent swallowing of cold water, &c. All of these may, and for the most part do take place in a sort of accidental manner, or, at the worst, are but the consequence of imprudence, being scarcely imputable either to evil 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.

To begin with Lightning.—There is scarcely a season in which the awful phenomena of thunder-storms do not cause the loss of life. The merest tyro in natural philosophy knows that the animal body is a ready conductor of the electric fluid, and that if it be the nearest object of attraction, it will be seized upon by the subtile matter, which passes through in such force as to extinguish 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 it is in such a situation that those who have perished by the electric shock *from the clouds*, have been commonly found. Persons, however, have perished by lightning upon open ground, and at a distance from elevated objects. This has been explained, as arising, 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 *.

* 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*

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. The circumstances in which a person may be supposed to inhale noxious gases, are various, and some of them unusual; but most people are now aware of the danger of burning charcoal where ventilation is impeded, of the impropriety of sleeping on lime-kilns, going rashly into mines, cellars, and other places that have been kept closed up, and into brewers' vats that have been standing empty; or of confinement in places where a renewal of atmospheric air is not supplied. The frequent recurrence of fatal illustrations, even in the present day, ought to prevent exposure under these circumstances; but every now and then, accident, ignorance, or imprudence, causes death, and renders investigation necessary.

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 actually frozen through exposure to the air, when at a degree of cold rarely known in this country, and seldom producing greater evils than chilblains, at least in the healthy and vigorous; while in more northern latitudes, it causes gangrene, 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

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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, and stands re-recorded in the *Memoires* of that body.

part owing to misfortune, and is commonly connected 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, and cannot cause perplexity as to the manner of their death. An event, however, more particularly illustrative of the cases I now allude to, occurred in London lately, when a man and his wife, aged persons, and poor, but not supposed to have been quite destitute, were found dead in their apartment; although food was discovered in the room, and money 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 the apartment of this miserable couple. It appeared that they had been previously in impaired health, and a doubt existed on the part of the Jury, whether they might not have attempted their own lives. The investigation seems to have been very unsatisfactory. The examination of the bodies was merely superficial, and though the verdict was in all *probability* correct, the means taken to verify the nature of the case were far from satisfactory *.

There is a cause of sudden death in the healthy state of not unfrequent occurrence, from imprudence on the person's own part, viz. the ingestion of cold water into the stomach, when the system is under great excitement from exercise. This is an event

* The verdict recorded that they had perished from the inclemency of the weather, under the destitute circumstances in which they were found.

which occurs in hot weather, and one which a little care, under extreme thirst, would obviate. It happens among those who labour in the open fields, travellers, especially pedestrians, soldiers on a march, &c. I set entirely 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 immediate 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 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.

Death from ingesta into the stomach, not connected with criminal interference, also arises through *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. There may be some doubt as to the propriety of distinguishing between strong drink, and poisons; inasmuch as there is a very close analogy between the consequences of strong liquor, properly used, and those of other deleterious substances. 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

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* Medical Reports, Vol. I. chap. xii.

which is applicable here, according to the usages of society and habits even of those addicted to the abuse of spirituous liquors: and where the consequence occurs which we have now in view, we can scarcely venture to consider it in any other light than the result of 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.

The question here relates to death as the immediate result of a debauch, which commonly in such circumstances occurs when the persons are alone, and beyond the reach of assistance, which if administered might save 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 the bones have been found. Of these occurrences numerous examples are on record; and although it has been much the custom to regard them with considerable incredulity, let me ask if the event is so totally at variance with the known phenomena of nature, or so

entirely destitute even of analogy, as to countenance absolute disbelief of what we find stated with as much appearance of truth as any unusual occurrence whatever?

Assuming, what I have no hesitation in considering myself entitled to do, that such an event has repeatedly taken place, the consideration immediately presents itself—how important it may at some time or other be, to establish this fact in a court of justice. We know that there have been cases of murder, in which attempts were afterwards made to burn the body, in order to escape detection; and on the other hand, where such an accusation is made, it might be urged in defence, that the body was burnt in a manner unknown.

We are yet unable to throw much light upon this subject; and the more so, as (in this country at least) an obstacle has existed, in the general disbelief of the event. But some of the cases carry full marks of authenticity both as to observation and intelligence. They have been reported by professional men, who have themselves been witnesses of what they describe *.

It appears that in all the cases which have occurred, the deceased had been habitually a spirit drinker, or had swallowed alcohol a short time previous to the accident. Now if we recollect what is the composition of this substance, and that when it is decomposed in chemical experiments, a great quantity of carburetted Hydrogen is evolved, we may perhaps advance one step towards the solution of the problem. We know that Hydrogen is highly

* An account of some of the least exceptionable is given in Appendix IX.

inflammable, readily ignited by the contact of burning bodies, and also by electricity *. That we are more subjected to the action of this power than it were perhaps easy to demonstrate, is the opinion of good authorities; and it is perfectly allowable to proceed farther, and say that certain states of the system may admit of actions, that under ordinary circumstances are unknown. These are hints that may not appear of much importance, but they are countenanced by observations that have been made on other occasions.

§ iii. *The practical Application of Chapter II.*

It is difficult to consider this part of the present subject without allusion, and that of a circumstan-

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* The learned and ingenious professor, under whom the author had the advantage of studying Natural Philosophy, used to illustrate the rapidity of the electric fluid by a very interesting experiment, which may perhaps be brought forward in illustration of the hint in the text. A wire went off from the wall of the lecture room, and traversed the building of the college in such a manner, that before the returning end discharged the spark, it ran many hundred yards. In the course of this space were planted at great distances from each other, as to the wire, though at the corners of one apartment, in order to facilitate observation, four small brass cannon, charged with hydrogen, through which the conductor passed. The returning knob, from which the spark was to be received again, was close to the discharging one. The phenomenon thus exhibited required the applipication both of sight and hearing; for on the approach of the charged phial to the one end of the wire, the spark was seen given off and received at the other end, after having run the whole length of the wire, and fired the guns in its transit, without the possibility of perceiving any difference as to time; while the reports of the four discharges of hydrogen were simultaneous with each other and with the exhibition of the sparks. The ignition of the gas by the electric fluid only, bears on the subject in view; but I could not well introduce that statement, without relating the whole of the experiment; for which (however familiar it may be) I trust I shall be pardoned.

tial nature, to a twofold view of it. Although the proceedings of courts are not the professed objects of consideration in this work, yet as some experience of certain formalities may be of great use to the medical practitioner, it has ever appeared necessary to the author that the want of this experience should be supplied by some account of these formalities. Under the present head the subject of coroner's inquests appear to demand attention; and in the former edition it was introduced into the text as a sort of preliminary digression. The sketch was on that account the less satisfactory; and as it has been reconsidered, and somewhat enlarged, it is judged preferable in the present instance to consign it to the Appendix *. We shall therefore proceed to enumerate the points of duty that devolve upon the medical practitioner, acting under any sort of formality that different laws, usages or circumstances may give rise to.

The general history of all such casualties as may arise out of the foregoing and other similar incidents, may be thus briefly declared. A dead body is found under circumstances of a mysterious, or at best presumptive, if not conjectural nature. Suspicion may exist as to criminal agency; or it may be deemed proper on various accounts, and (among others) for the prevention of malicious reports, to verify the cause, and manner of death. In the first instance, a report is made to the coroner, and he summons his jury. Before this court of inquiry, or as it is termed, inquest, all persons who have any knowledge of the matter ought to be cited, and those who are thus cited are examined upon oath. The practice of resorting to professional testimony as to

* Appendix X.

the state and appearance of the body, is so general, that we shall assume it to be matter of notoriety. If there be any obscurity about the case, the testimony of the practitioner may be the sole important one; and all the results that follow the inquest may depend on the manner as well as the matter of his evidence. It becomes him therefore to proceed with caution, prudence and intelligence, otherwise he may bring down misfortune upon the innocent, hinder the administration of justice—or (what generally ensues where inappropriate conduct is displayed) injure his own reputation, and, along with it, his fortune.

When therefore we are called upon 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 when found. He must carefully examine the whole surface of the corpse—not merely to discover wounds or bruises, but also to detect any improper tightness, pressure, or other impediment to free circulation. If there are wounds, they must be carefully traced, and the anatomical relation of the parts in which they are found, is to be taken into consideration: if there are bruises or any marks of violence whatever, the parts beneath must 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 not very material perhaps 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. Such neglect has not unfrequently occasioned much perplexity.

If, on opening the head, we find turgescence in the vessels; hæmorrhage accompanying the knife; blood extravasated in the cavities, or substance of the brain, or elsewhere within the cranium; adhesions between the membranes, great vascularity in them, unaccompanied by injuries, or malformations, tumours, mechanical pressure from morbid enlargements or indurations, the presumption will be that the person has died of Apoplexia Sanguinea: and this presumption (in the absence of positive signs or proof of the contrary) will amount to certainty, if the other appearances and circumstances of the case are consistent with the established history of this disease. Thus, we know that one of the more ordinary exciting causes of Apoplexy is repletion: consequently the presence of alimentary matter in the stomach, to great extent, or in an undigested condition, will favour the conclusion; and as the stimulus of strong drink generally goes along with that of a hearty meal, the sensible qualities of this substance being perceived in the contents of the stomach, will strengthen the evidence;

or the detection of a quantity of such liquor, even without food, or with but a trifling portion, will often warrant the same conclusion; for this stimulus is also a powerful exciting cause of the same disorder. The body being of the make favourable to determination of blood upwards, will likewise contribute to warrant the opinion.

But it may happen that there are other circumstances connected with the case demanding our earnest attention.

A person, for instance, 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 investigation, 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 will appear extensive, and may even lose a considerable quantity of blood. This would be ample cause for popular alarm and clamour—by which the man of science never ought to be swayed. On dissection, the real cause of death will appear, which, along with the extent and nature of the wounds, will shew that death has not been produced by external violence. A still more complicated event 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 nature of 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.

Let us suppose another case, one that perhaps may never occur, but which, however extreme, is still 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 of 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 objects, that this 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.

If, instead of the appearances just enumerated, we find tumours of a scrophulous character; pro-

jections of bony matter from the inner surface of the cranium; thickening or ossification in the membranes, particularly where they intersect the substance of the brain, we must conclude that the person during life had laboured under convulsions; for such morbid derangements do in that manner affect the nervous system. In the absence, therefore, of other appearances, whether of violence or disease, we must conclude that death has been caused by an epileptic attack; and if there are circumstances connected with the case, such as we have already noticed under apoplexy, we must be cautious to award the morbid appearances their just importance, and to give no more than their due weight to incidental appearances.

When the cause of death has been some violent derangement of the heart, or great vessels in immediate connection with it, the appearances will be very satisfactory. No mistake can possibly occur as to ruptures in these organs—excepting one that, perhaps, too often takes place, notwithstanding the plainness of the method to avoid it—I mean the examination of them. Of all others they are the most frequently passed over: but were they more frequently examined in cases of sudden death, it is not too much to expect that satisfactory cause would more frequently be discovered, for there is reason to think that these fatalities are not so rare as they have been considered *.

In the other thoracic viscera probably we might find the cause of death, though not suspected pre-

* A case of suspicious death, in which a hydatid was found in the heart, is related in the Med. Chir. Trans. Vol. XI.

viously. Thus, in several instances, inflammation has been detected, and the inference fairly drawn, that it has been the real cause when others were alleged; as in the notorious Oldham inquest, which elicited some very unprofessional testimony from medical men, and in which a natural cause of death was detected, while attempts were made to connect the event with an inadequate one of a different nature. The subject had been labouring under an inflammatory affection in the pulmonary organs at the time he received the injury that occasioned so much waste of time and indecent exertions for party purposes; and his death seems to have been fairly chargeable to previous disease *.

With regard to the stomach, where death has occurred from sudden affections of that organ, we may or may not meet with satisfactory appearances. Sickness must in the great majority of instances, in which this organ is the seat of disease, precede dissolution, a circumstance that necessarily takes the case from among those now under consideration. We are indebted to the late Mr. John Hunter †, and since him to Dr. Yelloly ‡ and others for a caution as to certain appearances in the stomach of persons who have died by violence or suddenly in the healthy state. It appears from observations made by these gentlemen, that the gastric juice in such cases may even dissolve the substance of the stomach; and that great vascularity, liable to be construed into inflammation, and to be considered in some cases as the consequence of deleterious ingesta, is generally

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* See Appendix XI.

† Philos. Trans. Vol. LXII.

‡ Medico Chir. Trans. Vol. IV.

found in such cases. To this caution we shall advert more precisely when we come to the consideration of Poisons.

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

Sometimes it has been found that the clothes of persons killed in this way 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 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 this 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 in these cases; and according to drawings he procured of them, they seem to have been particularly observable in the direction of the spine. Burnaby relates * that a person in North America, standing at his door, during a thunder gust, was killed. The delineation of an intermediate tree that stood at some distance, was found

* Travels in North America.

upon the body in miniature—all the surrounding part of the skin was livid, but that which was covered by the figure of the tree retained its natural colour. It is 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 even inflammatory appearances within. But these of themselves are not conclusive, as the same appearances are frequently found in the bodies of those who have died from other causes. Death by lightning has been said to take place *quâ* suffocation. Mr. Brodie, from opening the bodies of animals killed by electricity, for the purpose of experiment, draws the inference, that "*Death takes place precisely in the same manner as from a severe injury of the head**." In fine, it may be as well to observe, that were we in many such cases to attempt to draw our inferences solely from the appearances in the body, without any knowledge or suspicion as to the agency of electricity, we should have some difficulty in making good our conclusion; but in most instances of this nature, the history of the event may be presumed from the situation in which the body will be found, and the notoriety of the occurrence of a thunder-storm.

With regard to *non-respirable gases*, it might be imagined that death from exposure to them could not take place without manifestation of the real, or at least the probable history of the event. We may readily suppose that carbonic acid gas may have

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* Manuscript Notes of Mr. B.'s Lectures at the College of Surgeons, quoted by Dr. Paris, in his Medical Jurisprudence, Vol. II. p. 65.

been inhaled to a fatal extent; yet when the body 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 previous 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. The eyes of such as die in this manner 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 clearing up of those melancholy cases of death by cold and hunger, must depend more upon their history, 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—viz. 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 strengthened.

Those who perish in this manner commonly belong to the wretched classes of society; and we may almost 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. When people die from hunger, under circumstances in which the influence of cold cannot be taken into account, 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, imped-

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* See Chapter II. of the next Section.

ing the power of swallowing, or digestion; for in these, along with 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 hunger, 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 die from 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. 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 die in the cold, without any 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 the apoplectic state has not been induced.

It is hazardous, perhaps, to attempt an explanation of the manner in which death is operated by a sudden draught of cold water; 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 will 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. Perhaps it may be allowable to say that the activity of the nervous principle is instantly and fatally checked.

The consequences being so immediate, or perhaps it may be said, the fatal action being so rapid, we can hardly expect 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 the 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.

The difficulty of detecting intoxication as the cause of death it is to be presumed can rarely be great. 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.

To what has been already said on the subject of Spontaneous Combustion, there is little that can be added. In general, the accounts of these events record, that the extremities of the body are not entirely consumed. But we have the liberty of inferring, that the difference between this mode of combustion, and that which might, and indeed does, most ordinarily take place, is *singularly* marked.

In common burning, the body is seldom so palpably consumed; the process of dissipating such a mass of animal matter as that of an adult—and all the cases have occurred in such—by fire, is slow and difficult. Where it might be accomplished, the results would not be such as we find described in these instances *. We can only suggest as a practical consideration, the question of believing that such events have really occurred, and desiring the practitioner to bear in mind the phenomena that have been recorded, that lest these cases should be true, and one should happen in his own experience, he may be aware of what has already been observed.

In concluding this chapter, the reader is reminded that in all the cases now alluded to, the subject of examination is dead; and the cause of death either unknown, or that assigned, impugned. He will, therefore, have to depend on his own professional knowledge, as to deciding on the real cause. He must proceed without attaching more importance to preconceived notions or statements than he will find reason to countenance from the appearances, generally positive, though it may happen, even negative, in the body. Upon these he must *give* his opinion, and it follows clearly that upon these only should he *form* it.

The observations as to dissecting, given hitherto, are but few and imperfect, but in laying down directions for the various descriptions of cases as they fall to be considered, it is expected that not only will the defects be tolerably supplied, but the directions by that very method be rendered more applicable.

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* Appendix IX.

SECTION II.

OF DEATH WHERE THERE IS QUESTION OF PERSONAL AGENCY.

In this Section, we shall treat of those cases, the characteristic of which is the destruction of life in one person by the agency of another. Under this title, the reader will at once perceive that a great variety of questions must present themselves for consideration. In a judiciary point of view, the subject embraces several points with which the medical profession has nothing directly to do; but to the establishing of which we may frequently lend great assistance—even assistance that can be derived from no other quarter. Among these questions are many of the greatest importance, however, to ourselves; for not only do they furnish by far the most frequent occurrences that render our appearance in a court of justice necessary; but those in which the most important and serious consequences depend on our mode of performing the duties that belong to us in such situations.

Dr. Percival remarks, that on such occasions, the medical practitioner should be qualified to give his testimony consonant to legal, as well as medical knowledge. It is necessary, however, to observe, that he is here alluding to the coroner's court in particular, where something may depend on the *manner* in which a medical witness gives his testi-

mony *. I have been present at inquests where neither the coroner nor the jury could have been made much wiser by what was elicited from some of my brethren; though perhaps there is too often a disinclination to aim at the discovery of important facts. These lead to trouble, and that trouble and the loss of time are not marketable. But, to quote this excellent author more to the purpose, he adds, "To this end, he must not only be acquainted with the signs of natural death, but also with those which occur when it is produced by accident or violence. And he should not be a stranger to the several distinctions of homicide, established in our courts of judicature. For the division of this act into *justifiable*, *excusable*, and *felonious*, will aid his investigation, and give precision to the opinion which he delivers †."

The general term *Homicide* literally signifies the killing of a MAN; 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 con-

* In a case that I shall more particularly allude to hereafter, the consequences were such as should have been avoided, had the evidence of the surgeon before the coroner, been as much to the purpose as that given on the trial, by the same person.

† Medical Ethics, chapter iv. p. vi. The author follows up the quotation given above by some discriminatory observations on the species of Homicide.

ceived. This species of killing is styled *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 circumstances 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, but with intent to miss him, and thereby causing his death; mixing drugs in food with a jocular design, and, through ignorance, either putting in a deadly poison, or an overdose of that which in smaller quantity might do no harm. *Manslaughter*, *Justifiable Homicide*, *Chance Medley*, &c. are also terms that have each an important distinctive signification under this head, in Jurisprudence; but which I do not consider it within my province to attempt to elucidate; as they are not likely to be matters of consideration for members of the medical profession.

But when an accusation of violent death, or of murder is set up, it may depend much, or even altogether upon the medical practitioner, to verify the grounds for such accusation. He may find that there is some other, some more evident and more satisfactory cause of death than criminal agency, or he may be able to satisfy those concerned that the deceased had not been killed in the way alleged. Supposing, however, that his duty leads him to decide that life has actually been destroyed by unfair methods, he may encounter some of the following questions, which are of too important a nature to be lightly considered. Indeed, the whole of what falls to be said in this class of medico-legal topics is but their explanation.

He may be asked—are there no fatal diseases that

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 these, and other questions of equal importance, have been repeatedly put to professional witnesses*.

I shall arrange this Section into the following Chapters, and treat of them in the order here observed. I. Of Death by Poison. II. By Suffocation; and III. By Wounds and Bruises, or injuries analogous to these.

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* Appendix XII.

CHAPTER I.

OF POISONING.

THIS is by far the most important and most troublesome division of *homicide*, as concerns the duty of the medical practitioner; as it respects pathological physiology, and as involving a practical application of medical science, and of chemical knowledge, as well as an acquaintance with Natural History.

On the present occasion, the prominent object for consideration, is the proof to be afforded by the resources of professional research, as to the perpetration of the most detestable of all crimes—a crime, which the testimony of history warrants us to conclude was common in proportion to its difficulty of detection, prior to those discoveries which have rewarded the laborious investigation of medical philosophers. The *Science* of TOXICOLOGY has put an end to secret poisoning; and, whether the crime be now attempted without precautionary measures for concealment, or under circumstances even of scientific obscuration, detection is sure to follow—so that although society may have become acquainted with poisons, not known until lately, it has gained additional security from the attacks of cowardly assassins; and a case of secret practising of this nature upon human life is now seldom or never heard of. If medical men will but make themselves acquainted with this part of their duty, it will be impossible for a guilty culprit to escape the vengeance of the law, as far as conviction depends upon proof of the perpetration of the crime through identification of the *materiel* of the offence.

The duty of the medical practitioner in all cases of this nature is two-fold; and the one branch of

this duty is so equivalent to the other, that it is ground for just reflexion upon him if he is not competent to the discharge of both. He cannot choose for which he will qualify himself, or to which he will confine his attention. The distinction of ranks, of departments, and of pretensions, is done away with here; and though the physician and the surgeon, in a case of fractured limb, may imagine their provinces to be different, the one confining himself to the treatment of the constitutional, and the other to that of the local ailment, whoever happens to be called in to relieve a person who has taken poison, will be required to satisfy public justice as to the complexion of the case, and the criminality of the parties accused. Having done his duty with regard to the relief of the first sufferer, he may be instrumental in taking away the life of another individual afterwards; and this person's fate may not only hang upon the manner in which he acts at the bedside of his patient, but on the account he gives of his deportment, and the reasons he may be able to assign for it, on a public and solemn occasion.

Poisons have been defined "substances, which being ingested into the living system, in small quantity, derange the functions, and cause death." *Poisoning*, in its proper sense, implies the act of introducing such articles into the system: it may therefore be performed criminally or accidentally—by one person upon another, or by an individual upon himself. We are exposed to no small hazard from the close resemblance that many poisons bear to substances innocent, and (under due precaution) even salutary. Ignorance and carelessness often lead to sinister events; and while these circumstances may give a judicial complexion to cases as respects *malice*, and therefore criminal interference, the establish-

ment of the fact of administering any particular article, or its identification may rest solely on the adroitness, intelligence, and testimony of the medical practitioner, who has no direct concern with the issue.

The number of individual substances capable of acting in a deleterious manner on the living system is considerable; and, it may be added, that there is hardly a substance whatever, although not only innocuous, but even advantageous, in its ordinary shape and mode of usage, which may not, by some deviation from propriety, or under some circumstance or other, have a baneful effect. Thus we have records even of *food* acting in a poisonous manner—a refinement, however, which it would be inconvenient to adopt. It is necessary to restrict the signification of the term *poison* to the following sense: it ought to refer to substances whose ordinary and prominent powers are hurtful, and whose ingestion with impunity forms *the exception* to their common course of action; it ought to be restricted to those substances which are noxious to the *human* frame; for there are articles which act upon certain animals with violence, and do not molest others; and it ought to signify such articles as we are unable to use in any quantity beyond an exceedingly minute one, such as one or two grains, or a very few drops, without danger.

The materia *medica*, and the materia *toxica*, may be considered so far identical, that there is scarcely a known poison, (by which I mean a poison of easy access) that does not belong to the list of remedies: and the real distinction between a poison and a remedy lies in the proper use and management of the article in question. Thus *arsenic*, the most common, and one of the most deadly poisons, has been very

extensively used in the cure of diseases, and holds a place in our Pharmacopœia; the same may be said of certain preparations of *mercury*, and of other drugs that we daily do administer, but dare not administer without great caution and attention.

We shall do well, however, not to busy ourselves with exceptions, founded on those peculiarities which have received the name of *idiosyncrasies*, or on those attainments in the way of immunity (*quoad* certain poisons,) which seem to be founded on *habit*. There are strange stories on record, to which we shall not refuse our belief, but of which we can make no practical use. A man, a hundred years old, is reported to have swallowed daily a drachm of corrosive sublimate, at a dose, with impunity, and, perhaps, with benefit * ; but who would act rashly in the aportionment of this deadly poison, upon the knowledge of such an isolated fact, or dream of referring to it in a court of justice, to invalidate testimony as to the poisonous character of this mercurial salt ? On the other hand, we sometimes see very inconvenient effects, and effects very different from what were intended, result from the administration of approved remedies: but because it is upon record that opium has acted in one case or so as a purgative, would any sensible practitioner be deterred from prescribing it in diarrhœa? Is beer to be prohibited at our tables because a friend of mine happens to be unable to taste malt liquor without exciting epistaxis ?

Again, as to *habit*.—Tobacco, opium, and other articles, will maintain their place in the *materia toxica*, although many people can take, and have acquired an *appetite* for these powerful agents on the nervous system. The novice can never bear much

* This took place in Constantinople: Pouqueville, Mr. Hobhouse, and other travellers of repute, have attested the truth of the story.

of either without suffering; and I must confess it is matter of astonishment to me how so very general an *emetic* as tobacco in particular can have become so universal a luxury.

As every individual poison possesses a marked peculiarity, while (at the same time) there are many which possess some character, or various characters in common, the necessity of arranging them is not only great, but the facility considerable. This subject has been variously disposed of, though the most suitable and convenient method upon the whole is that to which we purpose still to adhere. It is not unworthy of remark, that although as *poisons*, we do not pretend to trace any relation between bodies and those properties or characters which denote them to belong to the respective kingdoms of nature whence they are furnished, yet both in the means of cure, and those of detection, the question is materially affected, and the conduct of the practitioner much influenced by the *nature* of the article. Thus of *mineral poisons*, it may be said that they all act upon the *texture* of the living system, that they are mostly susceptible of chemical remedies, and are entirely dependent on chemical processes for their detection; while few of these properties attach to *vegetables*, and still fewer of them to poisons of the *animal* kingdom.

Without entering upon any examination of the various plans that have been resorted to for the classification of poisons, 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.*

By far the greatest proportion of deaths by poison occurs from articles belonging to the *mineral* kingdom; and as modern chemistry has supplied *sure* means of detecting these, they bear a strong affinity to each other as poisons, notwithstanding the different ways in which they may act, and therefore should be considered consecutively—their importance in these, as well as all other respects, points out the propriety also of considering them first: by which method we shall have the advantage of an uninterrupted application of similar principles, and a series of illustrations thrown together, facilitating the labour of the student, and affording to the practitioner ready means of reference.

But as we are considering these various articles in a state of activity with regard to the living system, a knowledge of, and attention to their powers, will facilitate the business we have in hand: therefore, the other principle will demand conspicuous notice; and we shall find that most of the individual poisons, congregated under the head of one kingdom of nature, arrange themselves under the same general powers of action. Whether this be merely a coincidence in point of fact, or an evidence of the imperfection of systems of arrangement, we pretend not to decide; but where other plans of classification have been described, they have been abandoned for those to which I have formerly directed the attention of my readers, and to which I shall adhere on the present occasion *. The author of this arrangement is

* Dr. Paris, who, both in his Pharmacologia, and in Medical Jurisprudence, has proposed "a classification of the different modes by which poisons produce their effects," in a very methodical manner, prefers the method here adopted, as being more convenient for forensic purposes. Med. Jur. II. page 204. In a separate work I am preparing on Toxicology, I intend to submit a synopsis of classification, to which I am still uncertain whether I shall be able to adhere in the details.

Foderè; and it has been modified by Orfila in the following order, by which poisons are considered as—

I. Corrosive, or Escharotic,
II. Astringent,
III. Acrid,
IV. Narcotic, or stupifying,
V. Narcotico-Acrid, and
VI. Septic, or Putrefying;

examples of the majority of which are afforded among the *mineral* poisons; and having considered these, I shall proceed to the *vegetable* kingdom, which will likewise furnish poisonous substances belonging to the greater part of the six classes. *Animal* poisons will be treated of next; among which we shall also find a plurality of the classes; and in another department, viz. the *Gaseous*, there are substances, which might likewise with some propriety be referred to this classification. But, according to the arrangement of this work, it will be less convenient to consider them under the head of poisons, than in another place.

Before discussing the subject of poisons in detail, it may be expedient to explain what is meant by the terms used in the above classification; and to offer a few general observations respecting the action of poisons on the living animal system, premising that some poisons of the same class are alleged to act on different parts of the system, which will be more particularly considered, when treating of individual articles.

I. *Escharotic, or corrosive* poisons, are those substances that destroy the texture, or consume the parts to which they are applied. When they produce fatal effects, it is generally from being ingested into the stomach, though many of them may act by destroying other parts, either as being immediately essential to the continuance of life, or from being so violently acted upon as to affect the general system.

The general symptoms that ensue when a person has swallowed 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 sanguineous diarrhœa, 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. Certain 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 parts may not be required to bring on the fatal result. The countenance becomes altered and convulsed; and the internal senses remain unimpaired.

The rapidity with which this course of phenomena 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 even where this is not the case, and the patient dies of the more direct consequence of the poison, death for the most part is not sudden; the patient commonly enduring the symptoms 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 characteristic effect of the poison can generally be traced. The parts over which they have passed will be found more or less excoriated, if the texture be not de-

stroyed. In the stomach and sequent intestines there are generally marks of the most violent inflammation, indicated by destruction of the villous coat, extending even to gangrenous spots and eschars—nay, frequently to perforations; and ulceration is often observed in the colon.

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 occurred, without the slightest ground to suspect the administration of poison*, and allusion has already been made to certain appearances in the stomach, that want of experience may confound with the effects of poison, where nothing of the kind is in 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 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, the most notorious are, certain metallic preparations, concentrated acids, saline compounds, &c.

II. *Astringent poisons* should imply those substances whose principal characteristic, as to action

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* A very remarkable case of this kind, with respect to the stomach, is recorded in the Edinburgh Medical Essays, Vol. V. 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. For farther illustration see Appendix XIII.

† Page 52. See also an illustration under the article *Opium* among the Narcotic poisons.

on the living body, is the constriction of the alimentary canal, at least, if not of other passages. They will excite inflammation, however, if given in sufficient quantity, though they do not produce the direct destruction of texture like the former *.

Lead and its preparations comprehend nearly the whole of this class; 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.

III. *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, Euphorbia, Aconitum Napellus, &c.—Colocynth, Gamboge, and perhaps all drastic purgatives, when given to an improper extent †.

IV. *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 such poisons, though some of them vary in their effects; as along with the stupor or 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.

V. The next class of poisons according to this ar-

* This constitutes the distinction between them and Escharotic poisons, which are stated also to create constrictions in the bowels.

† These three classes have been consolidated into one, termed *Irritating* poisons.

rangement, 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 effects somewhat different; or that the action of these poisons is 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—less speedily when the poison has been introduced into the stomach, than when it has been thrown directly into the circulating system *.

As many of the symptoms caused by these poisons are characteristic also of certain diseases, careful dissection should be instituted in all fatal cases. This class comprehends some of the most deadly poisons, as the *Upas*, *Woorara*, and *Ticunas* of foreign countries, and the *nightshade*, *hemlock*, and others, so abundant in our own.

VI. The last division of poisons, according to this arrangement, is the *Septic*. "Those," says Orfila, "which produce a general debility, dissolution of the humours, syncope—and which do not alter the intellectual faculties †." But this explanation is not

* Orfila. General System of Toxicology, Vol. II. page 359.

† Toxicology, Vol. II. p. 371.

sufficiently clear; for narcotic poisons induce debility, and under the action of the escharotics the state of the intellectual faculties remains unimpaired. All the articles enumerated as belonging to this class, are of the animal and gaseous kingdoms, and their application to the living system can hardly ever be a question of criminality; their complexion is generally that of an accident, and consequently their relations to forensic medicine are less important than those of the other classes.

In the investigations which it may be our duty to perform, we may have to do either with the living or the dead body. In those cases to which we may be called during the life of a person who has taken poison, the primary object of the practitioner must, of course, be to save his patient, and remove suffering; and, though successful in both of these indications, it may not be the less necessary to institute a judicial inquiry into the facts connected with the case. As it must therefore be of the utmost importance to know what particular poison was administered, it is incumbent on the practitioner to be careful, in his endeavours to save life, not to destroy the means of verifying or disproving an 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. Having obtained a portion of one or all of these matters, the readiest means (to be hereafter pointed out) should be adopted for coming to a conclusion as to the nature of the poison; with a view to select the most appropriate remedy; and here, while it may be proper to caution the practitioner against trifling

with time, and wasting materials, which may be required for future investigations of a more precise and troublesome nature, it may be observed, that the evidence necessary for his direction in this matter, may fall far short of that which will be required in a court of justice. From the appearance of the substances examined, the symptoms under which the patient is labouring, and such history of the case as he may be able to gather, the medical attendant may form a tolerable guess at once whether a *mineral* or a *vegetable* poison has been swallowed, and his opinion may be strengthened by a due consideration of the following circumstances.

It is presumptive evidence that a person has taken poison, when in a state of health, and shortly after eating or drinking, or perhaps taking medicine, he suffers from violent vomiting and purging, attended by a sense of heat in the passages, and of constriction in the fauces; when the region of the stomach becomes suddenly the seat of pain, and the whole system is affected with convulsions: the evidence will of course be strengthened if there be a peculiar, that is to say, a metallic taste in the mouth; or if there be (instead of these symptoms) considerable coma, attended with more or less disorder of the intestinal canal. If there be no prevalent epidemic, exhibiting appearances such as those we see in the case before us, we can hardly avoid concluding as to the fact of deleterious ingesta having been exhibited.

Besides the attention already enjoined to the substances remaining in the utensils from whence the patient may have taken the food, &c., and to the rejected contents of the stomach and bowels, enquiry must be made into the patient's previous habits, constitution, and state of health—the nature of any diseases to which he may have been liable, and

whether he was the subject of idiosyncrasies, with regard to particular articles of food.

The nature of symptoms should be taken into account; and if they mark inflammatory or irritative action in the tissues of the visceral system, the general presumption will be in favour of a *mineral* having been swallowed; but if there be a disposition to coma, accompanied with insensibility, and no great pain, we may perhaps rely upon finding that a *vegetable* of the narcotic or narcotico-acrid sort is the cause of the mischief. Even in a court of justice, symptoms are sometimes enquired into as corroborative proofs of the nature of the poison, but beyond this it would be wrong to appreciate them, as there are diseases always ready to be quoted as furnishing the same phenomena.

Again, something is to be learned from the successful application of remedies. The grand improvement in the present day, as respects curative interference, is the mechanical evacuation of the stomach; which, if promptly and *successfully* performed, amounts to very strong evidence of the presence of a deleterious body in that organ: in a few cases of poisoning, there are remedies of a specific nature, or rather possessing affinities for the deleterious agent, by the exercise of which it is neutralised or disarmed. The realization of these combinations is certainly entitled to estimation in proving the particular nature of the substance to which the counter-poison, or the counter-agent, has been applied.

These injunctions are palpably necessary where the person is yet alive, and the great object is recovery; but they should also be attended to 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 to pursue it more deliber-

ately 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, also by negative as well as positive proofs. By these I mean the absence of all other signs of injury or derangement, whether from violence or disease, that might be urged as the cause of death. The presence of the fatal substance, and the known or presumed effects of such substance on the system, form what may be termed positive proofs.

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 *.

It is not my intention to touch upon every article of the *materia toxica*, in the present disquisition. Although it has been said that Toxicology can no where be taught with such advantage as in a treatise

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* A supplementary note will be found at the end of the volume on the *sectio cadaveris*.

on Forensic Medicine, I apprehend that one important branch of it is more particularly alluded to; viz. the *detection* of poisons; for their *medical treatment* certainly belongs to another province. But in truth there is no existing department of medical education that can do full justice to the subject, (now indeed become an auxiliary science itself,) without great inroads upon, or deviations from the proper business. I think, therefore, it is time to erect the full consideration of poisons into a separate study; and, if so, all that can be required of the medico-legal writer is to exemplify the relations which Toxicology maintains with the investigation and conviction of crime. Keeping this object in view, it will be more conveniently accomplished, if we adopt that principle of arrangement by which almost all the chemical processes for detection will be classed together, and the individual poisons amenable to them follow in a sort of natural order—under which respect will be paid to the physiological principle of their action on the living system: We shall begin, therefore, with MINERALS.

§ i. *Mineral Poisons.*

The individual substances of this class are not only the most important, but sufficiently numerous to form an extensive division; and we might dwell with advantage upon some general views of the subject, had I not judged it more convenient to be somewhat diffuse under the first head belonging to this department, to which, as an exemplar of his business, the reader may, on subsequent occasions, refer with advantage.

In examining the *families* (if I may so call them) of MINERAL poisons, we shall first treat of THE METALS; and then pass to the ACIDS, ALKALIS, and EARTHS, concluding with those intercombinations which are styled saline,

or neutral salts, it being understood that, in the metallic list, every article of a poisonous nature will be either a salt, or a combination of the metal with oxygen, under some modification or other.

Subordinate to this arrangement, the *corrosive* poisons of each division of this kingdom will take the lead, and the rest will follow in the toxicological order of Orfila already sketched out*. No one kingdom of nature affords example of all the six classes of poisons, but, among the minerals, most of the corrosive, all the astringent, and some of the acrid will be found. Consequently some difference must exist among the symptoms, remedies, and morbid appearances after death, as well as among the means of detection. This last is the most important part of our Forensic duty, and one on which it will, therefore, be incumbent to be precise, at least, if not minute—tedious it is hardly possible to be on a theme whose bearings are of such magnitude, involving lives and characters; among which latter, that of the medical profession is sometimes nearly as much at stake as that of the accused.

Chemical knowledge is the great distinction as to the qualifications of the practitioner for clearing up the obscurities of poisoning by minerals—and in an especial manner by metals: one important fact must be preserved in his lively remembrance, that where these last are in question, they, viz. the uncombined metals themselves, should be the objects of his search.

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* See page 69.

A. Arsenic and its combinations.

This is one of the imperfect, or ignoble metals; and, in its metallic state, is not of much importance. It is then 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 it has been asserted that deleterious effects have been produced on animals. In our proper view of it, however, it is of some importance to be able to recognise it in the metallic state.

It is extremely susceptible of oxidation, and in this state 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* oxide; a process carried on upon an extensive scale, furnishing that substance so abundant in commerce, vulgarly called *Arsenic*, but known in chemistry by the terms *White Oxide of Arsenic* and *Arsenious Acid*, constituting one of the most deadly articles, and that most frequently employed in modern toxicology.

Arsenious Acid, of which we pass at once to the consideration, exists in the form of white masses, opaque on their exterior surface, but transparent and vitrified within; by slow sublimation it forms teträdedral crystals. 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 (accord-

ing to Klaproth) in the proportion of two parts and a half in 1000 parts of water at 60°, and of 77 parts in the same proportion of water at 212°, about 30 parts remaining in permanent solution *.

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, or continual spitting; constriction of the pharynx and œsophagus; the teeth 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 black, intolerably fœtid, and sometimes mixed with blood. 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, and syncope is not unfrequent; unquenchable thirst comes on; and the body becomes pungently hot, though sometimes an icy coldness takes place; and respiration is difficult. 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 may appear to be a miliary eruption. These formidable symptoms are aggra-

* Brande, Manual of Chemistry, Vol. II. page 204.

vated 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.

These are the symptoms of the most formidable cases, those in which the poison acts with the greatest vigour; but in practice we must expect to meet with instances where the course of the effects is less rapid, and the phenomena, consequently, less conspicuous. They will differ, however, but in degree; and in some cases of the severest kind we may find but a few of the foregoing symptoms, while 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. Their number and violence 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, or 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, and of a reddish brown colour. Dark spots have been noticed on the lungs, and where the acid has been carried into the system by absorption, effusion in the cavity of the pleura. It has been alleged that the observation of this fact gave rise to experiments, by which the presence of arsenic was de-

tected in the mediastinum of a horse that had been made the subject of them *.

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 a peculiarity of Arsenic, as 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 take place in those instances only where the animal does not die promptly. Sometimes he found the inflammation of the stomach so slight that it might have escaped notice; and he concludes that the inflammation of this organ, in such cases, is not the cause of death. He states also that he never found the pharynx or œsophagus inflamed; but that, in several experiments made on animals, where the arsenic was applied to a wound, and carried into the system through the

* London Med. and Phys. Journal, August, 1821.

† Recueil periodique de la Societé de Medecine de Paris. Tom. VII.

medium of the circulation, the stomach was commonly more inflamed than when the poison was administered internally; and he also deduces that in whatever way arsenic is administered, it does not produce its effects on the stomach till carried into the blood *.

The sensible properties of Arsenious Acid in the solid, and pulverised form, have been already described. If a portion of this powder be laid on burning coals, or red-hot iron, it readily volatilizes, and sends forth a dense white smoke, diffusing a strong garlic smell. If a clean bright plate of copper be exposed to this smoke, it will be coloured white. 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 to ascribe the fallaciousness to inaccuracy on the part of observers, rather than to real resemblance on that of 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 the smell is always connected with the dense white smoke; and that though several other substances

* Philosophical Transactions for 1812.

yield either the one or the other, Arsenic alone produces both *.

With regard to these two circumstances, however, of the silvering of copper and diffusion of garlic odours, it is necessary to put the practitioner on his guard against too readily concluding that this is accomplished by his experiments in such a way as to warrant the inference that Arsenic is really present, or, on the other hand, that it is not. For an approach to the brightness in question has been found by heating copper plates with mere charcoal; while Arsenic may be submitted to heat, even to apparent combustion, and the alliaceous odour not be perceived.

With a simple aqueous solution of Arsenious Acid, the following changes of appearance may be produced by various substances. If Lime Water be added, it will cause a precipitate of a *white* colour; Nitrate of Silver, either in the solid form, or in solution will form a *yellow* sediment; Sulphate of Copper precipitates a *green* substance; and Sulphuretted Hydrogen throws down a precipitate of a *golden yellow*.

These facts are well ascertained, and the objections that have been urged against the uniformity of the results have served the important purpose of leading to accurate modes of experimenting.

The precipitates in question are combinations of the Arsenious Acid with the substance employed; and although it has been too much the custom, on obtaining the expected colour, to decide that Arsenic must be present, modern Chemistry has furnished

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* Pharmacologia, Arsenici Oxydum; and Medical Jurisprud. II. pp. 213, 214.

us with the means of going a step farther—one that has become so important as to be rendered indispensably necessary. For, as to the mere colour of the precipitates, it has been shewn that, if the same shades, or the same colours be not permanently produced, by other substances, yet that to inaccuracies, inexperience, or occasional causes of various kinds, many errors have been owing; and many opportunities have consequently occurred of objecting to results as evidence of the presence of Arsenic, on the plausible ground of other experiments producing the same.

But even if these tests should produce their respective precipitates strictly answering to the account given of each, they are but a preliminary step in the detection of the presence of Arsenic.

From all of them, however, when dried, and calcined with potass and charcoal, Metallic Arsenic is to be obtained; and to procure *this* 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. 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 deposited, adhering to the sides of the tube. It may then be subjected to ignition; and the proof will thus be (in a manner) two-fold.

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.

In the course of our practical enquiries into the presence of Arsenic, it is hardly necessary to say that we shall have to encounter it in a great variety of combinations, in which the colouring matter of many substances may present difficulties in the way of testing. The preceding observations are applicable to the simple solution, upon which the practitioner should occasionally make experiments. This will prepare him in a great measure for more important enquiries, and help to give him confidence and dexterity in the management of the processes that may be necessary. It is in our power, however, to get rid of some of this embarrassment, by the aid of an agent, for whose introduction we are indebted to Professor Orfila. Chlorine, which from its property of discharging vegetable colours, is extensively used in bleaching, may be here employed.

In solution we may add it to the liquid we are to investigate, and it will discharge, or modify the colouring matter, so as to facilitate results which might otherwise have been dubious.

With regard to *Antidotes* in this case, if there were

any approved means of counteracting the poisonous effects of Arsenic, the knowledge of these, and the contemplation of their successful employment might be of avail as circumstances contributing to identify the substance administered, in cases of recovery; which, notwithstanding so happy a result, often become the subjects of judiciary enquiry, demanding proofs of the actual administration of the poisonous matter.

Unfortunately, in the case of Arsenic, we can *confidently* administer nothing that will attract and combine with it in preference to the animal matter of the organ to which it is applied. The great object to be first attempted is to expel it from the primæ viæ, and then to administer such articles as may dilute or attenuate its causticity.

With this view, therefore, the sooner the practitioner can excite vomiting the better, and for this purpose some do not hesitate to employ the most active emetics, considering that the evitation of much fluid is an advantage in these cases *. Others are advocates for copiously ingesting bland liquids, such as will most readily promote the action of vomiting. In general, where the fact of poison having been swallowed is discovered, we may expect to find the patient tolerably dosed in this way before we reach the spot, if our appearance be not very prompt. Warm water, oil, linseed, or chamomile tea, and similar articles are easily obtained, and suggest themselves frequently to those who first come to the aid of a poisoned person.

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* A case of successful treatment is given by Mr. Buchanan in the Lond. Med. Repository for April 1823, where stress seems to have been laid upon *dry vomiting*. At the same time the patient took magnesia liberally.

There is a case related in the Philosophical Magazine for 1818, of a person who had swallowed an arsenical salt in considerable quantity, in whom charcoal prevented the operation of sulphate of zinc, but seems to have effected ready recovery. Some of the conclusions drawn from this case, are perhaps questionable.

Mr. Hume, of Long Acre, to whom we are indebted for valuable instruction as to the best tests for the detection of arsenic, has published a case in which a recovery is ascribed to magnesia; administered however in combination with vinum opii *. The case presented a modification of symptoms; and indeed, when the immediate result is not fatal, a great variety of phenomena may be looked for in the subsequent period of suffering.

I have been informed, upon authority, that opium, in the form of tincture, has been given in great quantity, with the happiest effects, during the activity of arsenic in the stomach. A person swallowed some of the mineral with the intent of self-destruction; but not finding the effect so speedy as was anticipated, and urged most probably at the same time by the intolerance of the pain, a large dose of laudanum, with the same substantial purpose, was afterwards taken. From that moment, however, all the uneasiness ceased, and recovery took place.

Upon the knowledge of this occurrence, a medical practitioner, in a desperate case of suffering under arsenic, employed the same article, with the

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* Med. and Phys. Journal for Oct. and Nov. 1821. Other cases have since been successfully treated in the same way; one is given in the Lond. Med. and Phys. Journal for February, and another in the Lond. Med. Repos. for April 1823.

same immediate and final results. Let no one act rashly upon this statement. I have not permission to give names, merely, I believe, because I did not ask it from my informant, whose professional reputation and liberality are of the highest cast. Perhaps, on learning the use I have ventured to make of the important statement, he may take the trouble to procure for the profession more satisfactory particulars.

A method of affording relief in cases of poisoning has been lately presented to the profession in this country, as the *invention* of a London practitioner *, which may, in certain circumstances, perhaps, be applied to the case of arsenic. The principle is that of injecting the stomach with warm water, through an elastic tube, furnished at the external extremity with a syringe or gum-bottle, capable of containing about a *quart!* The contents are then withdrawn by pulling up the piston, or relaxing the bottle. The operation is to be repeated till the water comes off clear and tasteless.

With regard to the *invention*, it is by no means a new thing, however little it may have been attended to. Chaussier, the younger, gives a description of the apparatus and mode of employment, very nearly in the same terms as those employed by our countryman, and at the same time ascribes the original idea to Boerhaave, and the perfection of the instrument to Mess. Dupuytren and Renault †.

But I must leave the subject of the treatment of arsenical poisons, which is by no means the proper

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* Lond. Med. Repository for Oct. 1822.

† Contre-poisons, &c. par H. Chaussier, 3 ieme edition. Paris, 1819.

business of a work of this nature, and which therefore cannot be done justice to. When there are any approved antidotes to be noticed, their successful employment may be an article of confirmation in forming our opinion as to the nature of the poison concerned.

In coming to the practical application of the foregoing remarks on Arsenious Acid, we must notice a very important distinction among the cases with which we may have to deal. The person may be still living—in which case, however hopeless recovery may seem, our duty will not the less demand that every effort shall be exhausted for the relief and welfare of the sufferer. Still we may, by certain precautions, so manage as to reserve to ourselves the means of making subsequent investigations into the nature of the poison. For we must suppose that this is a problem to be solved. Generally, we shall be informed at once as to this; and it is unlikely that the practitioner who has paid any attention to Toxicology, will be at a greater loss than to determine which of the *two* corrosive poisons, arsenic, or corrosive sublimate may be that with which he has to do *.

If there is no information to be had, and the symptoms are either so indistinct, or the action of the poison has been going on so long as to modify the peculiarities of the symptoms into those of the advanced stage, we must endeavour to procure the

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* It has been remarked, with great plausibility, that something may be learned from the symptoms of spitting, if present. In poisoning by Mercury, the practitioner will recognize the *peculiar fetor* —in cases of Arsenical poisoning, this will be wanting.

remainder of the deleterious article, if there be 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; but, although it is not to be supposed that we are to go to a case of this nature furnished with furnaces, crucibles, retorts, &c., yet some of the tests we may easily provide, as a solution of the sulphate of copper, lime-water, and 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 afterwards afford *. If enough of the solid poison be discovered, a small portion may be thrown upon ignited coals or red hot iron.

Supposing that in this, or in some other way, we conclude that arsenic is the substance that has been swallowed, (for it must be observed that we are treating of the ordinary exhibition of poison by ingestion into the stomach,) we are to labour for the recovery of the patient; but, bearing in mind that the *intent* and not the *result* constitutes the essential crime, we must be careful to retain the power of satisfying the proper authorities as to the fact of poisoning, by proving the presence of the poisonous article. This, in cases of recovery, can scarcely be done, except by analyzing the residue of the substance swallowed, or of that which is ejected from the stomach by vomiting, which, in the hurry and confusion necessarily attendant on such occasions, is likely to be lost; a circumstance of which

* At page 77, I have already expressed my opinion as to giving part of this to an animal.

advantage has been taken to baffle the enquiries of justice.

I would recommend the practitioner, on such important occasions, if he be in the first instance called alone, to obtain the presence and co-operation of another professional man as soon as possible; or, if this cannot be accomplished, to keep a strict watch over the matter he intends to examine at a future hour, when his attention will not be engrossed by the more urgent business of alleviating the sufferings of the patient.

We shall now suppose that he has succeeded in removing the remains of the poison, (in whatever shape it may have been prepared,) or part of the substance vomited, to a place of security. There he must go to work, as soon as he conveniently can, in a deliberate and cautious manner. If he is unaccustomed to the operations of chemistry, let him avail himself of the assistance of some more expert or experienced person; but all that is done must pass under his own eye, otherwise a question may arise as to the identity of the matter actually submitted to these experiments, with that which he had set aside for the purpose *.

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* In the important examination of Dr. Edwards, on the trial of Donnall, charged with poisoning his mother-in-law, at the Launceston Assizes, March 31, 1817, this circumstance was matter of minute enquiry, both by the counsel and the judge. A few of the questions and answers on this point may very appropriately be inserted here.

"Q. (By Mr. Serj. Lens.) Did you give any directions as to what was put into the basin? After examining the contents of the stomach, which were put into the basin, we poured them into an earthern jug.—Q. And your attention was particularly drawn to that in the basin? I placed the jug upon a chair, on which there was a cushion; and I took particular care, that, as the seat was elastic,

The method in which the tests are to be now applied, is substantially the same with that to be ob-

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it should rest against the back, so as not to fall; and I said at the time, that it must be taken particular care of, as it was necessary for me to examine it.—Q. Was that said to any one in particular, or was it said generally? Particularly to Mr. Donnall; we were very near to each other.—Q. Was there any other person present but you there? Not at that time.—Q. (By Mr. Justice Abbott.) The prisoner, Donnall, was in the room at that time? Yes, my Lord.—Q. (By Mr. Serj. Lens.) What did you proceed to do then? We proceeded to examine the intestines, &c. * * * * * * * * Q. Did you proceed then to see whether there was any thing to be discovered of an active nature? I then turned to the contents of the stomach, which I had placed in a jug.—Q. (By Mr. Justice Abbott.) Then your back had been to the jug? It was behind or rather on my left side.—Q. (By Mr. Serj. Lens.) When you had turned round, did you find it in the same situation? Yes, I found it in the same situation, but I was surprised to find it empty.—Did you express that surprise to any body? I expressed it to Mr. Donnall, and asked what had become of it, and he told me he had thrown it into the chamber utensil: I observed to him that he ought not to have done so, as I had before said that it must carefully be preserved; and I observed to him also that it would give me a great deal more trouble, as I must evaporate a larger quantity of water than I should otherwise have had to do, to get at the object of my search.—Can you tell us what quantity was in the basin, and what the quantity was afterwards? It was a little more than half a pint originally.—And what was the quantity when mixed with the other water? Nearly two quarts. The chamber vessel was clean when I came into the room.—What had occasioned any used water in it? I threw some of the water into it, in which we had washed some part of the intestines.—What was then done with it? As soon as we had finished the examination, I left it to Mr. Street's charge, who told me he would take care of the contents of the stomach.—You did not see them again till they were at your own house? No, not till they were brought there in two bottles. I recollect putting this chamber utensil further under the bed, in order that it might not be disturbed, and desired that no one should touch it or go into the room during our absence, Mr. Donnall still remaining. Mr. Donnall had been out of the room once or twice.—But was he there when that direction was

served with regard to the examination in cases where the person is dead—to which it is now time to proceed.

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* *.

Nor was it always deemed 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 perplexities of the case were but increased by the dissection.

We are not however to overlook the external appearances of the body; but while it may be our duty to take particular notice of such as may seem to be unusual, the interior research is the grand consider-

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given? Yes, Sir.—Did you afterwards, and when, proceed to examine the contents of the two bottles? It was two days before I had finished that examination.—How soon afterwards did you see it in the two bottles in your house? On the same day that we examined the body.

Upon the examination of Mr. Street, on the same point, it appeared that Dr. E. and himself were absent from the room about a quarter of an hour, while Donnall the prisoner (a medical man,) was left behind, and that the caution as to preventing persons from going into the room, was given to *him!* Mr. Street poured the contents of the utensil into a jug, and then into two bottles, without any examination (for aught that is stated) as to their cleanliness. I shall offer a few more remarks on other parts of this case in the Appendix XIV.

* 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.

ation. This we cannot perform too scrupulously;—recollecting that the life of a fellow-citizen depends upon our proceedings, and that the reputation and fortune of several individuals may be also affected by them.

Three circumstances have been pointed out by Orfila that greatly facilitate the detection of this poison. 1st. The impossibility of effecting its decomposition by alimentary substances, whether animal or vegetable, (or, he might have said, its difficult solubility,) 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.

I will no longer hesitate to say, that nothing short of the reproduction, or *reduction*, of the metal, should, on occasions of judiciary enquiry, be relied upon as evidence of its administration. It is true, that in some cases death seems to have been occasioned by this poison where it had all been discharged from the stomach and intestines, and no trace could consequently be found afterwards; but these are events of such rarity, that we are not to take them into account; where they do happen, we must give way to the force of circumstances, and admit the inefficacy of our art, leaving justice to deal with the culprit in that merciful manner which is always adopted in this country, when there is a doubt as to his guilt. It is possible, however, to reduce Arsenic, where so small a quantity has been found, that if we pursue the right plan, and *then* fail, it *ought* to be concluded that the Arsenic has not been introduced *.

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* See supplementary note of Berzelius's method, at the end of the volume.

The preliminary preparations for a chemical examination having been arranged, we 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 way to be presently pointed out. If the search for these be unavailing, our attention must 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.

The simplest method of proceeding is to dissolve the solid particles in boiling *distilled* water; and, after filtration, to apply such tests, or precipitating re-agents, as may be considered most conclusive; but if we decide upon omitting this part of the process, we had better proceed to dry the particles in question at once, so as to bring them into a fit state for subjection to the process of reduction by the application of heat.

Where the suspected substance is already in a fluid state, to produce a precipitate, will be an object of attention, not that the *colour* of this precipitate is now to be considered as a matter of *primary* importance. Much discussion might have been saved, and many mistakes avoided, had this question been set in its true light; but the progress of all sciences has been gradual, and that of toxicology has been fashionably slow. In detecting the presence of Arsenic, too much has been attempted on the one hand, and too many failures have been imputed on the other.

A host of experiments has at length shewn what we may put faith in, and has also taught us the uselessness of not a few processes, that have never been instituted without exciting perplexity, and calling up objections, which have themselves, however, been

sometimes founded in misapprehension. We have now got rid of much of this, by proceeding with all possible straightness to the *experimentum crucis*.

The only tests, therefore, that are worthy of notice, in our present estimation, are the four following, to which, without apology, I shall confine our attention *. *Sulphuretted Hydrogen—Lime Water—Ammoniated Nitrate of Silver*, or lunar caustic, and a similar preparation of *Sulphate of Copper*, or blue vitriol: perhaps the first only is that to which our confidence will in the end be found due, as it acts with greater uniformity and effect upon a variety of coloured, vegetated, or animalised fluids, than any of the others. Of course, amid the variety of substances that enter the primæ viæ, much discrepancy and inconvenience will be met with from the *colouring* matter they contain, which will necessarily influence the colour of the combinations or precipitations, formed by the addition of tests. To bring these as near as possible to the standard of the simple aqueous solution described above †, has been a great desideratum.

In employing the *sulphuretted hydrogen*, care should be taken that it be recently prepared; and a stream of gas passed through the suspected liquid has been recommended in preference to the solution, which adds to the bulk of the matter experimented on, and is fraught with other inconveniences. The *golden yellow precipitate* here formed is a sulphuret of arsenic.

To produce the *white* arsenite of lime by the addition of *lime water*, this test should be applied warm,

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* Recent and *good* writers have endeavoured to multiply the tests in doing which, I fear they have by no means enlarged our resources; the *reaction* now is to diminish their number, and adhere to such as are least liable to exceptions.

† Page 87.

and in considerable quantity, as the subarsenite is very soluble.

But the chemical actions will be greatly facilitated by the previous application of an alkali to the suspected fluid; which, by combining with the arsenious acid, forms an exceedingly soluble salt, and an arsenical preparation more prone to decomposition and recombination than the arsenious acid itself. Accordingly, the usage has been to make use of subcarbonate of soda or potash, caustic potash, or ammonia, with this view.

It having been found, that in using the *Nitrate of Silver* as a re-agent, inconvenience and even failure often attended the experiment, an improvement was suggested by Mr. Hume, in combining the *test* with an alkali, which holds out the following advantages: the test being kept in a proper state of readiness, the addition of an alkali to the suspected solution is rendered unnecessary; and by the employment of *Ammonia*, the decomposition of the lunar caustic is avoided, a result that is apt to take place from the fixed alkalis. The process need not be repeated here, as the article may be obtained at the chemists', either under the name of *Ammoniated Nitrate of Silver*, or *Ammoniuret of Silver* *. In using it, however, the liquor to which it is applied should be quite cold. The precipitate thus produced will be of a decided *yellow* colour, and will consist of an *arsenite of silver*.

Under the head of *Sulphate of Copper*, the only remark I shall now introduce will relate to the propriety of preparing this test with ammonia in the manner of the foregoing. The result will be the formation of *Scheele's green*, so named from the promulgator of its discovery, and the colour of the precipitate.

* The process will be found in the Philosophical Mag. for May, 1809; and in Paris's Pharmacologia.

Passing over other tests, upon which greater or less stress has been laid by different authors, such as the *Chromate of Potash*, the *Tombac alloy*, and the rarely applicable but very nice one of *the Voltaic pile*, (for accounts of which I shall merely refer to Orfila, and writers who have preceded myself,) the sum and substance of our duty may be briefly enumerated thus:—

Separate the respective precipitates, or combinations of Arsenic, thus formed, from the mass of fluid —which may be done by filtration, and subsequent drying, or by decanting and evaporation to dryness; mix them with black flux, and expose the mixture to heat in a glass tube, in the manner hereafter described: under which process we shall, if it be conducted with a moderate share of caution and dexterity, prove the existence of Arsenic, if the *smallest* particle of it be present.

The quantity of material to be thus dealt with will vary in different cases; and according to this quantity, perhaps, we may regulate the size of the tube; but, in general, it has been recommended to select one about three inches long, and from an eighth to a fourth of an inch in diameter, hermetically sealed at one end; and, for ordinary purposes, (where we are not driven to very nice considerations as to the quantity of the powder,) I have found the small *test-tubes* of the shops answer very well.

The portion of the suspected powder should be mixed in a glass, or agate mortar, with about three times its weight of *black flux* *, and then introduced into the tube in such a manner, (by means of a paste-

* Black flux is agreed now by the best authorities to be the most convenient medium of reduction, and may be had ready prepared: it may be formed, when necessary, by deflagrating two parts of tartar and one of nitre, gradually in a red hot crucible.

board or card gutter,) as not to leave any particles on the sides; the sealed end of the tube is then, without coating, or stopping its open extremity, to be held in the flame of a spirit lamp, at an angle of about 45°, when, in the course of a few minutes, the following appearances will present themselves: there will first be a disengagement of watery vapour, which will settle on the upper part of the tube, and may be wiped off by a piece of bibulous paper; this will be followed by a black discolouration, consisting of the volatile particles of the flux, then we shall see the formation of a brilliant metallic coating, extending partially or entirely round the inner surface of the tube.

This is the most important part of the process; and here we might stop; but as we have other means of satisfying the most scrupulous mind, beyond this, we must resort to them. It might be insinuated that the crust in question is not an arsenical one, or that it is not a metallic one at all; for it must be confessed, that there is occasionally a brilliancy in the aspect of the charcoal deposited on the interior of the glass, which might possibly be mistaken for the substance of which we are in search, as we are told it has in fact been. It is rather *necessary* than proper, therefore, that this crust should be scraped off, or the glass broken, and the part containing the crust submitted to the action of heat; when the emission of the garlic arsenical odour will necessarily display the identity of the substance *.

By keeping this in view, as the *ultima ratio* of the detection of Arsenic, the practitioner will have no occasion to busy himself with intermediate niceties

* See page 86. The method of Berzelius, pointed out in the Appendix, may be resorted to when the quantity of the suspected substance is very minute.

in the way of testing; and as I look upon precipitation to be but a mode of obtaining fuel for the glass tube, I shall not load my pages with arguments either against, or in favour of any of those tests which have, as *conclusive* proofs of the presence of Arsenic, maintained an impeachable reputation. We have been taught by a very accurate toxicologist, that no reliance is to be placed upon any of them but the sulphuretted hydrogen, which, in cases of coloration, and the intermediate process for getting rid of this inconvenience, is not so much at variance with the phenomena of the aqueous limpid solution as the others*.

This leads me to add a few remarks on what has already been alluded to regarding the subject of *decolorising*, and further decomposing animalised fluids, or those containing vegetable substances, so as to bring them as near as possible to the limpid state, or to the standard of the aqueous solution †.

Some of these impediments may perhaps be got rid of by *filtration;* which, with all turbid fluids, should be employed prior to further proceedings; but the liquid which passes the filter may carry with it not only the colouring principle, but others of a soluble nature, calculated to embarrass our subsequent operations very considerably.

The oxymuriatic acid had been long used as an agent in bleaching, (upon a knowledge of its powers of discharging vegetable colours,) when Orfila (I believe first) thought of its application to the purpose immediately before us ‡; but later experimenters have complained of the following inconveniences.

* Dr. Christison, in the Edinburgh Medical and Surgical Journal.

† Described at page 87.

‡ He announced this discovery in a paper in one of the Journals. There is no mention of it in his Toxicology; but it is adverted to in his *Leçons.*

The *colour* is seldom so entirely discharged by it, but that it will reappear in the precipitates; it does not act upon *other* principles which affect the accuracy of the test; and it forms delusive precipitates where it has been added to fluids *not* containing Arsenic. If it is to be used, the *gas* is preferable to the liquid.

Animal Charcoal, or *Ivory Black*, has been proposed; and it would seem to be free not only from the foregoing objections, but also from another that has been brought even against it, of removing the poison itself along with the colouring matter. It is directed to be washed, (in order to free it of muriatic salts,) prior to its employment, to be applied *cold* to the suspected solution in the same state; after which they are to be agitated together and filtered *.

Upon the whole, I consider the process of detecting arsenic, if not divested of its troublesome and minute bearings, to be vastly simplified of late; and I shall take leave of this part of the subject, by repeating my injunction to the explorer *to make for the metallic crust.* He may *swear* to that without fear; but he will fish in troubled waters if he relies upon the result of intermediate tests.

Arsenic is, upon the whole, the poison most frequently resorted to for the purpose of *homicide;* and this is solely ascribable to the facility with which it may be obtained and administered to an unsuspecting person. It is sold, I may say, *at random*, in shops of various descriptions; and there is hardly a town in Great Britain where a designing miscreant might not easily *purchase* enough to poison the whole population. Upon a small scale, its administration is not so difficult as that of some other poisons; for its

* Mr. Phillips, in Annals of Philosophy, for Jan. and Oct. 1824. Dr. Christison, in Edin. Med. and Surg. Journ. for July, same year.

sensible qualities do not stand much in the way. Its sparing solubility often hinders its prompt discovery by the organs of taste*; it is well fitted for admixture with many, with almost every common article of food, more particularly of the farinaceous sort. In flour, in milk, in broth, soups, wine, beer, and a variety of menstrua, it is soluble to an extent amply sufficient for nefarious purposes, and produces no sensible change in these vehicles. Examples enough are recorded of its being disguised in each of these ways; but none of them can screen the poison from the detection of scientific research. A few of these instances will be found quoted hereafter †, and to many others the reader has now ready access.

Arsenious Acid has been used 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.

Arsenic combines with oxygen in a higher proportion, and forms what is termed Arsen*ic* Acid. This substance is not common, and is unlikely to become the subject of investigation in the same manner as

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* A point that has been judiciously considered in Dr. Christison's notes on a recent trial, recorded in the Edinb. Med. and Surg. Journal for April, 1827.

† Appendix, No. XIV. He will derive great satisfaction from perusing Dr. Christison's valuable papers in the Ed. Journal, already referred to.

the Arsen*ious* Acid, which we have hitherto been considering. Should this happen, however, the essential parts of our duty do not differ from those already described.

The black oxide of Arsenic is dangerous; it enters into the composition of the common fly-powder, and by mistake or carelessness may produce the effects of the Arsenious Acid. Fly-water is also a rank poison, being a compound of a watery solution of Arsenious acid and treacle.

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 Arsenious Acid and potash. 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 substances 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.

The vapours of Arsenic are dangerous if inhaled; and although we have hinted that *metallic* Arsenic has not been proved to be a poison *, and Arsenical vapours are *metallic* vapours, the statements are not inconsistent. The mere *smell* of Arsenic does not injure, but if the volatile particles get into the lungs, may they not be *oxidated* there? At all events, the fact is indubitable †.

B. Mercury and its combinations.

Under this head, we shall not be obliged to study the same minuteness: for many references may be made to the preceding exemplar. The peculiarities of the chemical, and toxicological history of mercurials, only require notice; and I avail myself of a general acquaintance with the metallic characters of Mercury, to pass them over in silence; for in this state it has no action on the living system but what may depend on its mechanical properties. Large quantities of *Quicksilver* have been swallowed with impunity; and this fluid metal once enjoyed a wanton sort of celebrity, which has at length died away. Its consolidation at a very low temperature, and consequent malleability, is also a subject that does not concern us; but it requires to be noticed that it is susceptible of vaporisation, and in this state is very noxious; a most remarkable instance of which occurred in one of our ships of the line, which had taken some leather bags of quicksilver on board. These bags burst; and the metal, making its escape, per-

* Page 82.

† Vide Dr. James Gordon's Inaugural Thesis *De Arsenico.*

vaded the structure and contents of the vessel in all directions, amalgamating with other metallic substances, spoiling the furniture, killing the little animals, even to the birds in cages, and the mice in their holes; and at length proving mortal to some of the ship's company, nearly the whole of whom were more or less attacked by the specific effects of Mercury*.

The saline forms of this metal are still very numerous, although a greater number of preparations was formerly recognised, than our pharmacopœias now retain. Of its simple oxides there is little occasion to take notice here, as they are seldom found in the way of the Toxicologist, possessing, for the most part, marked sensible qualities, that form an impediment to their administration surreptitiously. We shall, therefore, hasten to the consideration of its muriates, or chlorides.

Mercury unites 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 disease, 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 this metallic salt is still 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 oxi-

* The story is quoted by Dr. Paris, and, if I am not mistaken, is given in a late volume of the London Medical and Physical Journal. It is also recorded in a recent number of the Medico-Chir. Review.

dation, forms the mild preparation still known by the term *Calomel* *, which 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, differing also in weight. It is very soluble in water, not requiring 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 proofs of the contrary.

Every preparation of Mercury, when introduced into the system, produces a *peculiar* effect. This must not be altogether overlooked here, though we need only keep in mind the most remarkable appearance belonging to that effect, viz. the impulse given to the salivary glands, either more peculiarly exercised upon them, or there, at least, more distinctly manifested than in other secretory organs. 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 turns intolerably offensive. If the mercurial medicine has been given too rapidly, and, in some constitutions, from a very small quantity,

* Consult Appendix XV.

† Mr. Brande says in about half its weight, Manual of Chemistry, Vol. II. p. 248; Dr. Paris three parts. Orfila, from whom the statement in the text is taken, observes that two parts of boiling water will hold one in solution. Toxicol. Vol. I. p. 29. Whatever may be the exact truth, it is obvious, and sufficient for our present purpose to be aware, that it is exceedingly soluble.

more violent effects take place; the soft parts swell, the teeth loosen, and even fall out; deglutition and speech are impeded; the patient is rendered loathsome to himself and to 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 by the very means intended for their cure.

These effects are promptly 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 to be repeated at considerable intervals, while the augmentation we may venture to make is exceedingly trifling, its virulence must be very great.

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 ptyalism. The solution excites 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 escapes 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,

* Philos. Trans. 1812.

must powerfully affect the functions of the former, whence again an impulse will readily be conveyed to the heart.

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 ultimately 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.

A solution of Sulphuretted Hydrogen will produce a *dark-coloured* precipitate; and all these precipitates if rubbed on a bright plate of copper will 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 tetraëdric 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 products 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, 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 attended to. The tests already mentioned will produce the effects as an aqueous solution, and the impediments thrown in the way of detection from the colouring matter of this medium, and of wine, will be removed by the addition of decolorising agents.

A very beautiful application of Galvanism to the detection of the presence of Mercury has been presented by Mr. Sylvester, and modified by Dr. Paris into a more simple form. "Drop a small quantity of a solution supposed to contain the salt in question, on a piece of gold, and bring into contact a key, or some piece of iron *, so as to form a galvanic

*. Any apparatus will do—as a gold coin, and the point of a knife, or of a needle. The test is delicate, easy, and satisfactory.

circuit; when, if sublimate be present the gold will immediately be whitened *."

We have the authority of Orfila for considering Albumen as an antidote to Corrosive Sublimate when taken into the stomach. Therefore the proper article to be administered is the white of eggs beaten up with water. The Albumen decomposes the Sublimate, reducing it to the state of Calomel, which will, at the worst, probably, act as a powerful cathartic. The remedy must be applied immediately, and in very large quantity. Where the amount of the poison swallowed can be ascertained, perhaps a tolerably correct estimate might immediately be formed of the quantity required of the antidote. We may, however, err by giving too little, we can scarcely do so by excess. Orfila found by experiment on living animals, that Corrosive Sublimate, previously mixed with a due proportion of Albumen, might be administered without danger.

Several cases are recorded in which it has been employed at home with success †, though it has failed in some. It is but just, however, to add that in some of those in which the result was fortunate, it seems to have been employed rather as a subordinate remedy.

M. Taddei has recommended vegetable gluten as

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* Medical Jurisp. II. p. 268. The method of Mr. Sylvester is given in the same place; but as it is so well known, and certainly not so readily or conveniently applicable as that above quoted, I think it unnecessary to insert it.

† Transactions of the King's and Queen's College of Physicians, Vol. III. 1820. London Medical Repository, June 1820, and May 1823. In this last instance four drachms of Sulphate of Zinc were previously administered, and the whites of *eighteen* eggs were afterwards swallowed.

a substance that more quickly acts on the salt in the same manner. A mixture of flour with corrosive sublimate was found to be innoxious; and it was also ascertained that twenty-five grains of fresh, or thirteen of dry gluten, or from 500 to 600 of wheaten flour would counteract one grain of the sublimate *. The new combination is said to assume the shape of a hard mass, which may be evacuated by an emetic, or by the intestinal passage.

When called upon to detect the presence of Corrosive Sublimate in a case of alledged poisoning, the steps we are to take are precisely those detailed under the former head. The only variation will arise from the difference of chemical affinities on the part of this particular substance, and the consequent necessity of selecting the appropriate tests. 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 and rubbed upon a clean plate of copper, 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

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* Journal general de Medecine Juillet, 1822. An Essay, in which the remedy was announced had been published prior to this.

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 substance 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 very general 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 to which a balloon is adapted. 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 urgency 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 at 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 described. Due 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.

In a paper on Corrosive Sublimate, and some other substances, by Orfila *, he puts the case of a person having swallowed a few grains of Calomel just before his death. Mercury will be found in the intestinal canal of course, and the knowledge that the oxymuriate changes, by the action of substances there, into the minor degree of oxidation, together with the probably-increased vascularity, may embarrass. What is to be done? He states that in such cases the Calomel will be found generally in the form of a white powder, which may be scraped off, because it does not combine with the tissues: it is insoluble in water; and when in contact with lime-water at the ordinary temperature, acquires a black colour. If it be mixed with the other substances

* Nouveau Journal, &c. Feb. 1821.

contained in the intestines, diffuse them in water, and the weight of the Calomel will carry it to the bottom of the vessel. On the other hand, the Calomel which is formed by the action of vegetable or animal substances on Corrosive Sublimate, is never found in the form of powder in the digestive canal, being intimately combined with these substances, so that lime-water will produce no change of colour.

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 cases; 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 to justiciary 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.

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. Its colour, insolubility in water, and other peculiarities, seem to guard us sufficiently against mistake, and would render concealment very difficult.

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, but they require no separate consideration: the preceding remarks, if applied under those variations that every practitioner's knowledge of chemistry will explain, are applicable to all preparations of Mercury, when they come under observation as poisons.

It has been matter of investigation, and I apprehend 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

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* Accum on Culinary Poisons. The story is curious.

† Elements of Forensic Medicine.

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 still not perfectly so *.

C. Copper and its combinations.

The properties of Copper 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, 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 preserve ourselves safe.

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, that 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

* See Appendix XVI.

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.

The Verdigris of Commerce consists of masses of minute crystals of a bluish green colour, silvery, and of a silk-like appearance, and is composed of the acetate and sub-acetate 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 the metal.

I am not prepared with an instance in which Verdigris has been *given* for the purpose of taking away life: cases have occurred where it has been voluntarily taken for that purpose; and 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

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* Appendix XVII.

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.

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* 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.

Sub-carbonate of potass precipitates the Verdigris 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 Hydrosulphurets*. 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.

It appears from experiments made by M. Duval, and confirmed by Orfila, that sugar is the most effectual remedy in cases where Verdigris has been swallowed. "The first care of the physician," says the latter, "called in to persons recently poisoned by Verdigris, should be to make them take a great quantity of solid sugar, and to administer to them plenty of sugared water†." All means should be employed also to excite vomiting.

On the application of the foregoing details to the

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* 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.

† Toxocol. I. p. 240, where numerous instances are given of the effects of sugar in counteracting this poison.

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 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.

D. Silver and its combinations.

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 effects, and which hard substances in articles of food would also occasion—such as bones.

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, and 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 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 patient was saved by drinking abundantly of milk.

The Nitrate of Silver has become an article of the Materia Medica, for internal employment. In an Italian publication, it is recommended in cases of Epilepsy. It is to be well triturated with the vegetable extract, by which process it is stated that the oxide, and not the salt is administered, and therefore that the poisonous properties of the salt do not come in question. As an argument for using the nitrate in place of the oxide it is stated, that a combination is *probably* formed between the extract and the oxide *.

In the cases in which it is administered, the patient must be kept from exposure to the rays of the sun, in order to avoid that discoloration of the skin which is liable to be produced by the absorption of the oxide, which Dr. Paris explains by supposing that it is deposited in the rete mucosum.

Muriate of Soda forms with the Nitrate of Silver an insoluble and harmless salt, and is the proper remedy if it can be administered promptly.

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.

E. Antimony and its combinations.

There are certain preparations of this metal, which, though in common use for medical purposes,

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* Giornale di Fisica. See Lond. Med. Repos. Nov. 1821. In the number for January 1822, this salt is recommended in Chorea as preferable to Arsenic.

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.

They 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.

It seems that Tartar Emetic is capable of inducing much mischief in circumstances of the system, in which it is likely to be resorted to, but where vomiting cannot be produced.

Infusion or Decoction of Cinchona Bark, (the yellow being preferable,) decomposes the Tartar Emetic, though the speedy evacuation of the deleterious substance from the stomach is the most desirable object. Under this idea, warm water copiously administered, has been recommended in preference to any other practice, with the view of diluting. Perhaps, however, filling the stomach with the decoction above mentioned, while warm, would answer both indications. The infusion of galls acts on the salt in the same manner.

A case is given in the Edinburgh Medical and Surgical Journal*, of a physician who swallowed by mistake, for Tartaric Acid, from twenty to twenty-five grains of Tartar Emetic, mixed with a solution

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* No. LXXVI.

of super-carbonate of Soda. In a few minutes he felt a warm sensation in the epigastric region, followed by acute head-ache. He was ordered to drink profusely of luke-warm milk. This was followed up by a solution of sulphuret of potass, which produced copious vomiting, but it was some time before the severity of the symptoms ceased to augment. He recovered in a few hours, and next day his mouth was sore, and his gums presented the appearance of scorbutic sponginess, discharging blood.

Tartrite of Antimony, when retained in solution, may be detected by the addition of the Hydro-sulphurets, which produce a *brownish-red* precipitate.

Tincture of Galls affords a precipitate of a *yellowish white* colour. 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.

F. 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 auxiliary 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.

In Dr. Ballard's edition of Metzger, there is an account of 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.

A few cases are given by Orfila, in which this article had been inadvertently swallowed, but which did well. He considers its corrosive powers to be confined; and directs our attention to the emetic action of this salt, with a view to encourage vomiting. In one of the cases, however, it appears that Carbonate of Lime, in the form of prepared crab's eyes, produced a decomposition of the salt in the stomach.

There are still some combinations of the foregoing metals which are poisonous, but the mode of proceeding with regard to them, either does not differ materially from those laid down; or the same principle will apply to them. There are also a few other metals, of which there are salts that appear to partake of the corrosive character as poisons; and which may yet present themselves to notice as such, amid the variety of the incidents of life. To give even the list of every substance that might, under a rare or improbable concurrence of circumstances, act in a deleterious manner, would be going out of

the way; and I shall but mention a very few which we may come to have opportunities of considering in this light.

TIN affords a salt, *viz.* the *muriate*, which, if taken into the stomach, produces lesions, according to Orfila, greatly resembling those caused by Corrosive Sublimate. He gives a case in which this substance was taken by mistake for common salt; and though the consequences were not fatal, yet the symptoms resembled what would probably be the result of swallowing a small quantity of arsenic, with the exception of vomiting.

"The physician," says this author, "called to the assistance of persons poisoned by this salt, will have immediate recourse to milk in very great quantity; in case of a deficiency of this article, he will inundate the patient with broth, warm water, or sweet and mucilaginous decoctions *."

He likewise directs that a small quantity of the suspected substance should be dissolved in distilled water, and tried in the following ways. Heated in the open air, the solution, of the proto-muriate, hitherto transparent and colourless, becomes turbid. If sulphureous acid be mixed with it, sulphur is precipitated, &c. A few drops of the solution of the proto-muriate of tin will curdle a large quantity of milk †. The solid substances suspected to contain this salt should be mixed with charcoal, and tried by heat in a crucible, which, in order to prevent the volatilization of the salt, should be covered with two or three pieces of charcoal. In the course of five-and-twenty minutes, metallic tin and muriate

* Toxicology, Vol. I. pp. 258. 263.

† Ibid. p. 251.

of potass will be obtained, which may be separated by water *.

Gold, in combination with muriatic acid, has been discovered by Orfila to have poisonous properties. For this discovery we might perhaps hold ourselves little indebted, were it merely adding a hitherto unknown poison to the already redundant catalogue. There seems, however, reason to believe that the experiments of its action on the animal economy have discovered virtues analogous to those of mercurials properly employed †.

Allusions are also made to the poisonous effects of fulminating gold.

Certain salts of Bismuth are possessed of deleterious powers, and Orfila accuses the bakers of England of employing them to render their bread heavier and whiter.

Iron claims a short notice. Since the former edition of this work appeared, a charge of poisoning by the *sulphate* of this metal has been entertained before a court of judicature in England. A man was tried for administering copperas to several people in tea. The substance in question was found in the house; but as the counsel for the prisoner objected *in limine* that copperas was not, as laid in the indictment, *a deadly poison*, no steps seem to have been taken to ascertain whether it had been actually swallowed. The evidence of professional men went to establish that the stomach would not retain a sufficient quantity of the sul-

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* Toxicology, Vol. I. p. 260.

† Annals of Philosophy, July, 1820; Lond. Med. and Phys. Journal, March, 1822; and Journ. Universel, June and Aug. 1822, afford some particulars worthy of consultation.

phate of iron, or copperas, to prove directly poisonous *.

G. 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 constitutes a real peculiarity.

Dr. Percival notices the case of a gentleman, who was in the habit of masticating lead many hours daily, to promote the secretion of saliva, which it was his object to swallow †. But although metallic lead be not itself deleterious, it may prove so through the action of substances in the intestinal canal.

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;

* Consult Appendix XVIII. for a further account of some facts connected with this case.

† Memoirs of the Literary and Philosophical Society of Manchester, Vol. II.

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 full knowledge of which few only can attain *.

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 in general produced have a particular character, with which we are tolerably acquainted, while the facility of exposure to this inconvenience is now pretty well understood, we might, in many cases, be baffled in our search after the poison.

Lead is very readily oxidized, and is by mere exposure to the air, converted into a powder of a dull grey colour consisting of 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 way during the process of oxygenation, is *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 the metal exerts its pernicious influence on the living system. A carbonate of Lead is formed by the absorption of carbonic acid gas from the atmosphere, and an oxide

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* Consult Beckman's History of Inventions on this subject.

is readily produced by water, where it unites with the carbonic acid of the air.

The salt of Lead, however, which more particularly claims our attention, is that formed by combination with acetic acid. 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 Lead is extensively 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 that 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*, so called from the ancient province of *Poictou*, in France, in which it was frequently endemic.

The use of leaden implements in making cyder in the county of Devon, gave rise to the prevalence of a disease of this nature, termed the *Devonshire colic*; it is called the *dry belly-ache* in the West Indies, where new rum, being impregnated with Lead, is the cause of it; and it has, from a class of its victims, been termed the *Painter's colic* *.

The usual course of the saturnine colic is marked by the following symptoms. Vague pains in the abdomen, accompanied with costiveness; frequent vomitings; paleness; emaciation; uneasiness about

* See Appendix XIX.

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

In a note to Fourcroy's translation of Rammazzini

* Med. Legale, Vol. IV. § 921.

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 appearance has been traced along the intestinal canal.

Dr. Paris hints that the acetate of ammonia may act chemically upon this salt, and, by decomposing it, probably afford an antidote *. He likewise remarks that gallic acid and tannin unite with Lead in solution, forming a perfectly insoluble substance; whence all liquors that have been kept in oak casks, for a certain time, must be freed from Lead †.

I shall now enumerate the efficient tests for the detection of those preparations of Lead with which

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* Pharmacologia, Plumbi superacetas.

† Medical Jurisprudence, Vol. II. p. 342.

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, 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.

The Carbonate of Lead partakes of the deleterious properties above-mentioned; and various trades, in which the artisan is under the necessity of handling lead in a state of oxidation, are noxious. This salt is easily formed by the application of Acetic Acid to Metallic lead; the acid being deprived of its oxygen, and the lead acquiring the Carbonic Acid from the atmosphere. Carbonate of lead is readily formed by spilling wine in cellarets lined with the metal. Attention should be paid to such circumstances, as accidents of a serious nature may arise.

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 paid to peculiar tests and their specific results) are still applicable here; and the great proof will be the production of the metal by calcination.

H. Concentrated Acids.

Some of these are corrosive poisons of the most active kind; and, in whatever way we meddle with them, 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 distinguished 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 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 if 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 detected, are so well known, and so easily obtained, that they require no particular description here. If called to a case, the deleterious substance, when heated with Metallic Mercury, will disengage sulphurous Acid Gas, known by its brimstone smell. Carbonate of Lime being applied to another portion, until saturated, and effervescence ceases, Sulphate of Lime will be formed; a portion of which being dissolved in boiling distilled water, then filtered, and tried with Muriate of Baryta, Sulphate of Baryta will be formed, insoluble in water and in 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.

The most remarkable affinities of this substance are so familiar, that the remedies suggest themselves at once. Magnesia, chalk, soap, or even simple dilution, in the absence of any of the other articles, must be *promptly* administered. It should be kept in mind that chalk, from the evolution of Carbonic Acid that must take place, is a less convenient medium of neutralization than calcined magnesia, which should be preferred where it can be obtained. But there is no time for delay: a few seconds may carry the case beyond the power of antidotes; and, at all events, will so far alter its complexion, as to demand a line of practice, which it is not consistent with the present view of the subject to recapitulate.

There is a curious case of death from swallowing a quantity of this substance, (copied from a foreign journal,) in the London Medical Repository for August 1820. The sufferer lived two months after the accident.

It is proper to mention that inhuman mothers have poisoned their offspring, not unfrequently, by administering this energetic solvent of the animal fibre, though, of most methods that might be resorted to with the same diabolical intent, it is one of the last that could be concealed. On the trial of Frances Clarke, at Exeter, last year, for thus destroying her infant of three weeks, one of the witnesses stated, that when a young woman she had used Oil of Vitriol for the tooth-ache, and (as might be supposed) it burnt all the teeth out of her head.

The child lived twenty-two hours; and, on the trial the two medical witnesses who were examined differed much as to the *ratio moriendi*.

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 *; and since the publication of the former edition of this work, we have had a case of poisoning by it in London.

A female in the Borough of Southwark, who earned her bread by manufacturing fancy baskets, used to colour the wicker, occasionally, by a solution of indigo in Oil of Vitriol. A young child accidentally drank about a tea-spoonful of this mixture. The mouth and lips were instantly and shockingly corroded; and though remedies were administered, the sufferer died next night in convulsions †.

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 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

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* Toxicology, article *Sulph. Acid.*

† Public Prints, July 1822.

equally caustic and corrosive, rapidly destroying organized matter—forming a solution, however, of a *yellow* colour, which tinge it communicates to the skin and other parts of the body, 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 acute pain, disengagement of gas, and abundant eructations, retchings, and 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. Then supervene tumefaction of the abdomen, with tension and pain on the slightest touch; a sensation of cold on the surface, while the limbs sometimes are actually of an icy coldness. The pulse is small, hard, frequent, and 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 the mind in a determined suicide) or of the high degree of internal disorganization, which gives an illusory appearance of remis-

* 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.

sion 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 com-

mencement 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 *Baryta* 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

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* Toxicology, Vol. I. page 352.

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 concentrated alcohol, (a menstruum that easily dissolves the *acetate* of potass and some 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.

Antidotes: Magnesia, or soap suspended in water—in fact, the principle and the practice are the same as in sulphuric acid.

Our duty as to Forensic purposes, 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—almost exclusively if we can obtain no remains of what was swallowed; we should likewise 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 com-

bined with albumen, or other animal matter, we may not perhaps find the acid in the portion strained. We must then look for it among 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, by 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.

I. Alkalis, and Alkaline Earths.

Three substances have been long known in chemistry by the first 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; in commerce and the ordinary œconomy of life, it 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 maintains the pure state with difficulty; 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 form of potass, known under the terms *Potassa fusa* and *Kali purum*, is a substance whose caustic qualities, resemble those of the nitrate of silver.

In the London Medical Repository for 1820*, a case is cursorily noticed, in which two ounces of "a highly concentrated solution of caustic potass," were taken by mistake for gin. The symptoms were violent and the danger great; active evacuants and copious dilution, with acetic acid and water, are reported to have saved the patient.

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* Vol. XVI. page 508.

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, favoured 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 *Baryta*.

LIME, as it appears from experiments made upon animals, would, if introduced into the stomach, occasion death, *via* inflammation, but not acting so rapidly, or producing such extensive mischief as the Corrosive poisons. In combination with Carbonic Acid it is not to be ranked among poisons.

Baryta is an earthy substance, possessing certain

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* Orfila I. 378.

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 cases 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.

K. 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 carried off by an ounce and a half of this substance, even where proper remedies were administered.

I remember an instance of a medical officer, in a large military hospital, discovering that he had given to each of three patients a handfull, or a quantity unweighed, of well crystallized Nitre, by mistake for Glauber's Salt. Ten minutes had elapsed before he found out his error, and some further delay took place ere the persons could be found, the establish-

ment being very extensive. Two of them were discovered with the nitre yet unused, the third had swallowed the whole of his quantity, but had not experienced any particular effects. Thirty grains of sulphate of zinc produced an immediate and copious evacuation of the stomach, and no subsequent inconvenience took place. In another case to which I was summoned, two ounces of nitre were taken, and an hour at least elapsed before I could get to the place. I found that vomiting had come on spontaneously, which had been kept up; so that the salt was rejected in all probability soon after it had been taken. Here also there was no further inconvenience.

Nitre 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, and as to the treatment, vomiting first, and dilution with bland or mucilaginous liquids, compose its chief features *.

Phosporus 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

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* Consult Orfila, Vol. II. p. 84.

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

(especially the first) been famous in writings on 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.

§ ii. *Vegetable Poisons.*

The vegetable department 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 of taking it, aware of what they were about.

Their 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 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 veget-

ables, 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 must in all probability continue to occur, that will prevent the most accurate and experienced investigator from coming to a decisive conclusion.

There have been some late discoveries in the chemical history of vegetables, that enable us to approach much nearer the desideratum in view than till very recently could be the case. The active poisonous power of some plants has been found to exist in a certain principle, known to and recognizable by the analyser; educible by a certain process, and capable of entering into certain combinations, by which the plant has risen into a degree of importance unknown before. Thus the active principle of opium is found to reside in an alkaline body termed Morphia, which may be obtained and combined with various acids. A corresponding discovery has been made respecting some other plants, of which notice will be taken in the proper place. These should be matter of study on the part of the medical practitioner. In the mean time, whatever may be said as to difficulty, or want of experience, as regards *them*, he must indispensably 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 Pharma-

copolist, 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 form, 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 ordinary 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 enterprise? 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 economy 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 detailing the poisons of this kingdom, I do not propose even to *enumerate* all the articles that are known to act as such. 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; and shall subdivide them with reference to the toxicological arrangement I have been led to prefer, taking up the individual articles in the order of the six classes, to which the poisons of the mineral kingdom have been referred.

There are no *plants* that may be ranked among corrosive poisons; but we have an article derived from the vegetable kingdom which acts in that man-

ner; for which reason I shall place it at the head of the poisons belonging to this department.

A. Oxalic Acid,

So called from a plant that contains it in large proportion, the *oxalis acetosella*, the common wood sorrel; an agreeable herb, in the hands of the French, who (in the northern part of that kingdom at least,) are in the habit of gathering large quantities, and of preparing it, by a culinary process, for use, in the formation of a soup, during the winter season. If we may so term it, they digest it into a sort of portable soup-maigre, a small portion of which creates a pleasant dish when vegetables are scarce.

Since the introduction of this salt into common use, (solely, I believe, for the purpose of cleaning leather,) the cases of fatal mistake between it and sulphate of magnesia, have been appallingly numerous, and so much has the public confidence been shaken with regard to dispensers of drugs, that many people will not venture to employ the saline purgative just mentioned.

Oxalic Acid, in common language, is called Acid of Sugar. It is kept in the form of small white crystals; and has been mistaken 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 discovered that the coats of the stomach are acted on by it, in the same way as by other substances that corrode that organ.

In the Edinburgh Medical and Surgical Journal, for April, 1823, there is an interesting account of a series of experiments instituted by Dr. Christison, Professor of Medical Jurisprudence in that University, and Dr. Coindet; from which they infer, that Oxalic Acid will act on the stomach as a corrosive, dissolving the gelatine of the coats of that viscus, when concentrated, and in sufficient quantity: and that death takes place by sympathetic injury of the nervous system. When diluted, it acts on distant organs by absorption: and in this state, more rapidly than when concentrated. They consider it a direct sedative, acting through absorption, primarily on the spine and brain, and secondarily on the heart and lungs; the *ratio moriendi* being sometimes paralysis of the heart, sometimes asphyxia, and sometimes both.

As antidotes, alkalies are objected to, on account of their own causticity, and from the corrosive power of alkaline oxalates themselves. The good effects from chalk and magnesia are ascribed to the insolubility of the oxalates of these earths. Magnesia is considered preferable to the carbonate of lime, for the reason mentioned in another part of this work *. The employment of stimulants is recommended.

Further experiments, illustrative of the conclu-

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* Page 140.

sions, are given in the continuation of the paper, in the next number of the same Journal.

Some cases are recorded in various professional Journals; and many reports of death, by mistaking this substance, have appeared recently in the public prints. This has led to a variety of proposals, with regard to the safety of the public, in respect to this particular article; and as it seems to be one that is peculiarly liable to become the deadly sport of ignorance or inattention, I shall make no apology for recapitulating some of these, although that view of the subject belongs more strictly to Medical Police.

In the first place, it has been proposed to expel the article altogether from the shop of the druggist. This would be effectual enough; for I believe that in every instance of poisoning on record in this kingdom, by Oxalic Acid, it has happened through some accident arising in a place of this sort. There was one case of a fatal and very distressing nature where the poison was found in clearing out a shop, and given to the unhappy victim as a dose of salts*! But the love of gain will make this difficult. It has been rather flippantly argued, that the admirers of delicate boot-tops should not be deprived of their gratification. I believe, the fact to be, that the comparative use of these articles was vastly greater when such a method of beautifying them was yet unknown.

2dly. It has been long matter of instruction to apothecaries, that in dispensing articles of a deleterious nature, the word "Poison," should be written on the envelope containing such substance. But, if I am not greatly misled by memory, in a shop of

* Lond. Med. Repos. January, 1819.

respectability in the heart of the city of London, two packets of oxalic acid were last year sold with this precaution, and taken, with fatal effects, in one day. I grant that this may be termed an extraordinary case, but I must insist that extraordinary censure ought to have attached to it. The fact was, that an incompetent person was left in the shop, and chose to sell, he knew not what, and that the purchaser or purchasers, being either careless or ignorant did not read or attend to the caution conveyed by the word on the wrapper.

3dly, It has been suggested that this salt might be coloured, in such a way as to distinguish it perfectly from any substance, for which it might be mistaken. For this purpose *Rose Pink* has been proposed * in the proportion of five per cent. to the salt. The same method, under a variation as to colour necessary for discrimination, has been submitted as a safeguard against Arsenic, but, although it may be true that oxalic acid has in every case of mistake been substituted for Epsom salt; and therefore with regard to the particular blunder a guarantee might be found in the method, yet there are other white powders of active powers, some of which are sold in quantity corresponding considerably with the ordinary amount of sulphate of magnesia †.

4thly, To guard the public from mistake, it has been further matter of enquiry as to the readiest method of identifying Epsom Salt, and Oxalic Acid before making use of what is obtained as the former

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* "Rose Pink. Whiting coloured with a decoction of Brazil wood and alum." Gray. Supplement, &c.

† Appendix XX.

of these substances. One person proposes to taste it before swallowing any quantity of the solution. But many people take salts that could not discriminate in this manner: to some the mere taste of the salt would be an insuperable obstacle to deriving any benefit from it, for the only chance they have of getting it down is by a bold effort of deglutition, by which it is passed rapidly over the palate. Dipping a piece of blue or litmus paper into the liquor has also been recommended, the acid changing its colour, and the neutral salt not. A writer in one of the newspapers states, that in making this experiment, he found that a silver spoon, employed to stir the solution, and then wiped dry, will have a strong nauseous, suffocating smell, after being in the acid, which it will not have from the Sulphate of Magnesia *.

The editor of the Quarterly Journal of Foreign Medicine, has proposed another precautionary test, viz. dropping a crystal of the saline body into a little black writing ink—the acid will change the colour to a reddish brown, and the Epsom salt will not produce any alteration †.

This leads me to take notice of the manner of detecting oxalic acid, in cases of poisoning by that substance. I shall here refer again to the paper of Drs. Christison and Coindet, as the most recent and precise information we have upon this subject. The fluid to be examined (the previous steps of the process of preparing it, as well as the parts that have been acted on, being the same as those described

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* Courier, Sept. 1822.

† See the Number for January 1823.

when treating of Arsenic) the hydrochlorate [Muriate] of lime will, on being added to a solution containing this acid, or an oxalate, throw down an insoluble oxalate of lime. "But it also precipitates," say these authors, "with the carbonates, sulphates, phosphates, tartrates, citrates, and with all their acids, but the carbonic. The following mode of procedure will serve to distinguish it from these substances. The nitric acid will not take up the sulphate of lime; but a few drops of it dissolves the oxalate. The hydrochloric acid will not dissolve the oxalate, unless added in very large quantity, while two or three drops will take up the carbonate, phosphate, tartrate, or citrate."

Sulphate of copper precipitates this acid of a bluish white, and the oxalates pale blue. This test does not affect fluids containing sulphuric, hydrochloric, nitric, tartaric, citric acids, or their ordinary salts. It precipitates the carbonates, and also phosphoric acid; but the oxalate is insoluble in hydrochloric acid, while a few drops of that acid will take up the phosphate or carbonate.

Nitrate of silver, applied in the same manner, produces a heavy white precipitate, which, when dried and heated over a candle, becomes brown on the edge, and fulminates suddenly, but faintly. From a quarter of a grain of oxalic acid, dissolved in 4000 parts of water, these gentlemen procured enough of the powder to shew its fulmination twice. This test should always be resorted to, after precipitation, as conclusive. The citrate and tartrate of silver, however, may be confounded with the oxalate; but they froth up on applying the heat, and leave a fibrous ash-coloured residue, whereas the other is all dispersed in white fumes.

Where magnesia or chalk has been given during the life-time of the person poisoned, the oxalate of either may be found among the contents of the stomach in powder. This powder must be separated by elutriation *, and, in the case of magnesia, is to be boiled for a few minutes in a small quantity of distilled water, filtered and submitted to the tests now described. In the case of chalk, half its weight of pure sub-carbonate of potass, and twenty or thirty parts of water are to be boiled with it for fifteen minutes. "A mutual interchange then takes place, and the solution contains oxalate and carbonate of potass. In applying the tests to this solution, the free alkali is to be previously neutralized with hydrochloric acid, when hydrochlorate of lime, or sulphate of copper is to be used, and with nitric acid before using the nitrate of silver. In the last case there ought to be as little excess of acid as possible, because the oxalate of silver is soluble in nitric acid."

Gelatin, though it does not impede the action of the two first tests, if present in large proportion, suspends that of nitrate of silver. Where this is found to be the case, either from this or any other cause, the oxalic acid may be thrown down with the muriate of lime, and the insoluble oxalate boiled with carbonate of potass. This process is further recommended where the suspected fluid is much coloured, for chlorine cannot be applied to it before using nitrate of silver, as it precipitates readily with that salt.

The profession is much indebted to these gentle-

* A chemical term which means washing, or exhausting with water, and allowing the heavy substances in suspension, to subside.

men for their scientific labours, the result of which is well worthy the perusal of every practitioner.

B. Acrid Vegetable Poisons.

These are also termed Rubefacient. The poisonous effects of most of the articles of this class, which I shall have occasion to mention, belonging to the list of *Medicamenta*, 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 deduce the means of detection.

The first I shall mention is HELLEBORE. Three plants, known under this name, have been employed in medical practice. The first, or *White Hellebore*, the VERATRUM ALBUM of botanists, the second the *black*, or HELLEBORUS NIGER, and the third, or *Stinking Hellebore*, HELLEBORUS FŒTIDUS. They have all been productive of mischief.

The *White Hellebore* is said to be the Hellebore of the ancients, and 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 have not been many. The experiments detailed by Professor Orfila, as made upon animals, shew how the human economy 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 powers of these —a knowledge that every medical practitioner acquires so fully elsewhere, that to enter upon particular description is quite superfluous.

Colocynth. Cucumis Colocynthis, Coloquintida, or *Bitter Apple*. This is an exotic plant, the *extract* of which is a well-known article of the Materia Medica: more rarely we meet with the *powder*. It is a drastic purgative, the extract possessing a strong disagreeable odour, readily recognized when once known—a nauseous and repugnant

* Consult the observations hereafter on suicide by poisoning.

taste. It is resorted to by the lower orders to produce abortion, and in this way, occasionally proves fatal. Its deleterious action is referable to violent stimulus of the alimentary canal, inducing inflammation and its consequences. 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, must render cases of its use for the direct purpose of destroying life, comparatively rare.

Gamboge, or *Camboge*, the gum-resin obtained from the Stalagmitis Cambogioides in the east, 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 of ascertaining the precise mode of its deleterious action on the living economy, 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 the little reliance that 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 this respect 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 coming under our observation in that character.

COLCHICUM AUTUMNALE, *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 there is great temptation to meddle with, as it procures relief from present suffering. 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 greater 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.

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.

In January, 1821, an inquest was held at Frodsham, Cheshire, on the body of a female who died from eating the root of Aconite. A large family party had met at the house of the deceased to dine, on Christmas day. As they were sitting down, something was said about horse-radish, when the deceased desired the servant to get some from the garden, at the same time directing him where to find it. The taste and colour of the supposed horse-radish, were the subject of remark by several who partook of it. Some time after the party had left the table, the deceased complained of being unwell, and of the loss of the use of her limbs. Sickness and vomiting ensued; agitation, cold sweats, an approach to syncope, &c. A surgeon being sent for, an emetic was ordered, and he left her. In a short

* Annual Register for 1814.

time, he was again sent for, and found her in strong convulsions—but these ceasing for a time, the emetic was then given. She became worse, and means were resorted to, to re-excite the circulation, but in vain. She died about six the next morning. The brother-in-law to the deceased was also taken ill, but recovered. The servants declared they had never seen horse-radish, and did not know what it was.

ŒNANTHE CROCATA, the *Hemlock Dropwort*, is a poisonous plant assigned to this class. The ingestion of the root into the stomach is followed by heat in the throat, insensibility, convulsions, and in some cases trismus. Death takes place in three or four hours.

Besides the cases quoted by Orfila, and which are numerous enough to erect this article into a poison of importance, I may refer to one recorded by Dr. Houlston*, of several boys who ate of the roots by mistake for earth-nuts. At the end of several hours, and after violent convulsions, he who had partaken most plentifully of them died.

Some cases have been recently reported to the Society of Medicine of Paris †; and it appears that from this species of *œnanthe* resembling others very closely that are innocent, persons have frequently been led into mistakes, gathering the *crocata*, and cooking it with their food. I question the accuracy of arranging it among the acrid poisons, for there appears to be evidence of its having a narcotic effect; and in dissections, the stomach has been found without any traces of inflammation. From

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* Observations on Poisons, &c. 1787.

† They are quoted in the London Medical Repository, for May, 1823.

the experiments of Mr. Brodie on vegetable poisons, several of these appear to act on the brain *.

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 Ranunculus.

SCILLA MARITIMA, or *Squill*. 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.

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.

MOMORDICA ELATERIUM, or the *Wild Cucumber*,

* Philosophical Transactions, 1811.

furnishes to the pharmacopolist, an extract, which by mistake or mismanagement, may attract notice as a poison. It is a drastic purgative. Dr. Clutterbuck has taken some pains to investigate the properties of this plant, and has favoured us with the results *.

Euphorbium. There are many plants of this very acrid genus, some of which are to be found in our gardens.

Juniper Sabina, *Savine* often resorted to for nefarious purposes in illegitimate pregnancy. Rhus Toxicodendron, or the *Poison Oak;* the R. Radicans, said to be a variety of the former: Jatropha Curcas, or the *Barbadoes Nut:* Convolvulus Scammonium: Arum Dracunculus, *Dragon's Root:* Croton Tiglium: Bryonia Alba, *White Bryony:* Anemone: Daphne, in all its varieties: Delphinium, Staphisagria, or *Stavesacre:* Sedum Acre, the *Wall Pepper* or *Stone Crop:* are all ranged under the same class of substances, manifesting acrid or rubefacient properties.

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 such manner as 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.

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* Lond. Med. Repository, July 1819.

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.

There are no *antidotes* to any of the foregoing articles. Evacuation, dilution, and attention to symptoms must be judiciously employed, and varied according to circumstances.

C. Narcotic Poisons.

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 *White Poppy;* obtained from 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 blackish tinge; its smell is strongly virulent and nauseous; 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, sufficiently so, at least, to enable a person, whose organs of tasting and smelling are ordinarily perfect, to recognise the presence of Opium, even when mixed with other matters.

The greater part of the Opium imported into this country comes from the Levant, where it is extensively cultivated; and to the follower of Mahomet, who is interdicted the use of wine, it supplies the means of intoxication. It is frequently adulterated, by cow dung, or the juice obtained from the plant by boiling the stalks, leaves, &c. and inspissating the decoction.

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 dose. 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

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* 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. Gardelle, who was executed in 1761, for the murder of Mrs. King, is recorded to have taken forty grains without effect, under the strong state of remorse that ensued.

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 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 evi-

dence that he 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 volume 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 Tincture of Cardamon that had been thrown in during unavailing attempts to preserve life. The *general* redness of the mucuous membrane was produced by effusions of blood into the cellular tissue †.

For the detection of Opium, I can add little to what has been said generally on obtaining remains of poisonous ingesta, observing symptoms, examining the matter vomited, &c. or where none of these aids are available, by learning, if possible, the history of the case. In fatal instances, we must dissect cautiously, and attentively examine the stomach and intestines, as well as their contents. It has been

* Journal de Medecine, 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.

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.

Late discoveries in the chemical composition of Opium have much improved its character as an article of the Materia Medica. Its soporific powers have been traced to an alkaline substance, that has received the name of *Morphia*, which may be obtained pure, in a state of crystallization, soluble in acids, and some other bodies, in which state it acts on the living system, producing the soothing effects of Opium, unattended by the inconveniences of the gross drug: it exists also in combination with *Meconic Acid*, another substance, of late discovery, entering into the composition of Opium. A third body belongs to Opium, termed *Narcotine*, upon which its *exciting* action has been supposed to depend.

Morphia, or as some term it, *Morphine*, is less efficacious in its uncombined state than when united with acids: its salts are more soluble; nor do we find it in Opium in a free state; for it is there united with *Meconic acid*, the third substance lately detected as a constituent principle of this drug. The acetate of Morphine, is an article of the *Materia Toxica*, which derives great celebrity from its connexion with a celebrated Parisian culprit, *Dr. Castaign* to wit; who, in the year 1823, paid the forfeit of his life to public justice on a double charge of criminality, for having forged the will, and taken the life of his friend by means of this poison *.

* I would gladly have introduced an outline of this instructive and important case, had the charges been less blended; and had it been practicable to direct the reader's attention to the medical bearings, without distracting it, by interposing the question of *forgery*. Such an outline I have prepared from the voluminous reports of the

On the treatment of those who have swallowed this drug, in quantity sufficient to take away life, there is rather more to be said of late than was formerly the case. The rule was to evacuate the stomach as speedily as possible by some of the most active emetics; then to administer acids, as vinegar and water, lemon-juice, &c. cordials or stimulants, and to keep the patient in a constant state of agitation, when comatose. A case is recorded in the first volume of the Transactions of the Medical and Chirurgical Society, where two ounces of laudanum were taken, and several hours elapsed before any remedies were administered. Vomiting and stimulants were successfully employed.

Much commendation has of late been bestowed on blood-letting; and several instances have been brought forward as evidence in favour of the practice. The following allusion to a few of them may direct the attention of the reader more particularly to this important subject.

In the case of a soldier who died in six hours and a half after swallowing two drachms of crude Opium, the sinuses of the brain were found loaded with black fluid blood, the dura mater partly injected, and the cerebral arteries containing black blood: the capillaries yielded drops of the same; and other parts of the cerebral system exhibited similar appearances. The heart was filled with black fluid blood—the lungs were loaded with it. The stomach had red brown patches at the fundus; and there were

trial; but it would exceed all reasonable bounds. Perhaps the reader may derive some entertainment and even something more solid from perusing the references to this trial in my *Analysis of Medical Evidence*, page 368, to the end. Since the publication of that work I have revisited Paris, and from good authority learnt that the unhappy culprit admitted the justice of his sentence, when on the way to the scaffold.

black parallel lines at the cardia, covered with a thin layer of whitish granulated concrete matter. About two pints of offensive yellowish brown fluid, of an oily appearance, without a fragment of Opium, were contained in the stomach. The intestinal mucous membrane was minutely injected, there were red brown patches in the rectum—the liver and spleen were gorged with blood, the omentum thin and rose-coloured. The reporter of this case, concluding that the cerebral affection in poisoning by Opium, is a principal phenomenon, though not the primary, is led to speak favourably of large blood-letting, and to say that, after the developement of the affection of the brain, vomiting will but serve to aggravate the congestion *.

Blood-letting has been resorted to with immediate relief, and subsequent restoration, in the comatose state, into which the patient had relapsed after partial recovery by vomiting and agitation; and in a case where vomiting could not be excited, after an ounce of laudanum was swallowed, though tried in little more than half an hour after the act had been committed, similar benefit was immediately derived from opening a vein †.

Subsequent to blood-letting, the cold affusion has been introduced. Three cases are given by Mr. Wray, and one by the Editor, in a number of the London Medical Repository ‡, in which this agent produced the greatest benefit. In all these relief

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* Journal General des Sciences Medicales. Sept. 1820.

† Cases reported by Mr. Richardson, Edinburgh Med. and Surg. Journal, April, 1821. In the number for May, 1823, of that Journal, a case is recorded in which the same treatment was successfully employed after two ounces of laudanum had been swallowed some hours—though in the meantime vomiting had been excited.

‡ July, 1822.

was obtained without the aid of the lancet, though in two of them it was employed on the day following, on account of very different symptoms.

The pathology of both these remedies—bleeding, and cold affusion, is fair, and scientific.

Mr. Sprague, to whose professional zeal and accuracy I have great pleasure in bearing unqualified testimony, in the subsequent number of the same Journal has inserted a valuable paper on the remedial treatment of Opium, which I regret that neither the limits nor plan of this work will allow me to analyse. In conclusion I have to remind the reader of the mechanical process for emptying the stomach, which has been used with perfect success in instances where laudanum had been swallowed—some of them by practitioners for the sake of experiment performed upon themselves *.

The attention of the professional and literary world has lately been attracted to an entertaining, and, if veracious, highly important work, on the subject of Opium. At all events it has been considered as conveying a true picture of the joys and miseries of indulging in this drug. I need hardly say that I allude to "the Confessions of an English Opium Eater." I should add, that it has been noticed at some length in the third volume of the Medico-Chirurgical Review. It does not however throw any light upon the Forensic consideration of Opium †.

A very singular case was tried in August, 1822, which arose out of poisoning by laudanum. R. Peat put this substance into the water in which some lamb was cooking; and of which a man and his wife par-

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* Mr. Jukes, Lond. Medical Repository, October, 1822.

† Unless the enormous quantities which this person brought himself to *require* rather than bear, may have a reference of this nature: but the results of habit are no authority for exculpatory opinions.

took, as well as of the broth, after which they sickened and vomited, and the man died the same night, at 12 o'clock. Several of the neighbours who tasted of the lamb sickened also. No medical assistance was sent for. The only test that seems to have been employed (for the prisoner was not charged with the murder till four weeks after the interment of the body) was the precarious one of a medical man giving *laudanum* to all who had tasted of the lamb, and they all declared it had the same taste, in consequence of which he was of opinion that the deceased had died of the laudanum in the lamb broth. The occurrence is said to have taken place at Darlington, in June of that year, and the man to have been found guilty, and to have received sentence of death.

Aqua Lauro-Cerasi, the *Cherry-laurel water*. A term now of nearly equal import with that of *Arsenic* itself.

The poisonous properties of the plant seem to be particularly developed in the simple distilled water, and in the essential oil. From an early period of the last century, the attention of medical practitioners had been directed to its deleterious powers; and a very tolerable account of its effects is 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 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 dishes at table; nor are we taught to be apprehensive of the consequences.

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

The *aqua Lauro-cerasi* is possessed of considerable medical properties; but from the fatal effects to which the officinal preparation 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 and other complaints.

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

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* It would appear that these leaves are *not* innocent, as we often find stated.

† Philos. Trans. 1781.

‡ The year following, 1782, Dr. Price of Guildford made away with himself by drinking Laurel-water. See Paris and Fonblayue, II. 401.

§ The story of the death of Professor Schäringer 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 con-

As it seems pretty well established that the poisonous properties of Laurel-water depend upon this principle, we should perhaps make *it* 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.

This Acid, when concentrated, is a transparent colourless fluid, remarkable for its agreeable smell, resembling that of the bay leaf, the blossom of the peach, and the bitter almond; all which, it must be remarked, partake of the identical poisonous principle. 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 relative by Laurel-water. The details of the trial are not more important, from the elucidation of the effects of this poison, than from the strange display of professional testimony to which they gave occasion *.

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tained 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.

* Although nearly fifty years have now elapsed since the date of this transaction, its interest has not passed away. The case is still recurred to as a remarkable instance of the perversion of evidence (particularly of medical evidence,) to an unfair purpose. Some writers on this subject have expressed their dissatisfaction with it; and several of the medical profession have animadverted on the testimony

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 of the appearances exhibited on dissection *.

The action of this poison is exerted on the nervous system. The stomach has been opened in less than a minute after its ingestion, and its presence there sought for in vain. In many experiments on animals, and in some cases of a fatal nature in the human species, death has instantaneously followed the exhibition of this article †.

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

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of the medical witnesses for the crown. I request the reader's attention to the note, in the Appendix, No. XXI.

* There are 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:* but this author merely relates the fact of a plant *that resembles the* laurel, not quoting it thus by name. See *Strabonis Geogr.* Art. *Gedrosia.* Death from this poison when not immediate, does resemble the manner of epilepsy. See Mr. Brodie's account in the Philos. Trans. for 1811.

† Instantaneous death has followed its ingestion into the human system.

‡ The reader's attention is requested to the works of Drs. Granville and Elliotson on this poison; as an article of the Materia Medica. The former gentleman proposes to collect the contents of the stomach and duodenum, and after agitating these with distilled water to filtrate—adding to the liquor thus obtained a few drops of caustic potash dissolved in alkohol. If to this be applied the sulphate of

To prevent the deleterious consequences of Hydrocyanic acid, or, in other words, to obviate the sedative effects, diffusible stimuli seem to afford the only hopeful means.

HENBANE, or *Hyosciamus.* There are two varieties of this plant, the black and the white; both possessing deleterious properties—but the latter not so powerfully 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 risk of the 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, comparatively in great quantity. 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 some 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 *accidental* use of Henbane. The roots have been mistaken for parsnips, and it would appear that their taste is sweet and agreeable. In many instances, however, it has been taken without fatal effects, though not without alarming symptoms*.

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iron, we shall obtain a reddish precipitate, by the addition of sulphuric acid changing to a bluish green, which by permanent exposure to the air assumes a beautiful blue, and will be a *Prussiate of iron—Prussian blue* in fact will be formed.

* In the fourth No. of the Edinburgh Journal of Medical Science, a case is recorded by Mr. Donaldson, in which an old woman and her daughter breakfasted on an infusion of a plant of this description, in mistake for *hyssop tea*. The effects on the sensorium were very marked, but accompanied by great disorder of the nervous

In this class of poisons is ranked the SOLANUM DULCAMARA, *Woody Night Shade*, or *Bitter Sweet*.

In Hufeland's Journal for 1822, there is a case of poisoning by an ounce of the extract of *Solanum Dulcamara*, which a young man added to a decoction of the plant he had for some time been using medicinally. The quantity now mentioned was taken in the space of 24 hours. He was seized with defect of sight, vertigo, trembling of the limbs, palsy of the tongue, and cold sweats. Fifteen drops of a concentrated solution of the Carbonate of Potass were administered every half hour for 24 hours, and all the symptoms receded *.

The YEW tree should be ranked among poisons, and perhaps among those of this class. The leaves have been long known to be deleterious to cattle; but the following case, from Dr. Percival's Essays † is worthy of attention.

March 25, 1774. Three children belonging to a labouring man near Manchester, being supposed to be affected with worms, the leaves of this tree were prescribed by some ignorant person, as a powerful remedy. The dried leaves having been first used without any effect, the mother gathered them fresh, and administered them in the same dose as before—(i. e. a tea-spoonful, mixed with brown sugar, divided into three equal parts,) at seven in the morning. At eight they breakfasted upon nettle pottage, and at

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system. Emetics, in powerful doses, were resorted to; and the practitioner would have gladly evacuated the stomach by mechanical means had such been in his power.

Cases of poisoning by this substance are almost always accidental.

An alcaloid principle has been detected in Henbane, which has received the name of *Hyosciama*, similar to the *Atropine*, which exists in the Belladonna, and is the active agent of Datura Stramonium, termed *Daturnine*, in which the poisonous matter of the plants to which they belong seems to be concentrated.

* See Lond. Med. Repos. May, 1823. † Vol. III.

mine they began to be uneasy, chilly and listless; yawning, and stretching out their limbs frequently. The oldest vomited a little, and complained of gripings. The others expressed no signs of pain. The second child died at ten, the youngest about one, and the oldest at three in the afternoon. No agonies accompanied their dissolution; no swelling of the abdomen ensued; and after death they appeared as if in a placid sleep.

To the best of my recollection Dr. Percival alludes to mention of the poison of the Yew in Cæsar's Commentaries: the statement is merely this, "Cativulcus—*taxo*, cujus magna in Galliâ Germaniaque, copia est, se exanimavit *."

D. 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 our œconomy, I shall notice but a very few individuals, merely for 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, or as materials for experiment in the hands of the Physiologist in these climates) about which

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* De Bello Gallico. Lib. VI.

so many wondrous histories are on record: the UPAS of Java—the WOURARA and 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 individuals 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 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 who 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 History of the French Academy *, and which is quoted by Orfila, the berries of the belladonna, crushed (of course by mastication), and some seeds were discovered in the stomach.

From the proneness of the bodies of those who have died of this poison to putrefaction, it would seem to have a claim for registry under the next class.

Its activity resides in a peculiar principle, termed

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* Vol. for 1703.

atropia. For the mode of detecting which, see Dr. Paris's work *.

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. A fatal case is reported by Mr. B. Granger in the Edinburgh Journal †, in which the sufferer (a child of two years and a half) ate an ounce or upwards of this article. Great torpor, accompanied by convulsions, followed. She died in 22 hours. Some of the poison was found in the *ileum* only. The brain was in a state of unnatural congestion.

Strychnus Nux Vomica. The seeds of this tree have been long known to produce the death of animals, and have been much used to destroy dogs. If there were formerly any doubts as to its fatal power over the human species, we have now evidence enough to shew its efficacy in this way.

Two cases have been recently reported of attempted suicide by Nux Vomica, one of which occurred in Westminster, and terminated fatally ‡: the other, in which recovery took place, happened at Paris. The first case gives an example of the distress into which the practitioner may be thrown from the difficulty of ascertaining what poison has been swallowed; and also describes the symptoms we may expect to meet with where this particular substance has been resorted to. In describing the state of his patient at the end of forty minutes from the time of swallowing the poison, Mr. Ollier observes "she was agitated and in tears, perfectly sensible, and without pain, but seemed in alarm. She had

* Medical Jurisprudence, II. 413.

† Vol. XVI.

‡ Lond. Med. Repos. June, 1823.

thrown herself back in her chair, and her legs were extended, and considerably separated. A perspiration had broken out on her skin, her pulse had become faint, and much quicker, and she called frequently for drink." The spasms became general, and she at last fell into a state of *Asphyxia*, from which she never recovered. I recommend those who can refer to the report, to peruse it.

In the other case, reported by M. Tacheron, a drachm of the same article was taken by a young woman in a glass of wine. The symptoms manifested themselves in a quarter of an hour, and were similar in character to those of the preceding case. Vomiting was excited by milk, and this was followed by oleaginous and emollient draughts, with *lavemens* of the same description. Within a fortnight she was quite well.

Although tetanus seems to be produced by this drug, it has been conjectured that it might be of use as a remedy in that disease,—of course when produced by other causes *. It is represented, however, as singularly predisposing to hemiplegia, by interrupting the freedom of circulation.

The alcaloid principle of *Nux Vomica*, of the *St. Ignatius' bean* and of the *Upas* has been found to be identical. It has received the name of *Strychnia*, or *Strychnine*. It is obtained in the form of "microscopic crystals, forming four-sided prisms, terminated by pyramids with four flattened or depressed faces †." It has an intensely bitter taste, and is scarcely soluble in water at the ordinary temperature.

Brucine, another deadly substance (to which the deleterious effects of the spurious Augustura bark have been found to be owing) is also contained in the

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* See Med. Repos. April, 1820.

† Majendie's formula.

Nux Vomica. Its properties are similar to those of the Strychnine, in which indeed it is contained.

Although TOBACCO is one of the most active and poisonous substances of easy access, I shall pass it entirely over. There is much curious matter connected with its œconomical history, and its effects on the animal system are highly important. They are so well known, and the plant itself is so readily recognisable, that I consider it unnecessary to offer any instructions concerning it.

DIGITALIS PURPUREA. *The Foxglove.* Every medical practitioner must be fully acquainted with the powers, and deleterious action of this plant: for it is nearly impossible to employ it to any extent without meeting with some degree of illustration on these points. This is probably the only medium through which we can expect to encounter a manifestation of the poisonous action of Digitalis.

I have met with a statement, for the accuracy of which I shall not pledge myself, that in Derbyshire the women of the poorer class sometimes indulge in copious draughts of the infusion of this herb, which produces great exhilaration of spirits, and furnishes a cheap method of intoxication *.

SECALE CORNUTUM, *spurred Rye* is an excrescence that grows upon the ear of this grain, resembling the spur of a cock, and by the French termed *Ergot.* It has of late been introduced into this country as a useful agent in certain cases of dilatory parturition, but the opinions of the profession do not yet seem to be uniform concerning its efficacy. When swallowed in sufficient quantity, convulsions, acute burning pain, troubled sensation, and derangement even of the intellectual faculties are said to be

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* It seems to exert a direct action on the heart and arteries. *Digitaline* has been obtained.

the consequence, together with Gangrene in various parts of the body. Some authors have mentioned epidemic Gangrenes, the cause of which was found in the use of ergotted Rye.

HEMLOCK is the well-known name of two dangerous plants of the same family, viz. the *Umbelliferæ;* though one seems to possess the 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 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 this instance there appeared a strong determination of blood to the head, coldness, speechlessness, and insensibility. On opening the body the stomach was found to be half filled with crude broth; and round the pylorus there were some red spots—the liver was much enlarged, but there was no alteration in the intestines. The left lung was sound, but the right had been destroyed by preceding suppuration. On opening the cranium a very large quantity of blood flowed, and the vessels of the brain were extremely gorged. 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 *.

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, and for instruction respecting those circumstances connected with poisoning, that my business does not require me to introduce †.

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* The Supplementary work of Orfila, entitled "Leçons de Medecine legale," contains several accurately coloured plates of the Mushroom tribe, which have been copied, and given with an English abstract of the work.

† The high character of this writer is so universally acknowledged, that to add any thing to what has been said above may appear superfluous. I shall merely say that the testimonials of his accuracy which I have received from several who have had the advantage of attending his instructions, are such as to leave no ground for hesitating to rely with confidence on his statements. Besides the works of which I have here availed myself, he has enriched the science of Toxicology with many contributions, which have appeared in the Continental Journals, and to which the notice of the

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

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profession in this country has from time to time been directed by the able editors of our own. These, perhaps it were too much to expect all practitioners to be acquainted with. The practice of not *reading up to the progress of Medical Science*, is more general where practitioners have most need to do so—that is, where they have less opportunity of professional intercourse, than those who perform the duties of medicine in the metropolis and other large towns are probably aware of. The Toxicology of Orfila should, in the present state of our literature on that important subject, lie in the hands of every one who pretends to answer a call to a person who may be poisoned. At the same time, I think that the translation might be improved, by *recasting* it, and rejecting some of the peculiarities in the form and phraseology of the original. Its faithfulness has always appeared to me an objection. The very comminuted manner in which the book is distributed, renders it unnecessarily tiresome; and this might be easily avoided without detracting in the least from its utility. In giving it more of an English dress, it would be very acceptable; and it would add much to its claims on the attention of the British practitioner, were the nomenclature translated into, at least our *scientific* phraseology, and still more so, if also made to accord with that used in ordinary language.

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.

§ iii. *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 an intimacy with animals, that behoves us to be well apprised of the danger of such intercourse, as well as of the means of avoiding or remedying that danger, if exposed to it. We are, moreover, from accidental circumstances, frequently assailed with casualties from animals, not belonging 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 necessary 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 many 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, when 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, they have repeatedly taken place.

As to the chief consideration in regard to poisonous matter, with a medico-legal view, viz. the detection, little can be said. The principle of chemical research may perhaps be considered as systematically applicable to one individual, to that which will be first noticed, but it is too much to expect any instructions of a practical nature. Even the observations introduced concerning the vegetable kingdom will not apply here. There are no indications by which the olfactory sense can go further than to ascertain that animal matter is in question.

Tasting, if even to be taken at all into account, could do no more. Vision may certainly go farther; as in the majority of instances, symptoms and appearances will be the chief guides, aided by information as to the history of the event, and assigned to their proper degree of importance by judgment.

The Spanish Fly. This insect, known scientifically by the different names of *Cantharis*, *Melöe* and *Lytta Vesicatoria*, is familiar 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, be-

fore 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, if thrown on burning coals, has a disagreeable acrid smell; 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 precipitate, which is soluble in an excess of this fluid; the solution, however, preserves a white tinge slightly inclining to opal. The infusion of tourne-

sol 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 moments, a white, and as it were, earthy precipitate, slightly inclining to yellow. The Hydro-sulphurets of Potass, Soda, and Ammonia precipitate the tincture 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 precipitate of a beautiful white colour. The Sulphuric and Muriatic Acids, poured upon the tincture of Cantharides, render it suddenly turbid, and cause it to pass to a canary yellow; 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 upon the surface 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 grumous 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. I. 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 aphrodisiac powers, 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 effect intended.

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 such an event. 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 forfeiture of her own life †. The taste, however, is so acrid, that the person must be conscious of swallowing something unusual—and should it be administered in the form of a medicine, the detection would perhaps be rendered still more easy.

It would appear, from cases that have been recorded where recovery took place, that the proper treatment consists in emollients, diluents, camphor and opium.

M. Pallas, who had formerly pointed out the danger of administering oil in cases of poisoning by Cantharides, has lately quoted experiments by Orfila, confirming his opinion. Oil dissolves the active principle of the Cantharides, thereby adding to their powers ‡.

Orfila has quoted several cases of poisoning by this substance, in some of which hydrophobic symptoms appeared, and in one violent tetanus, after which, however, recovery took place. In Hufeland's Journal, 1821, there is an account of four

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* Toxicology, Vol. I. p. 434.

† Medecine Legale, Tom. IV. § 1036.

‡ Journal de Pharmacie, &c. Nov. 1822.

men who drank some of the tincture by mistake. A burning sensation in the course of the alimentary canal, vomiting of blood, impossibility of swallowing, thirst, &c. immediately came on. They were ultimately cured by treatment of the nature mentioned above, with which in two, (who suffered more severely than the others,) small bleedings were joined.

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

" Poisoning by Cantharides is especially characterized 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, 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 characterizes 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 *."

The active principle, which has received the name

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* Medecine Legale IV. § 891.

of *Cantharidia*, has been detected in the common potatoe fly of North America, the *Lytta vitata* *.

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 are satisfactorily ascertained to be true. If what Dr. Beune has alleged be a fact, 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 †. Dr. Burrows has concluded that no fish partakes of the poisonous property unless it has undergone some morbid change, and that the property is a poison, *Sui generis*, always most active after the vital powers cease ‡.

In the month of January 1812, I arrived at Falmouth in charge of sick troops; and while there, was obliged to interdict the admission of oysters on board, having in my own case expe-

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* Silliman's Journal, Vol. II.

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

‡ In a paper published by this gentleman in the London Medical Repository, and afterwards in a separate form, reporting two cases of poisoning by mussels, a considerable number of facts and observations of the most interesting nature on this subject will be found.

rienced bad effects from those that were in the first instance partaken of. Some of the convalescents, who had likewise eaten of them, suffered in the same way.

Of the SEPTIC POISONS, all the articles 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 the 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 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 †.

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* In the Nouveau Journal de Medecine for August 1821, there is also an interesting paper on the same subject by M. Moreau de Jonnes.

† Captain Scoresby, in commending the flesh of the bear as wholesome and agreeable food, 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.

"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 ejections, 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 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 al-

* Med. Legale IV. § 835.

luded 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 which it would not be wise to indulge in.

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.

M. Magendie has lately made the effects of substances in a state of putrefaction the subject of experiments, which do not countenance the foregoing opinion. But his experiments scarce yet appear to be conclusive; and although willing to admit the analogy between the effects of such agents on animals, and that which *might* be the result in the human subject, still there is room for question until observation of the consequences in the latter may occur. As the subject is not one of frequent application to our present business, I shall not enter upon it. M. Magendie's paper is contained in the Journal de Physiologie experimentale, &c. January, 1823 *.

A new source of poison has lately been opened up to us in Germany, from smoaked meats, and particularly sausages. It is said to leave the brain and spinal marrow unaffected; but to suspend the action

* Some account of it is given in the Medical Intelligencer for June, 1823.

of the ganglionic system through its whole extent *. I shall not, however, quote more of this statement than the surmise of Dr. Paris, that the membrane in which the meat is stuffed may be the seat of the deleterious principle, as the bodies of animals dying of disease are capable of communicating fatal diseases to the human species †.

This observation calls for notice of the fatal effects that result from inoculation in dissecting the dead. It is more an article of curative than judiciary enquiry. Several important cases have lately occurred ‡. It is the opinion of those who have investigated the subject, that the mischief arises from a depraved state of the operator's health, rather than from that of the dead body. I have suffered from this cause, when I had every reason to believe myself in the highest health. But, I ought to add that there was no reason to consider the subject as one in which there was any thing peculiarly infectious, and that the accident happened in the middle of summer, and in a southern climate.

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

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* Literary Gazette for Oct. 1820, No. 195.

† Medical Jurisprudence II. 445.

‡ The fatal one of Dr. Pett is detailed in the London Medical and Physical Journal, Feb. and the more fortunate, though severe one, of Mr. Wansborough, by himself, in the Medical Repository for May, 1823.

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, and the maggots finding their way through 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 even to enter on the description. On removing his coat, the whole surface of his body appeared to be a moving mass of worms. His face

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

was considerably injured, as if 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 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 development proceeded with rapidity under circumstances so favourable.

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 *.

Another case of the same nature, perhaps more interesting than the foregoing, is said to have occurred near Rochester, in 1816. The subject was a female, who, in a state of poverty and wretchedness, laid herself down in a wood to die. There she remained from Sunday till the next Friday week! When examined, every part of her body exposed to the attack of flies, was found to be in the state of the miserable beings already described. She was removed to a public-house, where she was provided with every requisite comfort, and with the

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

prompt assistance of a surgeon,—under whose care she was rescued from her miserable condition, and put in a fair way of recovery *.

In a complete treatise on poisons, it would be necessary to take notice of some bodies that belong to the gaseous kingdom, or exist in the atmosphere. But in most of the instances that come within the scope of this work, where such agents are concerned, I think they are more strictly referable to the next Chapter, and shall take some additional notice of them as modes of causing Suffocation †, for we must suppose their deleterious action to take place through the organs of respiration.

In the first edition of this work, I concluded this part of Forensic Medicine with a short article on Occult Poisoning—those secret and extraordinary practices that have excited the curiosity of the learned, and terrified the world at large. It was very imperfect, and certainly less important than other matter that I shall take the liberty to substitute for it in the present volume. At most, I consider it a topic of mere literary curiosity, which the reader will find treated of at greater length in several works of easy access ‡. I do not know that the comprehensive subject of the adulterations of food, in the common course of such nefarious practices,

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* Kentish Gazette; and Courier, London paper, for October 12, 1816. The surgeon is stated to be Mr. Browne, of Rochester.

† Compare what has already been said, pages 21. 40. with the remarks on *Suffocation*.

‡ Beckman's History of Inventions; the Causes Celebres, and several works of a miscellaneous nature, contain allusions to this subject. There is also a sensible paper on it in one of the early volumes of the Monthly Magazine.

belongs so strictly to Forensic Medicine as to Medical Police; but it is too rarely matter of enquiry in the manner of the questions that have been now discussed, and too extensive for a just review of its distribution, to be brought in here *.

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* A little volume, upon this subject, by Frederick Accum, Operative Chemist, made its appearance not long ago, and notwithstanding the notice that was taken of it, seems to be now forgotten. This may be partly owing to circumstances not necessarily connected with the work itself. It was, however, considerably ridiculed, when before the critical tribunals on its own merits. I cannot help thinking that it contained more that was worthy of attention, than perhaps the sensible injunction of the poet,

"Be ignorance thy choice, where knowledge leads to woe,"

left some of its reviewers disposed to allow. I must admit, that it had greatly the appearance of a piece of patch-work, the odds and ends composing which had been selected without much pains, and put together with no great skill. There is scope for an authoritative work on this subject.

CHAPTER II.

SUFFOCATION.

This term must here embrace 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 proper 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 *aerial* medium than that of the respirable atmosphere, or to a *denser* medium, which cannot be admitted by the organs of respiration; or where he 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, and closure of 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 soon afterwards partakes of the arrest, and in the mean time the flow,

which is kept up, conveys unoxygenated black blood to the brain, which has been already stated to be fatal to life*; and which in a short period more, we shall find accumulated in the cavities of the right side of the heart. As 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 these 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 may become turgid, and that if there be 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

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* Page 34.

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.

§ i. *Noxious Inhalation.*

There are various substances that may be thrown into the state of vapour by extraordinary agency, and may still belong strictly to the subject of Poisons. Thus we have metallic vapours, which are very noxious*; we have exhalations also from animal and vegetable matter, under various modifications that are hurtful to health, and productive of disease, forming a conspicuous object in the department of Medical Police, under the notices of contagion, epidemic, and endemic diseases. Besides these, there are bodies that are tangible in the gaseous form only; some of which may be respired, for a longer or shorter period, and some of which there is reason to apprehend, cannot at all be admitted into the lungs. There is no one of them, however, 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 some of them, that exert a peculiar influence on, or convey certain sensations to the system, perhaps ought to be considered among the individuals of the Toxicological department, such as oxygen, nitrous oxide, and a few others that for a time may be

* Dr. Paris has given an interesting account of Mercury in this state, Med. Jurisp. Vol. II. p. 460.

breathed, and are not less marked as to their final effects, or manageable powers on the living body than many deadly poisons which have been considered in *their* ordinary state, which is that of condensation. But I shall confine my attention to those that are considered *non-respirable*, and shall illustrate the bearings of the subject by a few observations on one only.

The atmosphere consists of oxygen and azot; and when deprived of the former, becomes deleterious. The latter is ranked among the narcotic poisons; but the ordinary deterioration of the common air takes place by the generation of carbonic acid gas, under a variety of circumstances familiar enough in our experience. It occurs where the combustion of charcoal is going on without the renewal of atmospheric air; in lime-kilns, in cellars, wells, and breweries; in green-houses, and other places, where plants are kept during the night; and where animal respiration is carried on without an adequate supply of fresh air.

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.

It has been supposed to act both by paralysing the muscles of respiration, and destroying the action of the brain and nervous system; for if it acted solely in the latter way, such distension would not be found in the brain after death. But till lately, it would seem that sufficient precision was not ob-

served in distinguishing between gases that may *certainly* be respired, or admitted into the lungs, and others of which there is reason to doubt the fact, at least when they are concentrated. It has been concluded by eminent experimentalists, that carbonic acid gas is not admitted into the lungs, but causes a spasmodic stricture of the epiglottis, and kills in a way analogous to that of drowning. It appears also that when charcoal in combustion combines with oxygen, that along with carbonic acid, there is evolved, according to the degree of moisture, hydrocarbonous acid, which is peculiarly fatal to life, and which nearly killed Sir H. Davy, who attempted to breathe it in its undiluted state *.

The following remarks are by Dr. Percival in the second volume of the Manchester Memoirs.

" From the phenomena which attend the extinction of life in those to whom such vapours have proved mortal, it is evident that the *poison* acts chiefly on the nervous system. The vital principle seems to be arrested, and almost instantaneously destroyed; sometimes even without a struggle, and possibly without any antecedent pain. Pliny the elder was found after the fatal eruption of Mount Vesuvius, exactly in the same posture in which he fell, with the appearance of one asleep rather than dead, *Habitus corporis quiescenti quam defuncto similiter* †. Some persons killed by foul air in a cellar at Paris, were stiff as statues, with their eyes open, and in the act of digging ‡.

When Calcutta was surrendered to Shujah Dowla,

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* Consult a case in the Medico-Chirurg. Trans. Vol. I.

† Plinii Epistolæ XVI. Lib. VI.

‡ Valmont Bomaré, Dictionnaire d'Histoire Naturelle.

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 enquiry. Its counterpart however occurred a few years before in our own metropolis. In the year 1742, the high-constable, &c. of Westminster committed to the Round-house several persons, whom they found in the streets. Twenty-eight were sent to that of St. Martin, whom the keeper forced into a place called the Hole, not above six feet square; and the ceiling scarce five feet ten inches high. He had no regard to their cries of murder! and four women were suffocated, one of whom was big with child. A verdict of wilful murder being returned against the keeper, he was committed to Newgate, and tried at the ensuing sessions, when some points of law arising, a special verdict was brought in. Two additional bills for murder were found against him; and on a second trial, he received sentence of death. It appears that along with other criminals his punishment was commuted for transportation.

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* 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. A copious account of the affairs is given also in the Annual Register for 1759.

§ ii. *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, 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; or of 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 from 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 practices of suspending those taken out of the water by the heels, and rolling them on casks; practices 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, while the tongue is pushed forward.

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 cutting into 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 *.

"In consequence of the situation in which the animal is placed," says Dr. Bostock †, "the external air has no access to the lungs, and on this account the air which remains in them becomes considerably rarefied. Owing to this circumstance, a portion of the mucous fluid which lines the membrane of the vesicles is converted into *aqueous gas*

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* 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 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.

† Essay on Respiration.

which is mixed with the rarefied air; and fills the cavities of the lungs." This alludes to the state of the lungs after the efforts to respire under water have been made, and made in vain, expelling some of the air previously contained in them, without the possibility of taking in any more: whereby the pressure being removed from what remains, it expands.

With regard to the presence of frothy mucous in the lungs, a query presents itself (admitting the fact) whether it may not be derived from the vessels of these organs themselves in a high state of congestion? It seems to be fact that it is not always present; therefore it is more likely perhaps to depend on what is going on within the system, which may be different in different cases, than on the extrinsic and universal state of submersion.

Admitting that *water* may pass in, it can be considered merely as a contingent occurrence, and by no means 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 enter 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 throat; by which the irritation of the trachea, in resisting the access of the unsuitable fluid, while respiration was prevented, caused faintings, convulsions, violent agitation 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 stomachs* of these unfortunate people; in whom the usual lesions

* The case of Sarah Stout will admit of some illustrative remarks on this subject. See Appendix XXII.

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 of Sarah Stout, 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 certain skill be exerted, or he be kept 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 should contain air, it may be supposed that it will float at first. There may be something 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 †.

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

† The tragic story of Caracciolo, Admiral of the Neapolitan navy, who was hanged by sentence of a court-martial, affords an illustra-

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 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; unless where it has lain so long in the water as to become macerated, and unfit for examination, on account of the alterations in the state of parts. There is one case that might possibly happen—that of a person first dying by apo-

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tion on this subject 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. This fact is not introduced here to give force to the allusion in the text, as to the sustaining power being in the thorax, but to illustrate the subject of the buoyancy of bodies generally.

The first and most copious evolution of gas in a putrefying body will be in the abdomen, and that part will consequently rise highest, if no unusual cause prevent it. I entirely coincide with Dr. Paris as to this fact.

* See Appendix XXIII.

plexy, 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 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 when 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) may 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 pecu-

* 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 containing grass, which he had grasped from the side of the water.

liarly 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 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, by rising to the surface, or from other circumstances, may remain much longer alive than others; but if the question relates to being *under* 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 *.

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* 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. In their times, an author was obliged, by the law of custom, to cram every thing into his writings that had previously been said on the subject by great men. But I was not a little surprised at reading in a journal, published while this part of my book was printing, that *a Royal Academy of Sciences* had awarded a prize for an Essay, in which there is a display of credulity, and an impertinent farrago of stories about amphibious men, unworthy of the slenderest member of any profession. See Medical Intelligencer for August.

§ iii. *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.

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 luxation occasionally occurs among the vertebræ of the neck, generally between the atlas and dentoides. This luxation chiefly takes place in heavy persons, or in those who 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

* 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.

marks may indicate death, by hanging, there have been ample opportunities of 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 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 suspected 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

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* 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.

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; 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. 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 might 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 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

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* Elements of Juridical Med. page 181.

† Some light has been thrown upon the real import of this discoloration, in an article by M. Esquirol, published in the Archives Generales de Medecine, January 1823. He adduces several instances of the absence of those signs which are immediately caused by the settling of the blood. The very last case of this mode of death that fell under my own observation was that of a middle aged man, where there was satisfactory evidence that he had hung himself, and that the cord had not been round the neck more than a few minutes. The countenance was pale, and in point of appearance had

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: some who have examined particularly into cases of this nature, deny that luxation takes place from mere suspension, without additional violence, but 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 con-

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not assumed any change from its state during life, and the cord had left an impression, but there was no discoloration. An impression will be made after death, and discolorations arise then also; but in the next chapter we shall have occasion to consider the import of these marks more particularly. M. Esquirol accounts for the tumefaction and lividity of the face, froth at the mouth, &c. by the cord not being removed till long after death, and states that if it be removed immediately, or even at the end of some hours, these signs will be wanting. He draws the following inferences from the tenor of his previous observations.

The Ecchymosis round the neck is not a constant appearance, and should be regarded as an equivocal mark of suspension during life, therefore when the physician is called to examine a body found suspended, he should take into account the hour at which the death took place *, and the length of time that the ligature has remained on the neck; two circumstances that modify the cadaverous phenomena, which serve as the basis of the conclusion to which he should come.

* If this be a *sine qua non*, there are probably but few cases of mystery to which this consideration will be found applicable; for, if the hour of the death can be ascertained, we may fairly consider that the history of the case in other respects will be also obtainable.

clusion 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 interruption likely to take place; or the assailants be numerous and powerful enough (as in the notorious instance of Porteus) to set all interference at defiance. Dexterity, dispatch, and apparatus of some kind, must be necessary in all such cases; nay, it is perhaps not going too far to say, that a man cannot be hung alive by others, unless his hands be previously tied, and probably his legs also. 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 is 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 an ignorant curiosity, which, in places, where the event is rare, prevails among them, when 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. A girl, aged thirteen, came by her death, however, in this way in April 1821, in Northamptonshire. She was swinging in a brewhouse, and near the rope used by her for that purpose, was another for the purpose of drawing up slaughtered sheep. In the course of the exercise her head got through a noose of this second cord, which pulled her out of the swing, and kept her suspended at a considerable height till dead.

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

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* Ut supra.

is a point belonging rather to the curative art, and more allied to criminal than legitimate deportment on the part of the medical practitioner *.

§ iv. *Of Strangling.*

When this species of murder is performed by a ligature, the difference between it and the former consists only in the subject 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 should it be necessarily different—the mark of the ligature of whatever nature †, 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 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

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* See Appendix XXIV.

† 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.

of the body, though it may happen that, here and there, a discoloration will appear. Still the difference will be manifest. 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 twelve 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 despatched 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 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 at first sight apparently 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

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* State Trials, Vol. XII.

† 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. 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

medical and other witnesses deposed to marks resembling those of fingers about the neck; but 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* marks 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 upon 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

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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! In the case related above, the medical witnesses seem to have been very inadequate to throw light upon the subject.

* Pages 49 and 59.

asleep, and that though the deceased struggled violently, and made some noise, he soon accomplished his purpose.

At the Assizes held at Colchester, August, 1821, a man named Akers was tried for murdering Patience Ellis, by strangling her with a silk handkerchief. He first said she had hung herself on the tester of the bed, but it appeared that the tester could not have sustained her weight; besides which she had for many years been a helpless cripple. He himself had screwed down her coffin, in the first instance; but a report getting abroad that the deceased was pregnant, the body was submitted to the examination of a medical man, who said she had probably died of dropsy! A day or two afterwards, on being seen by another surgeon, he gave it as his opinion that she had died of violence, and was eight months gone with child.

The following interesting case was communicated to me by a physician, who had it in his power to assure me, from personal knowledge, of the accuracy of the circumstances.

In a small village of Warwickshire, in the year 1800, a young gentleman suddenly disappeared on the evening previous to his intended marriage. After a lapse of some days his body was found floating in a mill stream, and it was generally concluded that he had committed suicide, though the cause for such a rash act could not be conjectured. Upon stripping the body, some marks of a suspicious nature were discovered upon the throat. A surgeon was sent for to decide whether death had taken place from any other cause than drowning, who, after a minute examination, gave it as his opinion, that he had died by strangulation. Suspicion now

fell upon a man of bad character, who had been seen the night Mr. * * * * * * was first missed, running in great haste from the direction in which the body was afterwards found. He was apprehended, but no evidence of guilt being elicited by the examinations, was discharged, and the fate of the unfortunate young man remained buried in mystery. Ten years afterwards, the person suspected was convicted of sheep-stealing, and sentenced to transportation. While on board the hulks, he made a voluntary confession of having destroyed Mr. * * * * * *, and declared that such was his remorse, and the horror of his conscience, that he earnestly desired to expiate his crime on the scaffold. He was tried for the alleged offence, entirely on his own evidence, which was as follows.

Upon the evening of the fatal event, he was stealing potatoes from a field-garden belonging to the deceased, whom he unexpectedly saw coming over the gate to secure him, upon which he jumped over the hedge on the opposite side, and ran across the field to make his escape. Mr. * * * * * * pursued him, and being an active young man, nearly overtook him; upon which he (the prisoner) attempted to leap the mill stream, but, the bank on the other side giving way, he fell back into the water. Mr. * * * * * * instantly plunging into the water after him, strove to secure him. A desperate struggle now ensued, and the deceased had at one time got the prisoner down under him in the water, by which he was half drowned. At length he succeeded in overturning his antagonist, and, seizing him by the throat, held him fast in this manner, under water, till he seemed to have no more power. He then left him, sprang out, and made his escape.

The judge gave it as his opinion that the case amounted only to excusable homicide, and the man was acquitted.

Upon opening the bodies of those who have been taken off by manual strangulation, the usual appearances 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 they are 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 ‡.

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* 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.

‡ Of course those cases in which a person in Apoplexy or corresponding circumstances, with a tight stock on the neck, by the resistance of which a modification of this sort of death may take place, are beyond the scope of the present subject. A case of accidental strangling came before the coroner for Westminster in 1821. A young man, of a particular turn for mechanical and other inventions, being lame in his right arm and left hand, was accustomed to assist himself in moving a weight of nearly a hundred pounds, by means

§ v. *Of Smothering.*

This is a variety of suffocation on which there is comparatively little to be said. It is the mere closure 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 existence by the action of its own organs, the event falls within the scope of the present observations.

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of a cord attached to it, and passed round his neck. One morning, having retired from the family to his own room, his sister found him, in the space of a few minutes, sitting in a chair apparently in a fit. After some time it was discovered that a cord was round his neck, on cutting which the weight fell on the floor. A board was found lying on two chairs, and the jury were of opinion, that the weight had slipped behind and pulled him down upon the chair, in an attempt to lift it from the floor to the board.

The *ratio moriendi* in this instance requires no particular illustration. Death is the 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 accidentally laid against 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.

The following case, of very recent occurrence, is important enough, as an illustration of the question now more particularly under view to merit notice; but its relations are of a more extended nature *.

York, July 18, 1823, Margaret Parkin was indicted for the wilful murder of her bastard child. The body was found in a canal, and buried without any knowledge of its parents, or of the manner in which it had come by its death. The clothes, however, being preserved, led to the discovery of the mother. The delivery took place on the 20th of February, and the body was taken out of the water on the 6th of March.

On that same day the prisoner carried the child,

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* It likewise affords a good specimen of the manner and applicability of professional testimony. The report is better drawn up than those of many trials that are laid before the public through the medium of the newspapers; and I have had some satisfaction in abstracting those parts that are connected with the medical bearings.

wrapped up in a variety of coverings (the weather being cold) and held close to her breast, about three quarters of a mile, from the house in which, for some days, she had been residing, to the passage boat on the canal; and the account she gave was, that she never looked at the child, which was perfectly quiet, till she got near the pier, and then, on opening the clothes, she found it dead. She was much distressed, and afraid to let any one know it, lest they should suppose she had done it on purpose, and thought it best to leave it *.

Mr. C * * * * *, a surgeon, "examined the child on the same day, and there were no marks of violence about it. On the following day he opened the body. In the mouth and stomach he found the appearance of milk. Judging from appearances, convulsions were the cause of death. The symptoms would have been the same had the child been drowned. Putting the child in water would have produced convulsion. *If he found the child in water, he would have concluded its death took place from suffocation by drowning* †."

Cross examined. "No doubt any suffocation would have produced the same symptoms. In the act of drowning there is a great exertion made to inhale the air. It is perfectly possible that the mouth in the exertion would open. If the child were with its

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* These newspaper accounts generally contrive to leave out some important link of the story. It is hardly imaginable that this woman, having told so much, should not have stated *where* she left it, whether in, or out of the water. At all events that question must have been put, and even supposing her answer not to be true, it would be satisfactory to have it.

† This passage being at variance with the rest of the witness's display, must be incorrectly reported.

head downwards, and under water, the water would get in. Water is detected on the stomach, but not in the lungs. Whether the person drowned was strong or weak, he thought water would be in the stomach. In that case he conceived strength would make no difference.

Mr. G * * * * * C * * * * * * *, surgeon of York, " had been fifteen years in the profession. A child a fortnight old, with its head downwards under water, would struggle considerably, so much so as to make its clothes imbibe the water. In the course of his experience he has seen several persons drowned. He has seen them opened. He has heard the evidence of Mr. C * * * * *, and is of opinion that the child suffered death from *other* suffocation, and not from suffocation by drowning. It was wrapped up in a manner likely to cause its death."

Cross examined. " The probable cause of its death was the manner in which it was wrapped up, and its being hugged close. In his own experience never heard of a child being suffocated in that manner. Has known children suffocated in bed by overlaying, which does not mean being actually laid on, but the mouth and nostrils being placed against the skin of the mother or nurse, or the bed or clothes, in which way death would take place in a few minutes. The child would struggle, but if held close to the breast the struggles would not be felt. A child held closely to the breast, and then put into the water, would not struggle much if nearly dead before. He never saw an instance in which water was not found in the stomach of a person drowned—has seen at least twenty instances of persons drowned—has opened the stomach of persons drowned.

" It is a doubt amongst medical men whether water

in the stomach or not, is a criterion of death being caused by drowning; but has none himself; and if he were to find a dead person in the water, and no water in the stomach, he would conclude that he had not died by drowning, if such a person's body had no marks of violence would not still conclude that he had died by drowning. There are other means of knowing the cause of death *without opening the body*. In most instances water flows copiously from the mouth. I think water must be in the stomach from the effort to inspire air; the effort does not necessarily open the passage to the stomach, but when the water gets into the mouth, and reaches the fauces, nothing can prevent its passing into the stomach. Could not say that he ever saw an instance of an infant drowned. From the description given thinks himself quite as competent to judge of the cause of the child's death as the person who saw it two hours after." Verdict—*Not Guilty*.

A case so far similar is stated to have occurred near Edinburgh, a few years ago. A man and his wife, the latter with a sucking infant at her breast, went into a public-house, and sat for a short time, when the woman discovered that she had smothered the child by overlaying it with her shawl*.

Of late, repeated instances have occurred where children have been smothered by being folded up in a sort of bedstead much used among mechanics and others of the poorer class, for the sake of making room in the day-time. In all these instances, as far as I I know, the affair has been considered accidental, it having been forgot or not supposed that a sleeping child was in the bed. But, I would rather in-

* Scots' Magazine, January, 1807.

cur the suspicion of want of charity, than refrain from putting jurymen on their guard, should such *accidents* continue to occur so frequently.

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 this 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 suffocation, 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 dis-

tressing 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 it is technically termed, *were wilfully 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 thirteenth 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 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, in most instances, 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.*

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.

All 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. It will be advantageous, however, previously to offer 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. Perhaps, like the individuals of the human race, no two wounds have ever been ascertained to be precisely alike.

Experience in the management of wounds has enabled practitioners to form a tolerably accurate idea of the danger from the first. Some wounds are considered *necessarily* fatal, from the importance of the organs concerned, or when they are 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.

Wounds prove fatal to some 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 cavities 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 of intention*. On the other hand, after wounds have healed up, the marks of original injuries have disappeared, and the person has to all appearance recovered perfectly, death has been the 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, to involve the innocent, and in many cases to allow the guilty to escape. A person's death may be fairly traced to an injury, even though it

* "Many lives," says Sir W. Blizard, "have been sacrificed to the gratification of curiosity by researches into the direction and extent of wounds in the body." See the case (hereafter mentioned) published by Mr. Maiden.

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. By a celebrated act of the legislature, to which we shall have repeated occasion to allude, the application of medical knowledge to enquiries of this nature is much simplified. 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 the same, though the design may have failed. Here, however, the complexion of the affair must be occasionally modified by considerations belonging to the province of the medical practitioner; as was the case 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, had not the scull been 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

* Instances of languishing, even for years, after receiving wounds, are frequently seen among troops, who have been in action. There are always many cases which live long but never recover, even from the first consequences.

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 abdomen, 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 indispensable, 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 cha-

racter, 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 take every care, in the course of dissection that he do not confound the subsequent application of surgical instruments with the original and real wound, which may happen where another practitioner has been employed in the treatment. Biessy relates an extraordinary example of this kind of blundering *. A soldier in a fit of intoxication, attempting to return his sabre to the scabbard, wounded himself in the left thigh. He died quickly by hæmorrhage from the femoral artery. Two reports had already been furnished by as many practitioners, when M. Biessy received orders to examine the body, which he found had not been opened, or any way dissected. One of the reports stated, the wound to be in a different place, and in consequence of the discrepancy, another inspection was ordered, without intimation to any of the professional men of such a proceeding. The last produced a still different account, having added to the real dimensions of the wound the enlargements made by M. Biessy in his previous examination.

The surgeon must also be careful that he does not by careless or awkward dissection render cases inexplicable that might otherwise have been clearly ascertained; and above all, that he does not describe the consequences of his own inaccurate procedure as natural malformations, or arising from injuries inflicted during life. I have in my possession the original report of a dissection, in which many extraordinary circumstances are detailed,—among

* Manuel Pratique de la Med. Legale I. page 144.

others the presence of a urinous fluid in the cavity of the abdomen, and no bladder. It is evident, however, from the report itself, which adds that the catheter passed, *per urethram*, into a membranous bag, lying under the pubes, that this organ being in a state of more or less distension, had been touched with the scalpel, its contents evacuated, and itself retracted within the cavity of the pelvis. I have met with the report of a trial, where the question related to an injury of the head, and a practitioner swore that on examination he found a large fissure in the cranium, which a better instructed member of the profession described to be the sagittal suture!

It is very true that in reading such accounts great allowance is to be made for the inaccuracy of the public press, and that even professed reports are often not free from charges of error. But those who are capable of detecting error, will always be able to discriminate between incorrect reports and insufficient evidence. I think it may be averred that the former are never seriously erroneous where the practitioner has acquitted himself in a professional-like manner; or if they should be so, the fault is palpably ascribable to the proper quarter. Many curious illustrations might be brought forward on this subject.

Another caution to be given respecting the examination of injuries, is to preserve the parts concerned as entirely in their primary state of derangement as the necessity of sufficient dissection and due examination will allow.

Since the diffusion of surgical knowledge and experience throughout the empire, failures in these respects have become more rare, and less important. Courts would not put up with the statements we

find to have been abundant formerly; and men could hardly be found capable of giving them.

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 Oldham inquest.

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, which 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, whether 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 presence 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 marks of the loss of blood. On the other hand, if a person has been first taken

off in some other way, and afterwards wounded, the want of hæmorrhage, internally, and of the *appearance* of it externally, will be very evident, and cannot well be mistaken.

Uncertainty has arisen in the case of contusions, from an alleged similarity in the appearance produced in the skin after death, to that which is caused by bruises in the living body, viz. discoloration. A distinction has therefore been made between these, the former being termed *Sugillations*, and the latter *Ecchymoses*.

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. It is distinguished from *thrombus*, by 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 where pressure has taken place, in the latter stages of disease.

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, and 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.

With a view to practical application in Judiciary or Forensic Medicine, attempts have been made to arrange these injuries into some method; and various principles of classification have been adopted. It has been proposed to divide them according to *two causes*, those produced by *mechanical*, and those by *chemical* agency; and the arrangement of poisons, has been also considered to afford an example for the classification of wounds. Thus the causes of these lesions have been said, either to inflame; bruise and stupify; cut and pierce; or acidify and arrest life in the action of the organs *. Others again have rejected all classification, and have asserted that every wound should be judged of upon its individual peculiarities. There is much reason in this, as has already been stated; and in our country we are saved from great perplexity in this matter by what has been called the Ellenborough Act, which (founded upon enlightened, just, and at the same time liberal views of justice in homicide) has given due importance to the reality of the crime, and even to its degree. The mere intent to kill, without any overt act to that purpose, may pass unnoticed, but

* Biessy. Manual.

the failure of such an act is often ascribable to any cause but one favourable to the person accused. This improvement has almost (at first sight) taken away occasion for the delivery of professional opinion; for medicine cannot, *a priori*, be supposed to discover the thought and intentions. It has, however, led to the manifestation of circumstances, from which it has been possible to draw very important inferences, even in regard to these. It may be of use in proving that some injuries may have been the effect of accident, and that others could not have been so.

It may be questionable how much further it is necessary to pursue the subject of wounds; for the sake, however, of introducing more conveniently some additional observations, I shall assume a form of subdivision, and prefer that which may be afforded by the different parts of the body in which they are inflicted. There are peculiarities belonging to some organs that do not attach to others; and with much propriety, therefore, a few remarks may be offered on each of certain portions of the system, that may not be applicable to any other. I shall consider them in the usual order observed in teaching systematically their structure and relations.

§ 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 readily 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.

A. Wounds, &c. of the Scalp.

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 *children of misfortune* pass through a fair duration of human life under a pretty close series of such afflictions.

But even these, or injuries similar to them in their origin and aspect, may create troublesome or 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.

The scalp may be injured in several ways. A wound may extend simply through its substance; 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 determining 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 on 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.

With regard to appearances in the scalp, we are warned by those most conversant with the state of parts in the dead body, not set down as bruises, the mere effect of pressure on a particular part of the head, when the scalp is œdematous, and loaded with blood.

B. 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 crack in an earthen vessel, 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 mere simple fracture, when no more is implied than 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; the most essential part of practice 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 die in spite of the most attentive and judicious treatment.

In seeking for fractures of the scull we must recollect that they are frequently in some part more or less distant from that in which the external violence has been received; thus, after a fall on the vertex, the fracture has been found in the very base of the cranium.

A recent author on Anatomy has some very important instructions on this and other parts of morbid investigation after death. I consider the ensuing passage important to the surgeon when acting upon the requisition of justice.

"The question whether there has been a fracture previous to death, is sometimes more difficult to decide than a person who is not accustomed to make dissections, could imagine. If the fracture has occurred immediately before the patient's death, there will be coagulated blood found upon the bone, and in the fissures; if the patient has survived for some time, there will be marks of inflammation, and perhaps pus in contact with the scull; but if a fracture has been produced in making the examination, which sometimes happens even in a very careful dissector's

hands, the blood in the fracture will not be coagulated, nor will there be any effusion around the portions *."

C. 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 greater 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, and the presence of tumours 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

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* Manual of Anatomy, by John Shaw.

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 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.

"If effusion of blood be found between the dura mater and scull, and if a bruise on the scalp corresponds to the part, we may conclude that it has been caused by the blow*."

Sometimes, however, violent blows are received upon the head, without causing any apparent wound, or leaving any visible marks of injury. A remark-

* Shaw. Ubi supra.

able 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 abscess was discovered.

* Journal de Chirurgie de Dessault, tom. 1er.

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, and when 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 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 exa-

* Notes to French Trans. of Metzger's Principles.

† Surgical Observations.

mining 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 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, no doubt, 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. 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, sixteen 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.

§ ii. *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 one of the most frequent modes of suicide, is cutting the throat.

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 the lesion necessary to insure death, 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, 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.

A few years ago a prisoner in Edinburgh jail cut his throat transversely, dividing the larynx quite

across at the upper end of the cricoid cartilage, and the separated extremities receded from each other to the distance of three inches. The great vessels and nerves escaped injury from the cut being so high. The professional gentlemen who saw him were satisfied that the œsophagus was also cut entirely across. Several attempts must have been made, as another opening was afterwards discovered in the wind-pipe. In this state a junction of the parts was found to be impracticable, and the ligatures that had been applied with the view of making the best possible approach, were separated by his incessant exertions in passing water through the mouth, and out at the wound, in which way he used several bucketfuls in the course of one day. He was supported in the first instance by nutritious enemata, and afterwards by means of a tube conveyed through the wound into the œsophagus and stomach. After much trouble to the practitioners, and considerable risk to the patient, the functions of breathing and ingestion were carried on through a tube in each passage, introduced by the wound, the tracheal tube being removed when it was necessary to apply the other. The man was afterwards tried, acquitted, and liberated from jail. He continued to live under the disadvantages mentioned, and the details of the case are worthy of perusal *.

Other fatal injuries may be done to the neck, among which I may 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. Wounds piercing the vertebræ, or passing between them, are fatal. A known

* It is recorded in the Edin. Med. and Surg. Journal, July 1820.

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.

§ iii. *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. 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 even of 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 protrusion 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 patients 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. The 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 should meet with 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 would 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 better system of investigating the phenomena of the living body, which has of late prevailed, has set aside the opinions on this subject.

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 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. A similar instance occurred lately in France, and is reported in the Archives Generales de Medicine, for May, 1823 *, and others have also occurred of lacera-

* A sufficient account of it will be found in the Lond. Med. Repository for June, 1823.

tions 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 its pressure against the wound, prevented those immediate effects, which, from the impossibility of rendering surgical assistance, cannot be averted.

In most injuries of the thorax that reach to the contents of that cavity, we must consider that 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.

Some years ago, the shaft of a gig passed through the thorax of a man, from the left to the right side; entering near the fifth rib, and making its exit somewhat lower. At the end of nine weeks, these extensive lacerations were hardly healed; but not-

withstanding the formidable, and perhaps unparalleled nature of the injury, a recovery took place *.

§ iv. *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 very easily penetrated, injuries, even trifling in appearance, will be attended with 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 proportion of this part of the body, together with the weakness of its defences, exposes it in an eminent manner to intrusion from sharp instruments, though 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 peritonœum; and this when injured or irritated, seldom escapes inflammation, to which 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

* The case was detailed in a quarto pamphlet by Mr. Maiden, surgeon, of Stratford, Essex.

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 peritonœal cavity. In all these cases, neglect or delay in the application of remedies may be considered absolutely fatal—the mere *vis medicatrix naturæ* being very rarely adequate to the rectification of such injuries, or if it should so act, we have no right to expect it.

Although, in wounds of the abdomen, where the intestines are implicated, 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 them 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 they are not directly injured themselves. In such cases, death may result from this consequence, rather than from the nature of the mere 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 opening. Upon reducing these, the wound was discovered to be on the right of the navel, and 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—as well as who the surgeon was 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 properly stated, that if the wound had been enlarged immediately, and the intestine returned, as it was not 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 reports 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.

* Memoires de l'Acad. Royale, 1705.

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, when under observation, are of the most important nature. The fluids extravasated by lesions in these organs, are irritating to the delicate and irritable 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.

The solid viscera are also 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 whom I have some knowledge, in one of the

* An interesting case of laceration of the liver is to be found in the Transactions of the Royal Coll. of Physicians, Vol. III.

midland counties. In the course of an altercation between a man and his wife, the woman suddenly died, and a clamour was of course raised that the husband had killed 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 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 an abscess had burst into the cavity of the abdomen, through the agitation into which she had been thrown *.

Blows on the belly, without wounds, have frequently caused death. In one instance, which oc-

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* This is the case alluded to at page 62 [note *.] The situation of the surgeon—too common a one, I know well, even at this day—affords a lesson of the need that existed for some means of considering the relations of medical knowledge to the exigencies of public justice, beyond those afforded by experience in the curative art. Being a neighbour of the parties, and in great request among the *assistants* on the occasion, he was of course sent for, and became the professional man of the inquest. Being much alarmed at this novel call, he wished to obtain some hints as to the mode of acquitting himself, which, alas! could not be accomplished; for the only source of information he had any conception of, was a book written by one 'Farr,' which book, in a remote place, was not to be had on the spur of the exigency. In what manner the investigation was made, or the testimony afforded to the coroner, I regret much that all my endeavours have been unable to fathom: but I do not hesitate to say, that had it been done in any thing like a *rational*, not to say *scientific* manner, the unfortunate man need not have been sent to the county jail to await trial for his life, under a charge of *wilful murder*.

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. It is supposed, by the best authorities, that people are thus killed by the sudden shock to respiration, through the intimate connection of the eighth pair of nerves.

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.

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 the part of the viscus corresponding to that of the parietes, in which the violence was understood to have been received; a learned physician of my acquaintance, being asked whether such an appearance might not be the effect of disease, replied, of course, in the affirmative. The Judge considered it unnecessary to go on with the trial; but another one, who took rather a busy part in the proceedings, thought proper to declare that no

such appearance could be caused by violence to the stomach, *without involving the liver!* an assertion that we can neither reconcile with anatomical *ignorance*, nor with any knowledge of the varieties of position of the stomach in the living body.

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.

§ v. *Gun-shot Wounds.*

These have some peculiarities so striking as to require a few separate observations. The first I shall notice is the rarity of their occurrence in ordinary life. From this, an idea is very general that practitioners, who have exercised their profession among peaceable citizens only, are less qualified to treat and to pronounce upon them, than surgeons who have served in the army or navy. I shall, for sundry reasons, avoid offering an opinion on this point, which belongs to a question of too much importance to be introduced as a digression. I will admit that study, and attention to the few cases of this nature that may fall under a private practitioner's notice, should give him a fair claim to undertake their cure, and enable him, generally speaking, to conduct their treatment properly. But when they become matters of justiciary enquiry, the opinions of those who have had great experience should be sought, and must preponderate on all points connected with their peculiarities.

If we could suppose a soldier to inflict a sabre

cut upon twenty different people, on the same part of the body, with similar force, there would be a great similarity in the first appearance of each of these wounds; but let him take aim with one fire-arm, loaded in the same manner, and let his aim be so sure that he shall strike twenty people in the same part of the body—there would be a very curious dissimilarity among the injuries thereby inflicted. Although, upon examining a gun-shot wound, it may be very evident in what direction the ball has been received, yet it is impossible to say in what way an intended wound of this kind will be inflicted. If we see a man run against another with a charged bayonet, and strike him forcibly with it on the belly, we know it must penetrate, and perhaps pass through that part of the body; but it is not so with the missiles we are now considering. They frequently do not penetrate the cavities, though they strike with a force a thousand times more than adequate. They will often be turned off again; frequently bury themselves in the muscles, or run perhaps the whole circumference of the body, or to a distance in some capricious direction under the skin.

It is quite unnecessary here to make any particular remarks upon that description of wounds inflicted by large shot, round-shot, cannon-balls, or shells. These can only be received where magistrates have no jurisdiction, and coroners no occupation; our observations must necessarily be restricted to musquet or pistol-balls, slugs, small shot, and such ignoble missiles as are sometimes chosen to supply the place of these; viz. stones, hard peas, fruit-kernels, &c. and the first will fully answer the purpose of exemplification.

With regard to them, it is to be observed that their importance partakes much of the same circumstances that influence that of all other wounds, viz. the parts of the body in which they may be received—the nature of the injury they inflict—the circumstances of the person wounded, as to general health, peculiarities of constitution and structure—the promptitude of surgical aid, and propriety of treatment. All these may require to be taken into consideration in estimating the importance of the case, even in a court of justice.

1. With regard to the parts of the body, much of the danger depends upon their importance to life, rather than in the nature of the injury—such is the case with the brain, heart, and other organs, any lesion of which must be of the gravest description—*cæteris paribus*, having wounds in them by these bodies are more deadly than by cutting or piercing weapons.

2. It is necessary to advert to the nature of the injury. It is not strictly correct to talk of a gun-shot wound being a contusion, but a contusion inflicted by a ball, partakes of the nature of a wound, for a superficial wound, from which the foreign body is readily removed, differs scarcely at all in its nature from the bruise that a ball may inflict. All wounds, however, inflicted by them are *contused wounds*, there is greater or less laceration of fibre around the spot struck and penetrated, which gives a character to these injuries very distinctive. Where they are superficial, perhaps the danger is trifling; but when they go deep, or pass through the body, the prognostic cannot be too guarded: no one can predict what is to be the result. They spare nothing in their progress; vessels, viscera, and

bones partake of the injury: so that we must be aware of the contingent events of hæmorrhage—inflammation, with all varieties of consequence—exfoliations and other sequelæ of fracture, fissure, or grazing in the osseous structure. Their mischief is generally augmented by the introduction of other extraneous substances along with themselves, especially fragments of clothing, which often embarrass and cause great suffering after the ball itself has been removed.

3. Of peculiar circumstances relating to the patient, I shall merely hint, that posture at the time of receiving the wound, irregularities in the distribution of vessels, or transposition of organs, may save a life among many thousands; but over these things we have no control, and they cannot be adduced as matters of exculpation or crimination. Balls will often remain long in the body without sensible inconvenience; and give trouble, or even prove fatal at the distance of many years. They are, in these circumstances, very apt to wear themselves a passage to some distant part; and may by such removals transport themselves to the neighbourhood of important organs.

In the investigation of these cases, it is of consequence, where there are two orifices, to ascertain at which the missile has entered, and at which it has made its exit. For this purpose we are instructed that the orifice of entrance, or beginning of the wound, will exhibit a depression, with the edges and fibres driven inwards, whereas the contrary appearance will exhibit itself at the other, which will also be the larger of the two. It is likewise to be kept in mind that hæmorrhage does not invariably follow these wounds, as would be the

case were the same parts divided by a cutting instrument.

With these memoranda, upon which alone I counsel the reader not to rely, I shall terminate my own attempts to illustrate the subject; and shall add the very last practical example perhaps of Forensic Surgery, as to gun-shot wounds, that has taken place in this country.

At the late Assizes for the county of Kent, an officer in the preventive service was brought to trial, in order to satisfy justice and the country as to the death of a man who was shot in the night, under circumstances of a suspicious nature as to his pursuits at the time. There was no doubt that he was in company with a strong party of smugglers, and that he came by his death accidentally. If he was shot by the prisoner, it seems it must have been a misadventure, for this gentleman's gun went off in consequence of his tripping and receiving a fall, but in that case the deceased must have been shot from behind, as he was retreating before the prisoner at the moment. It seems, on the other hand, that various shots were fired towards the pursuers, on the part of the smugglers, in their retreat, and that the deceased came by his death through a shot from some of his own party, the evidence of which was in great measure, if not entirely medical. Two surgeons were examined on this point, one for the prosecution, and the other for the accused, and this is the outline of their respective statements.

The former gave evidence that he found in the body of the deceased a gun-shot wound. There was an *aperture* in the lower part of the buttock, and another in the upper part of the groin. The latter was higher up in the body than the wound

behind. He opened the body, and found that the ball had passed through the bone of the pelvis *from behind*. Had no doubt the wound occasioned death: one of the arteries was lacerated. Hæmorrhage was the immediate cause of his death.

The other gentleman was a surgeon in the navy, and had seen many hundred gun-shot wounds. "Examined the body of the deceased in the presence of the former evidence, and was most unequivocally of opinion that the ball entered *in front*, and passed out behind the body. The wound in the fore-part, was much smaller than behind; its edges were smooth and depressed, or turned inwards. The opening behind was twice or three times the size of that before, and was ragged and uneven. This proved most unequivocally that the ball entered in front, having, with diminished impetus, torn itself out. He felt the fragments of the bone at the hinder opening. If the ball had entered behind, he should say most certainly that there would be no fragments of bone in that place. Had the ball entered behind he should have expected to feel the fragment in the cavity of the pelvis upwards and inwards."

Cross-examined. Witness made his examination after the body was sewed up. Did not see the state of the bone itself. The openings of the wound would shew a great deal more as to the nature of it than the bone itself. The bone would certainly be shattered where the ball entered. Witness's examination was but a slight one. He was called in by Mr. ——* to examine the body. *They both agreed*

* There is some trifling inaccuracy with regard to the name here, but it refers to the former witness; and I decline inserting names on this occasion.

that the ball had entered in front. The spiculæ of bone he observed were impacted in the muscle of the buttock.

It seems rather strange, after they should have agreed (which I think there is little doubt they *must* have done) that the shot was received in front, how such a difference of opinion should appear in their evidence. That of the last witness is given upon intelligible grounds: but let me be clearly understood to keep in mind that this is a newspaper report, and in matters of this nature the abridging powers of the reporter can seldom be judiciously or fairly exercised.

SECTION III.

DEATH BY SPONTANEOUS PERSONAL AGENCY, OR SUICIDE.

The *moral* consideration of self-destruction is often founded upon circumstances, of which the medical practitioner cannot have any peculiar knowledge; though the conclusion 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 deprived *himself* of life or not.

In the consideration of 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 a variety of mysterious cases by the investigations and deductions of the medical practitioner. Instances often occur, in which a person takes away his own life, where his friends, naturally wishing to conceal the fact, will attempt to hide the real state of the case, by ascribing the event to some natural cause. 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 an indignity offered to the corpse. But where the decision must be between the rashness, insanity, or crimina-

lity of the dead, and the imputation or suspicion of crime with regard to the living, it is our serious duty to assist carefully in developing the truth. Of circumstantial means I decline to speak, they are not strictly within our province, though they must have their weight in aiding even *our* researches. The motives that may prompt to suicide, and the moods 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 here.

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 would be resorted to for that purpose. For instance, we have hardly any 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 delay and 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 considerations that decide the unfortunate who lays violent hands upon himself, or seeks (in whatever way) to effect the termination of a burdensome existence. There have been suicides, who with extraordinary coolness and deliberation, have contrived 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 inves-

tigation of the manner of death, for there can be no want of moral proofs.

Is it possible to confound a case of suicide with death from *natural* causes? It may be the interest of survivors to establish that a person died by disease, where suicide is alleged or suspected; and a person labouring under a disease that would have soon terminated fatally, may take away his own life, when upon examination of the body, morbid appearances, 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, the traces of which will be more or less apparent; 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 person, 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*, in addition to the observations already given in the prior consideration of death from these, it is to be remarked that concurrent circumstances will tend to elucidate the history of doubtful cases of this nature; such as the mental state of the deceased previous to his death, and other things concerning him that should be inquired into. As to physical proofs or presumptions, the nature of the poisonous substance, or rathe ıthe

form, and vehicle in which it has been used, will have considerable weight. Where poison has been swallowed spontaneously, we are more likely to find remains of the matter made use of, than where it has been administered by another. The unhappy *felo-de-se* is in general less solicitous about the minor consideration of discovery, than that of prevention. In rare cases, where the poison does not act immediately, and the victim is anxious to avoid detection as long as remedies might be forced upon him: all appearances of what has taken place may be removed, but although the attempt to give to homicide the appearance of self-murder is common, I do not recollect any case of a person purposely destroying himself in such a way as to lay suspicion of the crime against others.

To take the case of Sir T. Boughton, merely for the sake of example, and to reason from the facts that were given in evidence, that the deceased was poisoned, and by *Laurel-water*. All the circumstances on the face of the event discouraged any supposition that he had made away with himself. The very choice of laurel-water, by a person not conversant with it, and not having access to it, would have been strange; and the mixing poison in medicine was still more unlikely to have been done by an individual bent on his own destruction. There was no occasion for such pains to conceal it; and it is hardly to be supposed that a person of sound mind, intending to destroy himself would, at the very time, be 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 selected for administering poison to another by a designing and reflecting individual, will be that least liable to detection. This has ever been the principle in slow poisoning; and laurel-water, not being familiarly known, at least at that period, partaking of certain sensible qualities that belong to some medicinal preparations, and, above all, being administered in a medicinal mixture, 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, 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 readily procurable, the simplicity of the form in which it has been taken, or its being 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 suicide, by whatever means, and should be kept always in mind.

" 1. If the person had for some time laboured

under melancholia; had met with losses, disappointments, 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 solitude, 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 apartment, 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. Some 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, on the other hand, 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; yet there are on record several cases in which bodies have been recently found in this plight, and juries

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* To which may be added anticipation of punishment, or disgrace, from misconduct.

† Med. Legale. IV. § 948.

have not testified suspicion as to homicide. In one instance they returned a verdict of—" Found drowned," but in others they have deemed it " insanity."

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 ever 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.

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 exposed to the view of passers-by; if near the body we find the means by which the deceased might have reached the place to which the cord is fastened. If the body be not suspended, but touches more or less the ground or floor, while the cord is not tight enough for the purpose of strangulation, and there be no manifestations of any other means of death, there can hardly be room to doubt as to self-murder. It is true that the mere resting of the toes takes away but little of the character of suspension; but we may meet with

stronger cases. A few years ago, a man, aged 75, destroyed himself at Castle Cary, in the morning, by fixing a cord round his neck, while sitting on the bed-side, and leaning forward till his purpose was accomplished. His wife, who had for years been bed-ridden, and was therefore not likely to have been very fast asleep, was in the room during the transaction, and knew nothing of what was going on. A prisoner hung himself in jail, by fastening the cord to one of the window bars, and pushing himself away from it with his arm; but this case is one bordering at least on strangulation.

There can be no doubt that however unlikely the complication may be, persons have both wounded and hung themselves. Placing the cord wrong might give rise to such a complication, and suffering being thereby protracted, together with eagerness to accomplish the object. Ballard relates, that a young priest having first cut his throat to a certain extent, hung himself in his robe *. In cases 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: and if we admit the case of choking by doubling back the tongue, it cannot, except in infants, be believed to be done by another person, and must be considered one of suicide. If foreign

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* Notes to Metzger.

bodies are found in the trachea or œsophagus, the fair conclusion must always be, that disease or accident has placed them there.

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 very 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. When it is done by himself it is by running violently against a wall head foremost. 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. Cases have been met with where the arm has been cut across with the view of bringing on fatal hæmorrhage; and I recollect the instance of a surgeon who bled himself to death *secundum artem*. 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 circumstantial proof must in every such case be requisite before coming to that 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 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 deceased'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 charged to the right person by means of the wadding of the fire-arm. 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 the wadding being examined, was discovered to have been torn from paper found in the possession of the murderer*. The circumstance is of striking import-

* Debate in the House of Lords, Nov. 10, 1820; and Literary Gazette, April 4, 1818.

ance; and in a case of suicide, it might sometimes lead to right conclusions, and should ever be kept in mind. Authors have generally noticed 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. In the reign of King Charles II. and for some years afterwards, a good deal of discussion took place respecting the death of the Earl of Essex, then a prisoner in the Tower, who was found with his throat cut. The case had some important political bearings, which I avoid noticing. Some remarks, however, on the physical circumstances of it were hazarded from time to time. The authoritative report was that he 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 sur-

* It was so considered at the late memorable inquest in Maddox Street.

† History of his own Time, 1683 and 84.

geons 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 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 sufficient 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

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* In fact *cutting the œsophagus above the trachea*, though satisfactory to the Bishop, is " unmixed nonsense."

† There were other circumstances connected with this elucidation, which will interest the professional reader. He may consult the IXth volume of Cobbett and Howel's State Trials, 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."

cases there will be such peculiarities, that general rules can hardly be laid down; and it will be necessary to maintain coolness, and freedom from prejudice or the influence of current report, where investigation is required. I shall conclude these 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. Unless the *veracity* of this statement be impeached, what can be more conclusive than the inferences

that naturally present themselves? In the imputation of unintelligible refinement which has been expressed by the learned and judicious authors of "*Medical Jurisprudence*," I cannot acquiesce.

Towards the close of the last Session of Parliament, the nation was gratified by the introduction of certain improvements in the criminal code, by which some of the horrors of British Jurisprudence have been removed. Among others the treatment, (for perhaps it would be wrong to call it the punishment) of those who commit the felonious crime of murder on themselves has been so far modified as to abate what was a great nuisance in the estimation of the living. The cross roads and the stake are in future to be dispensed with, and self-murderers may now be buried with the same simplicity as dogs. But absurd as it may appear to inflict punishment on a corpse, there are many exemplifications of such procedure in history. The very bones that had for many years been mouldering in the earth, have been torn from their silent obscurity, and an *eclât* given to the character of their former personality, by treating them with 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 thoughts of the place of interment. In England, there is a universal preference for reposing in *consecrated* ground, and great anxiety regarding rights of Christian burial. Those who ascribe no sanctity to one spot of earth more than another are generally anxious to have their remains deposited among those of their friends.

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, difficulties that are augmented by the laws, (and particularly so at present from several instances of their application in full severity,) such a provision would operate with double advantage to society. The subject is one that naturally claims the attention of professional men, so that in a work of this nature there can be neither presumption nor impropriety in suggesting such a consideration; and I hope the day will come when in every case where an individual is proved to have taken away his own life, the body shall be given for dissection, unless such evidence be adduced to prove mental alienation, as would have exculpated him under a charge of homicide, had he been tried for the same before *a competent tribunal:* the commonplace verdict of a Coroner's Jury will then no longer put the final imprint on a person's character, or sway the descent of property, because he is dead, although it cannot dispose of any thing con-

nected with a *felo-de-alio* living, beyond the security of his person till the next gaol delivery.

But, while, on the other hand, 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. That of lunacy cannot 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 urged in vain. Why deal more tenderly with the dead than with the living?—and what evils could possibly result from exacting such a tribute of utility to that society, which the spirit of the law considers injured by the abstraction of a member? The claim must be still greater on the individual who makes such an exit, charged with other crimes.

It has been argued that suicide is of itself sufficient proof of mental alienation: but, without stopping to enquire here, whether every kind of mental *alienation* is to be considered a proper excuse for the actions of the person subjected to it, the argument

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* Among other notorious exemplifications, may be quoted those of Hackman, and Stent.

has been fully overturned on other grounds. I shall therefore pass it over, and close this section by referring to the subject of insanity, for the doctrine that should bear more especially on this point.

SECTION IV.

PROLICIDE*.

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, which must be treated of separately; for the crimes, while distinct from every other species of murder, 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 newborn infant, or *infanticide*.

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* It is hoped that this word will be considered entitled to reception, on the score of analogy. We have long had *parricide*, *fratricide*, and *infanticide*, all (if I may use the figure of speech,) of the same family; and recently the very appropriate term *fœticide* has been introduced into Forensic Medicine. In both these last crimes there is a peculiarity arising from the person accused being, in almost every instance, the parent; in *fœticide* not unfrequently the father, as well as the mother; in the other case, commonly the latter only. In this relation to the beings destroyed, the general term of murderer, or murder of offspring seems to be the fair converse of *parricide;* and will suit well the purpose of the Medico-legal writer, who considers the two cases as parts of one subject, for the designation of which collectively a proper term was wanting.

CHAPTER I.

FŒTICIDE; OR, CRIMINAL ABORTION.

ABORTION or *miscarriage* is the separation of the *immature* * fœtus from the womb of the mother. It is a natural event to which women, in the pregnant state, are much exposed, and to guard against which, in many cases, requires very scrupulous management. When it takes place, it not only destroys, for a 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 is often attended 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 of it practically in our country, only where there has been illegitimate intercourse, and the object is to conceal that fact, by hiding the consequences—to which view of the subject I shall confine myself.

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* This word has a technical meaning, which will be explained hereafter.

§ i. *Advance of the Embryo in the Womb.*

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, even by physiologists, such as they were, 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 of which is 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 corion, near the umbilicus—but after the third month this 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; a fact which has often created confusion at the usual period of natural birth.

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, the abdominal seems to predominate over the thoracic volume. At the sixth month, the fœtus acquires a considerable degree of vigour; it then measures about nine inches in length—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 end of the seventh, the infant is perfectly formed—being deficient only in size and weight; and about this period the membrana pupillaris disappears. 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 mature. The questions relating to the extinction of its life after which period will fall to be considered in the next chapter.

Abortion may occur at any period of pregnancy, previous to such developement of the fœtus as enables it to support existence separate from the mother—in other words, during the first seven months. It is a general 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 them non-rearable, or more concisely *immature*—in distinction to those between the seventh and the ninth month, which may be reared, and are merely *premature*. A child carried to the full term of utero-gestation only, is properly *mature*. These distinctions are here of considerable importance. I am quite conscious that to this rule exceptions have been adduced, and while giving them all the force that can be claimed for them, by admitting their existence, I hold it quite unnecessary to take down the rule for their sake. Besides the admitted doctrine that we are not to teach principles from the rare, but from the common phenomena of na-

ture, I retain it on this ground—that in any particular instance which may be the subject of enquiry, should the vague and wild objection be set up, that this may be one of the exceptions, it would be fair and scientific to reply—that we are not to speak from the imagination of what it might have been, but from the evidence of what it is. I think the medical practitioner would find this a golden maxim for his conduct in justiciary investigations generally.

Of the notion about quickening, in the period of utero-fœtal animation, concerning which so much has been written, the origin is easily explained. After the embryo is enclosed in the uterus, no new characteristic can reach it. It must be furnished at the time of impregnation with all the constituent principles of a living being, and its future progress can be but the developement and increase of these —not the acquisition of more; for there is no direct communication between the system of the mother and that of the fœtus *in utero*. The placenta constitutes a boundary 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 medium of the mother; for it has been ascertained that no injection can be made to pass from one side of the placenta to the other, either way; and though it would be very unguarded to allow the inference to be drawn, that I lump life and injecting matter together as substances, still it is sound doctrine, that the animating principle can never be proved to be imparted at the distance of months after conception.

Quickening, therefore, instead of marking the period at which the future individual becomes endued with humanity, or elevated to distinct personal identity, is but the sign, or signs of the developement and aggrandizement of the growing body to a certain pitch, and of its now possessing 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, and to furnish evidence to others, whose business it may be to ascertain the fact as to pregnancy.

§ ii. *Phenomena of Abortion.*

Natural or 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 unhappy mother has herself been the sacrifice, while the object intended has not been accomplished.

" One may as easily expect," says Sir Hans Sloane, " to shake off the unripe fruit from a tree, without injury or violence to the tree, as endeavour to procure abortion witnout danger to the mother †."

The causes of abortion are very well understood. Sometimes they appear to be constitutional. Certain women are so highly predisposed to it, that it is in them the sure consequence of impregnation; and females of disreputable life, have been known to be repeatedly pregnant, and in the early months to divest themselves of that state without apparent means. Not that I believe them to be in possession of any secret remedy for pregnancy—but by encouraging a constitutional disposition to abortion, which women of character similarly situated, would take all pains to avoid, some may succeed in their object. It is impossible to describe an abortive habit, in the manner of some dispositions to other 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

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* This may perhaps be considered now too positive an assertion; for in casting my eye over a recent medical journal, I find something alluded to that touches the question the other way. Still, however, it is to be kept in mind, that the two sorts of cases in which the article has been administered are widely different; that it has *not* caused abortion, where it seems to have excited *apprehension* that it might; and that even where the *benefit* is sought, it is not satisfactorily established that it is to be relied on.

† Introduction to his Natural History of Jamaica.

reckoned acute diseases; agitation of the system from violent mental emotion; severe exercise; dancing; raising heavy weights; falls, &c.; the general stimulus of ardent 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 to the expansion of the organ, thereby inducing the expulsion of the ovum by premature contraction: on the same principle it will be acted on by tumors in the 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. These, and other causes, which to the practitioner will readily suggest themselves, may occur without the slightest culpability.

In the crime of *procuring* abortion, the female may either be an accomplice, or she may be seduced into acquiescence under false pretences, or she may be altogether unconscious of the nefarious attempt which is made upon her. How far the practitioner may be able to decide upon *her* guilt or innocence, it would be difficult to say. Before the motions of the child are perceptible, she may not believe herself to be pregnant, and it may 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 drastic 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 confounded 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 before the end of 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 symptoms resembling some of those 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 always contains 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 at least 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 absolute poisons, and others have acted 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.

§ iii. *Practical Application.*

The duty of the medical jurist in 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 called, abortion is going on, the knowledge of this event, as a disease requiring professional aid, will enable him 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 become his 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, for solid substances are frequently mixed with it, among which, 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 the 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, shewn by tumefaction 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 a former 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 is made to baffle enquiry. In proportion as the fœtus has acquired bulk, or in other words, according to the length of time it has been carried alive in the uterus, the greater will be the derangement caused to the parts of the mother by its exit, and the longer time will be necessary for their readjustment. 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 be dead, we may attain fuller 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 agency, we must in some degree be guided by circumstances; such as 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 physiological inference.

While 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 system of the parent—and those that are at once applied to the uterus—the former being chiefly medicaments, and the latter consisting of mechanical violence.

Of medicines that act upon the gravid uterus in a manner analogous to that of emetics on the stomach, or cathartics on the alimentary canal, it has never been established that there are any; it has therefore been by causing violent action in parts connected with the uterus, or by 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 those in which the parent has not suffered materially—and often indeed has the

forfeit of 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 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, however, 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 identification 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 declares 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 the could not conceal her shame, and the prisoner had given her an innocent draught to amuse her *. Still, however, it

* Case of Collins, tried at Chelmsford, August 9, 1821.

is proper to be aware of what drugs are vulgarly considered capable of effecting the purpose. Here let me caution those who sell these things, to have an eye to *their own* safety, at least. For, by dabbling with a loose sense of its importance in this matter, they may render themselves accomplices, even through vending articles perfectly innocent.

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: 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. 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 that he had sold one of the witnesses 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 good reason for keeping in his possession.

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* That of George Angus for the murder of Margaret Burns, at Lancaster, Sept. 1808. See Appendix XXV.

† Dr. Houlston—"Observations on Poisons,"—says that the proper Jacob's water is a solution of Corrosive Sublimate, but that a *watery* solution of arsenic is often sold under the same name.

The *Cucumis Colocynthis*, or bitter apple, has also been given to pregnant women. Its effects are analogous to those of the former article, but it is 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) have been very often resorted to for the purpose in view, but they 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 been exposed 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, 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 method, of a likely nature, viz. being bled by a practitioner, on the ground of the real event, and, after his departure,

removing the bandage, and encouraging hæmorrhage, even to syncope *.

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 bless himself on its having been invented out of France. 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 on a similar principle. The medical practitioner needs no farther elucidation of the capability of exercising villainy in this way; and believing that no good purpose would be promoted by any 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 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

* Cours de Medecine Legale, p. 84.

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.

As a proper sequel to the foregoing subject, I shall advert briefly to a very important, though among us, perfectly understood question, in the practice of Midwifery;—how far the accoucheur is warranted, in cases of such pelvic deformity as cannot allow the passage of the head of a full-grown fœtus, in bringing on premature delivery, as holding out the only chance for saving the lives of mother and child?

My object is not to convey any information, afford any satisfaction, or set at rest any question, as far as the British profession is concerned. Among them I do not believe that there is the least discrepancy of opinion on the subject, or any risk of misconception regarding its true bearings. If there is, it must bear a very trifling proportion to the intelligence and sound principle that indubitably prevail; so that without arguing impertinently myself about it, I shall merely take occasion to record, that in the year 1756, at a meeting of the principal practitioners of midwifery in London, assembled for the purpose, the morality, necessity, safety, humanity, and every other quality of the practice were solemnly

and deliberately considered; and that ever since it has been no ordinary matter of congratulation.

I should have deemed it, perhaps, unnecessary to have said even thus much, were it not that in a work, whose general merits cause some regret at the circumstance, lately published in Paris, and much approved of in this country *, there is an inexplicable want of information, or a deficiency of candour on this subject.

It seems that in France there is a difference of opinion concerning it; and this author sides with those who deem the practice *illicit* and *criminal.* We are by no means given to understand that it is contrary to the code of the country, indeed we know that it is not so; it is on the score of religion and morality that the criminality is set up, on the ground of its being a practice of the most dangerous description.

What it may be in the hands of the French practitioners is not for me to contest. It may be as deadly as M. Capuron says it is, having succeeded but in " a few fortuitous cases," and it being " impossible to cite a single authenticated fact attesting the harmlessness of such an operation"—all this may be conceded. But so different is the state of the matter in this country, that if it be necessary to allow the occasional interference of untoward events which human foresight and precaution cannot avert, or even to charge sinister results upon unskilful dealing, these are but rare exceptions to an abundant course of success. On the score of *criminality* M. Capuron might have said the less, as he admits the practice to be the " sole anchor of safety for a wo-

* La Med. Legale, &c. de M. Capuron, p. 296.

man labouring under convulsions, or uterine hæmorrhage;" and on that of *danger* his arguments are too vague to stagger any judicious practitioner of midwifery in this country.

But what are his preferable plans for the safety of the parties in such cases? The *Cæsarean Operation* and *Symphysiotomy!* Of the former we have reason to stand in the utmost dread. All that it has amounted to in this country, has been a very remote chance of survivorship for the infant; and less than forlorn hope for the woman. Of the latter too much has already been proved on this side the water, not to excite, however reluctantly, some suspicion as to the real motives of absolute silence on the state of practice here regarding the premature induction of labour *.

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* The reader may refer, on this subject, to the introduction to Dr. Denman's Midwifery, and to a paper by Dr. Merriman, in the Medico-Chirurg. Trans. Vol. III.

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 womb, having attained a sufficient degree of strength and developement, to be able to maintain its existence independently, 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 visited with severe 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; and 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 death of their illegitimate offspring, are to be conducted upon the same princi-

ples as other trials for murder, the jury, in cases of acquittal on that charge, 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 still is 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 of stimulus of plunder or gain, and add 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 take place in the mind of the woman might appear incredible.

But so many of the tenderest of the sex have committed such a deed that we hardly know upon which there is more claim, our pity or abhorrence. If we consider that the paramount object of solicitude to every woman not abandoned, is the reputation of chastity, without which a female is of no account in society; and the penalty, (to a rightly constructed mind, worse than death) attendant on the discovered loss of that jewel—a secret which a living consequence alone perhaps can reveal—we may lessen our wonder that concealment,

even by unfair 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. It must not be urged that the insanity here is not real because temporary, so long as *temporary insanity* is 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 even minor misfortunes, are to be considered sufficient causes of insanity where there is no direct evidence of the fact, and the *feelings* arising from which excuse that deed, are we to give a modest female, (one that has probably erred through excess of confidence, and all the better sympathies of attachment towards a villainous deceiver,) no credit for despair, for distraction, under the anticipation of the irremediable infamy that approaches her?

If the practitioner reflects for a moment on the common propensity 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 delights in what is extraordinary, and feels a perverse interest in things that are necessarily odious to the enlightened; in fact, events that must

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* Paper on the uncertainty of the signs of murder in the case of Bastard Children, read before the London Medical Society, July 14, 1783.

be painful to the reflecting and liberal-minded, seem to give them pleasure. It is unnecessary to obtrude any formal exhortation to my professional brethren not to be led away by popular outcry; they ought to be men as much divested of mobility of this sort as any in society; and should even studiously maintain a temper of mind, and habit of thinking becoming their important functions.

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 abhorrence of the man by whom she has incurred the pain and ignominy 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 it would be her pride as well as her duty to display under happier circumstances. In taking away the life of her child, she is driven to the commission of so unnatural a crime, that we ought perhaps to be ready to admit 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 must not only allow 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, who knows nothing of such matters, and to whom reputation is every thing, has reason to suspect herself to be with child. As yet it cannot be more than suspicion, why should she rashly 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 has no friend to whom she can reveal her situation, or if she has a confidant of her own sex, the revelation even to her must be a severe misfortune, as she will thereby injure herself in that person's opinion; for women are, in this matter, proverbially uncharitable. Shall she impart it to one of ours? That is quite out of the question. She resolves at length to make what preparation she can to meet the urgency of the moment when it shall arrive; and then, when concealment is no longer practicable, she will apply in a quarter where she can obtain the necessary aid. Sooner than this it seems quite unnecessary to announce the event, and it would be to the last degree repugnant. Such being her plan, she pursues it till unexpectedly overtaken with the pains of labour, in a situation where no assistance can be obtained, or by a process so rapid, that it would be impossible to avail herself of any, if at hand. She finds herself delivered of a dead child, and the suc-

cess 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. Circumstances, however, lead to suspicion; search is made; the child is found; an accusation of infanticide is set up; the Coroner holds an inquest; all the mouths of the neighbourhood are in full cry; an apprentice from the nearest apothecary's shop first mangles the body of the infant, and then the evidence that ought to be obtained from it; the jury, knowing that they cannot hang her, and under-estimating all other considerations, send her to gaol, by stating on oath, that twelve of them at least believe she has committed murder. If this takes place in London she may be brought to trial shortly; but if in the country she may be consigned to the horrors of a prison for months. Sooner or later, however, a true bill is found by the grand inquest, and she is finally produced before the petty jury, with whom rests the issue. Some question is put to a medical practitioner as speedily as possible*, which he either cannot answer, or so answers as to leave the question of murder in doubt. The Judge informs the jury that there is no evidence of the child having been born alive, and directs them to acquit her of the capital charge, and find her guilty of the misdemeanour of concealing the birth. This being done, she resumes her abode in jail, and at the end of her imprisonment, may come out in any state as to character that may happen to be the consequence of her recent mode of life—to her it can make little

* On several recent trials the medical witness has been examined first.

difference, she is worthless, and will be scouted by all those who have had better luck: and this is the tale of the majority of cases called *infanticide*—this is a story of love.

The relations of this subject to the duties of the medical practitioner are very important. It is obscured by difficulties enough without those which have been gratuitously heaped around it. A case of this sort is one from which there is a general disposition to shrink, arising sometimes from a laudable apprehension that we may contribute to the shedding of innocent blood. Part of this a thorough examination of the subject I think will remove. But there is another reason which may operate on some, and that is the troublesome nature of the investigation. What is to follow may set this in a still stronger light. But we cannot help it.

§ i. *Progress of the Fœtus in Utero.*

In a case of alleged infanticide, it may be necessary to establish by the evidence of professional men, both that a child has really been born alive, and that delivery has been suffered on the part of the mother. The reader will find what is necessary to be said on the latter subject under the article *Pregnancy*. At present our observations will be restricted to the former part of our duty.

Referring to the body of the child alone, it will be of primary importance to ascertain that the fœtus 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 infant could not have maintained itself alive, out of the maternal womb, or in other words that it had not reached the

end of the seventh month of utero-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 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 sufficiently developed, except in the articles of weight and measurement.

In the immature fœtus there is considerable vascularity: the skin is very red. 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

* 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 constantly reverting to the difference between the rule and the exceptions, I would here say that when these occur the practitioner has no business to run from the investigation, as if he were to be held responsible for the unwonted state of the subject.

is wanting, as in the palms of the hands, soles of the feet, &c.

The head, though proportionately 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 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 still present, and the iris 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, and 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 also seek for corroborative proofs, as to the age of the fœtus, in the 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 following remarks on the progress of the contents of the cranium are from the Edinburgh Medical and Surgical Journal, No. 76, the first part of which is taken from Chaussier. Before the sixth month the brain is semi-fluid, uniformly white, without convolutions; in the seventh the medullary matter is redder, the cortical

Chaussier has given a scale of admeasurement, from which to deduce references as to the age of the fœtus. He states that at the full term of gestation the middle of the body 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 further 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.

§ ii. *Means of ascertaining the vitality of a new-born infant.*

Having made these preliminary observations, let

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still white, and the grooves of the convolutions begin to appear; and at the full time the cortical substance is greyish, and the convolutions are distinct. The pia mater, at the sixth month, does not adhere, as may be conceived, from want of grooves; but it begins to be connected at the close of the seventh month, when the convolutions first shew themselves. From the recent discoveries of Tiedemann and of Serres, it appears that the corpus callosum in the sixth month is only half as long as the hemispheres of the brain; the tænia semicircularis, infundibulum, and choroid plexus are formed in the seventh; the corpora olivaria do not protrude till betwixt the sixth and seventh; but the corpora pyramidalia are fully formed a month sooner; and in both, the protrusion is owing to the developement of cineritious matter in them. It is not till very near the end of pregnancy that the cineritious substance is formed in the spine, or even very manifestly in the convolutions of the brain and cerebellum; but it exists from a very early period in the corpora striata and optic thalami.

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 problems for our solution are 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 circulation altered from that peculiar to the unborn fœtus, are discoverable.

For it is by evidence as to *circulation* and *respiration* that we must decide in a doubtful case, whether a child has or has not been born alive; and until it is separated from the mother, and has commenced its independent state of existence, there is a consi-

derable difference in the œconomy of the circulatory system from that of the adult, which after birth it immediately assumes. 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 mother, through the placenta. 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, is partly distributed in the liver—a portion, however, goes 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, obtains access to the left, by an opening between the auricles, 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, which at the usual term of delivery is, for the most part, about two feet in length.

Such is the course of the circulation in the fœtus, the most striking peculiarity of which is the trans-

mission to the left side of the heart, without passing through the lungs. Previous to their distension by the entrance of atmospheric air, or prior to the function of respiration, these organs being collapsed and dense, are capable of receiving no more blood than is necessary for their nutriment. It might, therefore, be supposed, that if an unborn child cannot breathe, the lungs would furnish 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: they do not 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 incisions made in their cellular structure.

If, in the same state of the system, we inspect the heart, we shall find the foramen ovale open; and the ductus arteriosus pervious, containing blood. We shall also perceive that the diaphragm is more arched, (convex upwards, and concave towards the abdomen,) than after respiration has been performed. In the abdomen itself, we shall find the canalis venosus in a state corresponding to the canalis arteriosus, and blood in the umbilical vein. The urinary bladder generally contains urine, and meconium abounds in the intestines. Discolorations about the body will partake of the character of sugillations rather than of ecchymoses—a distinction which has been already explained.

If the child has been born alive, the organs now

enumerated will be found immediately afterwards to have undergone important changes. Following them in the same order, we remark that the immediate effect of respiration 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, so that 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 also find 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 soon degenerate into imperforate ligaments. The pulmonary vessels will be enlarged. The diaphragm will have less convexity. The urinary bladder will probably be empty, and the intestines freed more or less from meconium. 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 my duty to consider the subject in all its bearings; and to give a fuller view of them, than may be necessary with regard to many other topics that come under the observation of the Justiciary Physiologist. In doing so, I expect to contribute to the right ends of investigation, as well as to furnish some facilities for conducting it.

§ iii. *Of the* Docimasia Pulmonaris, *or Proof to be drawn from the Lungs.*

A. The Hydrostatic Test.

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, between lungs that have respired, and those that have not been distended with air. If, in the former case, they are thrown into water, they will float, and in the latter they will sink. 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 expand and become buoyant. The fact was known to Galen, but no use seems to have been made of it till about the year 1660, from which time it was 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 coming at length to be urged against it, practitioners seem to have passed from the extreme of implicit reliance, to that of unqualified discredit as to its validity. Medical practitioners of repute have gone into court, and roundly asserted that the test is not only absurd but one that has been long exploded. This opinion has been caught up rather eagerly; and we have it on record that it has been quoted from the Bench as matter of congratulation to jurymen. With submission, however, I would say, that neither of these declarations is warrantable. That the test is too often applied in an absurd manner, is too true, and that it is in fact so far exploded, that too many will not venture on the task of making it, is well known; but the real cause is neither the

absurdity of the thing itself, nor any authorized suppression of the practice. It will generally be found in the want of ability or of inclination to undertake the experiment as it should be performed*.

Having already mentioned in what the phenomena consist by which we are to judge of the fact whether a new-born child came into the world alive or not, I shall now review the principal objections that have been brought against drawing conclusions from the sinking or swimming of the lungs in water, or in other words, against the HYDROSTATIC *pulmonary test*.

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

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* I cannot help subjoining the following illustration of gratuitous pains to get rid of the embarrassment into which practitioners have found this point of physiological enquiry to have so often thrown them; and for which, in nineteen cases out of twenty at least, they have themselves to thank.

An inquest was held on the body of a child taken out of the basin in Hyde Park, in the month of January, 1822. Mr. * * * * deposed that he had opened the body of the deceased, who, in his opinion, was *near a month old.* * * * * could not ascertain the cause of the child's death. *Coroner.* Can the surgeon say if the deceased was thrown into the water alive or not? I cannot.—*Coroner.* Have you examined the lungs, and made any experiments by putting them into water*? I examined the lungs, but the practice of putting them into water to try if they float or sink, is now *completely exploded*, having been proved to be founded on false principles!

* As if a child might live for a month without breathing!

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 twenty-sixth 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 before its birth; and one has been lately published in a highly respectable Journal *, upon authority, which, if it is not more imperative to believe, it would be less decorous peremptorily to reject. The gentleman who helped the Royal Society to the first case, lived at a time when people were as well pleased to wonder, as we are now to explain what would have been wonderful; and he speaks only from the report of the mother and midwife. Mahon very 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 †."

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 presen-

* Edin. Med. and Surg. Journal.

† Med. Legale, II. p. 396.

‡ Dissertation on Infanticide, § ix.

tation 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 solitude 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.

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 allowed thus 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

* Ut supra, p. 401.

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: but should partial inflation be found, along with increased *absolute* weight *, the necessary inference must be in favour of attempts having been made to respire. If it cannot be ascertained whether these took place before or after birth, it will amount to want of evidence that the child was born alive, of which the prisoner will have the benefit.

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 turns to the idea of concealment. It has been surmised that this operation may be performed through malice on the part of another person. There is no doubt that air might in this manner be introduced; and if so, how are we to verify its origin?

It is very difficult to effect under the circumstances in question; 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 probably quite ignorant of the proper manner of performing it, is not likely to succeed. But, granting that air has been conveyed into the lungs in this manner, authors have pointed out in such cases a flatness of the chest, and the absence of crepitation and hæmorrhage on cutting into the lungs. These will be very partially dis-

* This will be shortly explained.

tended; and it has been observed, that all the air thus introduced, may be squeezed out again, 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 distension 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 length reached the surface, where it continued to float.

Admitting the lungs to be actually putrid, and that air is consequently evolved, it is to be observed

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* Beclard, Bulletin de la Societé d'Emulation, Nov. 1818.

that the process is from without inwards: the aëriform fluid is first generated on the external parts of the lungs, and lies under the enveloping membrane in bubbles, running along the fissures of the component lobuli. If the lungs, in this state, are squeezed hard, these bubbles will burst, the gas will escape, and the lungs will become heavier than water, as before.

But there is little real importance in this objection. Bodies have often 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 a pulp—to "*bouilli*,"—were in a state of putrefactive solution; and in which putrescence had advanced so far as to prevent discrimination of the sex; notwithstanding which the lungs immediately sunk*. These organs resist putrefaction longer than all the other parts of the body, excepting the bones. The fact has been accounted for by 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.

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 granted 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

* Translation of Metzger. See also Mahon, Med. Legale, II. p. 400.

which we undertake to make experiments, and tubercles, vomicæ, schirrosities, and congestions of blood are extremely rare in the lungs of new-born children *. If we find them, (and where they exist they ought to be discovered) we can easily assign to them their real degree of importance.

Hitherto I have been speaking of the lungs in 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, which will cause lungs that have respired to sink in water, let such part, or such 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 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

* 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.

there can be but partial inflation even of one, the other remaining collapsed. The observations called for here, bring out a curious fact in infantine physiology. If the buoyant lung in such a case be the *right* one, the force of the objection 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 appears 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 vertebra 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 is inclined more backwards than it is in an infant after respiration has once taken

* Paper read before the Medical Society.

† Memoires de l'Academie Royale des Sciences, année 1769.

place; and the right, in an infant born to the full time, is more elevated than before birth."

The result of Dr. Hutchinson's later 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.

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 asphyxied; 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 proof that the child was born

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* 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 overlaid 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.

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 this state; 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 happen, will be to conclude the child to have been still-born. But, if from evident signs of circulation having been carried on after birth, (such as may be presented by wounds, or other injuries,) we should be led to believe, notwithstanding the state of the lungs, that the child had been born alive, 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.

Here let me inculcate—that the Hydrostatic test, and all other circumstances connected with the lungs, relating to the question of life in the new-born infant, though forming the most important links in the chain of evidence, are but links—for the conclusion must be drawn from the concurrence of many facts: that we shall be unable in some cases to come to any conclusion—when it will be our duty to confess this, but not, because such has taken place in a particular and very rare instance, to denounce the *docimasia* as absurd in itself: and that, as a general answer to the foregoing objections, it may be safely asserted—that no one of the occurrences on which they are built, can greatly embarrass him who has right views and sufficient knowledge of the subject; for he will by no means be surprised should he, now and then, be able to make little or nothing of it. I am sanguine, however, in the expectation that by the

time we shall have discussed the sequel, those who may choose to bestow upon it a due share of attention, unbiassed by prejudice, will see that cases of this nature must be but *exceptions.*

B. The static test; or the test of Ploucquet.

The *specific gravity* of the lungs, however, is not the only circumstance about them affected by the change in the circulation after birth. While that becomes so much diminished, the *absolute weight* is increased. While the fœtus depended on the mother for a supply of blood, and the circulation went on through the medium of the umbilical cord, and the other channels peculiar to the uterine infant, part only went to the lungs—that which was requisite for their nutriment, 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, the infant acquires new powers—the most early and important of which is the oxygenation of the blood in its own pulmonary system. The whole circulatory fluid passes to the lungs; and these are not only distended with air by the act of respiration, but they are now filled with blood, their vessels are 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 extravasa-

tion of the coagulable lymph *." This is an illustration of what takes place in the fœtal lungs when their vessels are throughout filled with blood, though to a less degree than in morbid congestion; they must become heavier.

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 *permanent* 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 *absolute weight* of the lungs cannot but be increased."

Ploucquet announced this discovery so far back as 1777; and the observations, or experiments made by himself, as well as those communicated to him by Jæger, down to 1782, had warranted the state-

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* Dr. B. adds, "it therefore commonly sinks in water;" but this is not a fair corollary to the preceding fact about its weight, for it is certainly absolute weight that is meant, although it also acquires specific gravity.

† In a tract published at Tubingen, 1782, called "Nova Docimasia Pulmonaris," &c. to be found in Schlegel's Collectio Opusculorum ad Medicinam Forensem spectantium.

ment, 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, 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 his test 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 help suspecting 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 general 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.

It must be confessed, that subsequent investigations have, by no means, established the claims of this test, according to the sanguine expectations

of the discoverer. Yet it should, in my opinion, never be omitted; for it is founded upon a basis, that is *self-evidently* true, although the deductions instituted have been in no small degree confused. It is to be regretted, that among the numerous intelligent practitioners of midwifery in this country, no assistance has been furnished to the medical jurist in coming to decisive conclusions on this point *. We must look to practitioners of midwifery to help us to accurate conclusions, or to prove that none such are to be drawn. But as far as the ground-work of this enquiry is concerned, I shall quote from Ploucquet's own statements the leading arguments for and against the applicability of the test, referring the reader to the tract itself for further light on the subject.

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?* Ploucquet believes, "that a mathematical ratio may be established, on the result of *numerous* experiments, from which a *mean* may be obtained, applicable to extreme cases. Moreover, with the

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* Nearly three years ago, I inserted in the Medical Journals a series of queries on the proofs of infanticide, in such a shape as to facilitate the business of acquiring a mass of information, which I should have been happy to have returned to the profession in a digested form; but I have not yet received a single reply!! As the article in question was looked upon to be of some importance, and reprinted in the English edition of Beck's Medical Jurisprudence, I shall make no apology for inserting it in the Appendix to the present volume.

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."

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 accurate and numerous experiments would enable us to draw a 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 died of hæmorrhage, loss of blood would alter the ratio:* in such a case he argues that the lungs would still 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, scirrhus 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 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. 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.

These are the only experiments with the organs of respiration that we can admit to be practically useful. But it is proper to take notice that another has been proposed by Professor Daniel, the principle of which 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, 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.

The same remark may not apply to Daniel's proposed Appendix to the test of Ploucquet, by adding to the calculation of the increase of the weight of the lungs, a similar process with regard

to their bulk. This is to be done in the following manner. After weighing these organs, they are to be placed in water while still in the balance, and by means of a graduated scale attached to the inner surface of the vessel, the quantity of the fluid they displace is to be noted. This may be a very proper adjunct to the other experiments, and one that is easily performed. A graduated *glass* tube is recommended for the purpose, but any other scale will do as well, provided it be ascertained at what height the water stands before the lungs are introduced. Of course the basis of this test is the knowledge of the bulk of undistended lungs.

The important part which the liver plays in the fœtal economy ought also to be attended to: it seems to bear some analogy to the lungs; for, as in these, the quantity of blood prior to birth, or respiration, is not sufficient to expand them to the dimensions they afterwards reach, when the whole of the circulating fluid passes through them; so the liver in the uterine child receives a much larger supply of blood than it does after birth, and its bulk diminishes when this event takes place. This phenomenon might perhaps be taken as the counterpart of Ploucquet's test, and the state of the one organ be advantageously compared with that of the others *.

§ iv. *Of the means of destroying the new-born infant.*

Although the law was deemed severe that took

* The reader will do well to peruse the paper of Mr. Bryce on the fœtal liver, in the Edin. Med. and Surg. Journ. for January, 1815.

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 prevent solitary delivery. A woman, in a rare instance, may perhaps be endued with sufficient knowledge and physical power, to afford those aids which infants require at the time of birth, and even to obviate occurrences that frequently happen at 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, know nothing of 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 will in all probability not have strength enough 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 these necessary services towards the child. Accordingly, in the strict, and by no means severe view of the subject, if a female *wilfully* incurs the danger of a solitary accouchement, criminality ought certainly to be laid to her charge, even though there should be no ground for insinuating that any positive injury was intended 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 consequences of what has just been animadverted to, and that of

commission, where the life of the infant has been destroyed by positive interference.

A. Infanticide by Omission.

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, in the usual way, the adaptation of the shoulders to the passage, 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, by remaining so, if not removed, it may perish by *smothering:* or be *drowned* 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. The mouth and nostrils may be filled with sordes, or otherwise choked up, so that air cannot find its way till this be remedied; and in cases where the umbilical cord is longer than usual, it often passes round the neck of the infant, and strangulation may 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 their 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, by the crying of the child, from which we learn that the blood has ceased to pass by its previous channel, yet there would be the greatest danger of losing the infant by hæmorrhage, were the portion of the cord remaining at the navel not previously 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 them, 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 placed behind it; and also to prevent the very serious consequences that would ensue should any unhealthy process come on at the wound were it close to the parietes of the abdomen. Let speculative authors say what they please, it is criminal 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; but such cases are only exceptions. 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. True, the cases are not strictly paral-

lel, because in that of the umbilical cord, where the blood has once ceased to pass through it, its return thither is not to be calculated on; but we cannot perhaps in any instance acquire such previous knowledge on that point as to warrant the omission; and although it may be further argued that, in the event of the death of the infant from other causes, there will be means of inferring that it did not occur from loss of blood, it is to be objected that in *all* such cases this cannot hold, as in some of those of wounds; and I would counsel the practitioner, if called upon to state his sentiments as to the omission of the ligature, to get his lesson well by heart before he undertakes to shew the propriety of a practice countenanced merely by exceptions to an established rule*.

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 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

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* Appendix XXVI.

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.

B. By Commission.

New-born infants may be the subjects of every species of violent death that can 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 inference, 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 child was born alive be first inferred) much discussion will not

here be required as to poison, strangulation, drowning, wounds, and the like. 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 the fœtus is exposed, that cannot be practised upon others.

1. It may be killed by *premature ligature of the umbilical cord.* It often happens that the blood for a short while after birth continues its accustomed course; respiration not having 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 the child cries or gives some other unequivocal sign of respiration. 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 accomplishable 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 chaff, mud, earth, sand, &c. Where it has been buried among any such substances as those last mentioned, we may probably detect some particles in 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. 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.

3. Besides those evident lesions ordinarily occasioned by wounds and other kinds of violence, which the most superficial examination will discover, it is necessary to be aware that a method has been resorted to, in the hope of escaping detection, by 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 marrow between 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 this: and fractures of the scull, or luxations of the cervical vertebræ will speak for themselves.

§ v. *Practical application.*

The practitioner when authorised to make the necessary inquiries, 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. Let a note be made of every appearance, as they are discovered. On this account, as well as for greater certainty and corroboration, there should be two medi-

cal 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: 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 foul, in what manner it is dirtied—whether mud, or any thing capable of stopping the mouth and nostrils be found in or about them.

This being accomplished, the next step is to have the fœtus washed, and the head shaved—the whole body weighed, measured, and carefully examined with a view to ascertain its probable state as to the period of utero-gestation. 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 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. Larger wounds and bruises will necessarily attract notice; and 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

* See the last chapter of this work—On Medical Testimony.

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 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 observed; 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. Let the umbilical cord be carefully observed, and any marks about the neck accurately investigated.

An important part of the practitioner's duty will consist, in determining the import of one appearance, or the state of one organ before he proceeds to examine another.

The spine should be examined 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 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. Let an incision 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, dividing the jaw at the symphysis menti, and, turning back the lateral portions, separate 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. 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 unusual, 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, and note whether there is any fluid.

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 cause this 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 *. 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

* Article *Arsenic*.

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 that the practitioner can forget the importance of the lungs, or overlook what 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 mar the whole of his work—and in a court of justice will find himself in an awkward dilemma, being either compelled to make the humiliating admission of the truth, or reduced to shift unwarrantably the want of conclusions to the inapplicability of the subject—or, (which cannot be contemplated) draw such as are false. 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 speak boldly, and to maintain his own reputation.

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 can be done with convenience; 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 verified. 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. They are then to be weighed accurately, by drachms rather than ounces.

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. 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.

If the corroborative proof of Daniel, mentioned above, can be performed, (and I see no reason for not adding it,) the lungs are to be kept in the balance according to his instructions; but I would recommend the simplification of the experiment in this way—rejecting both the scales and the silver-wire basket for sinking the lungs. Let the practitioner place his hand in the water till it reaches any given height towards the arm, and mark the height to which the fluid is thereby raised upon the scale. Then let him sink the lungs under his hand, taking care to immerse it till the water reaches the same height as to his arm; and observe how much

higher it stands then upon the scale. Solid bodies displace a quantity of water equal to their bulk.

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 number and distribution of the lobes * should be remarked, whether there be three in the right lung and two in the left, or any variation from this the natural arrangement. The knife may now be applied, and when cutting through their substance we must be watchful for the crepitating sound that will issue from the cells if they contain air, as well as to mark the appearance 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 next 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 auricles and ventricles must be examined; and the circumstance of congestion there will excite suspicion of death by suffocation. The state of the foramen ovale lastly demands attention.

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* There is a very common *error*—for it goes beyond an inaccuracy—even among good writers, in regard to the lungs: they talk of the right and left *lobe*. It would not be much worse to say the right or left *lip*. We have two lungs as well as two eyes, but their lobes are no more designated right and left than the palpebræ.

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 their cavities, not covering the pericardium, of a firm consistence, sink in water under every variety of trial, 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 open, the conclusion must be that respiration has never been performed. On the other hand, if we find that the lungs fill 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 have considerable proof that breathing has taken place: and 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 found in it 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 general 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 likely that any spontaneous evacuation will 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 considering. It will be said that in breech presentations, meconium is often evacuated during labour. Granted—but we have already shewn that these cases cannot often form the subject of such enquiry. A woman can rarely

* Mahon observes, that in the stomach of a full grown child, there is a thick mucus of a pale ash colour. He admits the possi-

be delivered in solitude where there is an unnatural presentation. But were it otherwise, it would be accomplished under circumstances that would furnish much better 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 concurrent proofs.

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 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 morbid appearances, congestions, and even extravasations. It is therefore evident that too much care cannot be bestowed when 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

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bility 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. The reader had better now peruse again the case given at page 246, which illustrates the subject of Suffocation as applicable to very young children, though it is not one of Prolicide.

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 *.

§ vi. *Considerations in favour of the accused.*

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 con-

* The "Dissertation on Infanticide," by Dr. Hutchinson, is the result of much research, and is particularly valuable for the elaborate instructions it contains for the examination of the fœtal subject.

sciousness of approaching labour, when she experienced an inclination 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 first the possibility of her being unable to do so from the effects of the occurrence on her own person; and after she has recovered, though an alarm might secure her in the case of trial, it can be of no use to 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 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 in question.

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, on any surface rupture the umbilical cord, or by forcing away the placenta cause fatal hæmorrhage.

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* Dr. Hutchinson's Dissertation, Sect. VI.

Taking all the accidents of sudden parturition into account, it is to 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 if the accuracy of the statement as to the nature of the labour, 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, and 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 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 force of uterine propulsion, powerfully resisted, upon the head of a child unusually large may urge the parietal bones so far over as to lacerate the soft connecting parts; and there are other ways in which protracted labours may cause the death of a child, well known to the practitioner. Monstrosities or malformations are sometimes the cause of such labours, and we should be able to give them their due share of importance, in weighing the circumstances that may attach to cases of this nature. In breech presentations the child is frequently lost by pressure on the umbilical cord *.

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

* 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 opinion, 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 performance, however, of embryotomy, in order to save the life of the parent, at least until the Cæsarean operation, or some other alternative is established, must not be considered as prohibited even by this statement from so high a quarter.

are certain circumstances which will countenance the idea of artificial inflation—and if it cannot be 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. As it illustrates several of the observations that belong to the subject, I have inserted it in the Appendix*. The preparation of clothes may be attended to by women who are aware of the importance attached to that circumstance, even without any intention of using them: but this is an extreme supposition. Those who generally commit such crimes, are by no means the best instructed as to the methods of concealment: and so much is the course of matters of blood beyond control, that no foresight can provide for an assured concealment. Women in particular, know little or nothing of the nature of evidence; or indeed of any matters that belong to courts—and for this ignorance most of those upon whom a charge of infanticide can fall,

* Appendix XXVII.

must be especially distinguished. They are generally illiterate and thoughtless.

A very affecting case is to be found in the reports of the Chelmsford assizes, for 1820, where more than one of infanticide was tried. A young lady, a foreigner, had become pregnant through an imprudent degree of confidence in her lover—a case both of more frequent occurrence among respectable young people abroad than in this country, and comparatively seldom fraught with the sad consequence of desertion that would take place here. On finding what was the case, she conveyed intelligence of her situation to the gentleman (then in a distant country,) imploring him to hasten to the rescue of her reputation. He lost no time in obeying the summons; but an accident detained him on the road. In the mean time, the poor young creature, living among strangers and foreigners, and relying, as it appears she had every reason to do, upon the timely appearance of him who was hastening to the fulfilment of his engagements, avoided the communication of her disgrace to any other person, and was surprised by a solitary delivery. This took place in her own apartment, and the body of the infant, &c. were deposited in the night-chair. Three days elapsed without any suspicion being excited as to the cause of the prisoner's distress and illness, nor was the truth discovered till she herself pointed out the source of the offensive state of the room. The lungs floated in water; and, I believe no attempt was made to disprove the vitality of the infant: nor did it appear that there had been any preparations for its birth. The prisoner was acquitted, both of the capital charge and the inference

of concealment. The ostensible circumstance that operated in her favour was her not having attempted to secrete the proofs of the event, which it appeared there had been singular facilities for doing, had she been so inclined. There was a moral conviction in this case that no evil intent existed on the part of the mother; and it would be hard indeed, even upon the physiologist, if we should not now and then meet with a case in which it would be JUST to bring the better part of the female character to her aid, when she is suffering sorely for her weakness.

But we cannot admit the plea that the woman did not know she was with child. Yet as we find the great majority of those against whom the charge of infanticide is brought have borne good characters, as to the previous state of their feelings, the very circumstance of carrying a child successfully through the term of pregnancy to the time of parturition, ought to bear a favourable construction. If it can 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 equally objects of compassion with those who stand the trial to the last, and then terminate unfortunately, yet the avoiding of 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. Often, however, does it happen, that a stubborn jade, in the very advanced stage of *labour*, will abuse

the accoucheur for breathing such an insinuation; and even, when the living, visible, and audible evidence itself is thrust in her face, behave in such a manner as almost to warrant the belief that she imagines it more likely to have been produced by himself, than that such an event *could* have happened to her. So strong is the influence of the bubble reputation, even in the coarsest mind.

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.

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 that 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 considered *instar omnium*, has a precise

* De relationibus Medicorum, lib. ii. cap. 5. There are other chapters almost equally particular.

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 *.

The details of this class of questions are not of great extent; and I shall separate them into four Sections—I. Maiming or Mutilating. II. Surgical Operations. III. Corporal Punishment. IV. Stuprum, or the *Violation of Females*.

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* Medecine Legale, III. § 810.

SECTION I.

OF MAIMING, OR MUTILATING.

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 with *intent* to kill or maim, 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 required 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 extravagant, and do not admit of elucidation.

Among the many extraordinary phenomena presented to us by our own species, one of the most wonderful, and certainly least explicable to my apprehension, is the propensity so often exemplified to injure the persons of others. I do not allude to savages, but to those in whom it is certain that there is light and knowledge enough to prevent it, were there not in the nature of things some influences that these cannot extinguish. Ignorance cannot account for it; because we see it manifested by men of all degrees; though, from other causes, its great outrages are not to be encountered in civilized life.

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. The act called the Coventry act has been set aside. It was made in the reign of Charles II. on occasion of Sir John Coventry being waylaid in the street, and *having his nose slit*, in revenge for a jest on the king (and through him on the court) in the course of a parliamentary debate. 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 *.

At a comparatively late period, however, there were some cases, on which it bore, that would have been important matters for consideration here, were it still in force.

In the year 1765, two street robbers were convicted and executed under the provisions of this act, for cutting a gentleman across the nose; but as the terms of the statute expressly declared that the nose should be *slit*, such being the form of the wound in the particular case of Coventry, a discussion arose about their liability to capital punishment, on the ground that the wound here was transverse. Medical testimony was accordingly had recourse to, in order to establish this point; and it was asked whether giving a wound explicitly *transverse* could be called *slitting*. The witnesses agreed that formerly the word *slit* was used for such a wound; and one of them quoted Wiseman as an authority, he having used the word *slitting* for *dividing*. This same gentleman declared that in the case of "slitting the nostril," it would be called "*an incised wound.*"

Now this is not the place for giving the meaning of the word "*slit,*" which is no more a term of surgery than of any other art,—for it implies, in general, a cut made *longitudinally* either in the containing parts of a hollow fibrous substance, or in the direction of the fibres of any thing composed of a bundle of such—but the necessity of some better principle of administering justice, in such cases, can hardly be more clearly shown than by what took place on this occasion. So flagrant was the instance at issue,

* Blackstone.

that rather than the miscreants should escape the just punishment of their outrage, which according to the wording of the statute, was expected might be the case, a transverse wound over the eyes and ossa nasi, was ruled to be a *slit of the nose.*

There is a curious account in the annals of the year 1763, of an old ruffian named Henry Turnbull, who was indicted under the same act for castrating two apprentices, the one aged eight, and the other sixteen. This fellow was tried at the Salisbury assizes, and got off for a misdemeanour, his case not coming under the statute, as there was no proof of *lying in wait.* These scruples, however, on the part of the "gentlemen" of the robe, were highly disapproved of by many to whom ancient custom has also assigned the privileges of the gown; and some of them, considering their interests greatly endangered by the decision, attended at the place of punishment, in order to obtain redress for themselves, according to laws of their own *.

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* See Annual Register.

SECTION II.

OF SURGICAL OPERATIONS.

WERE I to imitate the tedious formalities of some of my predecessors, I might 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, 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.

It seems to have been matter of question among the older authorities, not only how far it was allowable to abstract parts of the body by chirurgical operations, but how far it was lawful to restore parts that were lost. Such a question is touched upon by Paul Zacchias, when enquiring into the possibility of letting blood, amputating, healing malformations by incision, such as occlusion of the arms, palpebræ, &c.; puncturing the thorax and abdomen to evacuate pus or serum; extraction of cataracts, calculi, &c. &c. with a safe conscience.

Whatever may be said of SURGERY, the *chirurgi* of those times and the surgeons of the nineteenth cen-

tury are not the same order in society. The latter are *medici;* and perhaps it is no more the province of the *physicus* to judge of the propriety of operating, than to superintend, direct, or perform it himself—indeed, so well defined are their boundaries, that in surgery itself there are departments within departments, which certain designations of operators claim for themselves only *.

In this country, all such matters are prudently left to be arranged between the patient and the faculty. If the surgeon is competent, and the operation has not been rashly advised, consent is implied in the fact of performance †. Unnecessary operating would perhaps be a ground of civil action; but the proofs would be difficult *ex post facto.* A surgeon might not be amenable to justice, were he at the earnest request of his patient, to perform an operation, terminating fatally, even against his own judgment—but it would be immoral, and unsafe to hazard such a measure.

Where, however, through 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 professional 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 ne-

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* Appendix XXVIII.

† In the case of coma and insensibility, where the scull is fractured, it may not be literally true that the patient's acquiescence has been obtained, but the operating is not less warrantable, if indicated by symptoms and the nature of the injury.

cessary; 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, the surgeon is justly liable. It is not long since a verdict of £800 was returned against a practitioner in London for injury sustained on the part of a person who had dislocated his shoulder. The luxation was not reduced, and several weeks elapsed before this was ascertained to be the case, at which period it was in vain to make the attempt.

There are some surgical errors which are more incident to practitioners than others—such as injury to a nerve or artery in the common operation of phlebotomy. In general, it would be difficult to exculpate the operator altogether should the *latter* occur; for if there were an unusual distribution of vessels, whereby the artery lay so much in the way as to render it difficult to avoid touching it, the circumstance, by due previous examination would be discoverable before making use of the lancet.

Whether the practice of Midwifery is related to that of Surgery, or not; or whether, from there being no authority under which cognizance is to be taken of it professionally, we are to consider it lawful for any person to intermeddle with it as he pleases, it is a subject of the most important nature to society, and ought to be put under strict regulation. It is at present on a good footing in this country, but exposed to great danger.

In the year 1807, a very aged practitioner in this department met with a circumstance in a case he was attending, that deprived him of self-possession,

and his conduct cost the woman her life. For this he was tried on a charge of murder. The late Lord Chief Justice rebutted both this idea, and the minor inference of manslaughter, as the intention of the prisoner could not be criminal. He had manifested kindness and attention, and had some degree of skill, which was proved in court by several women who had been under his care.

SECTION III.

CORPORAL PUNISHMENT.

Upon this I shall be very brief, as the bearings of the subject, with the exception of one, are well understood, and very seldom call for justiciary interference. The term simply means inflicting blows on the body (generally naked) with some instrument (as a rod, small stick, or whip) which will give temporary pain, without any bad consequences. The right of this chastisement belongs to the head of a family, and to public authorities, civil and military, to be exercised in a way prescribed by law.

It is an established right that a husband possesses of chastising his wife; and one that the law will countenance, where it is done upon sufficient grounds, and in a certain manner. A distinguished judge once mentioned, on a circuit, that a man might lawfully use a stick, for this purpose, provided it were not thicker than the thumb. Upon this the ladies of the assize-town are said to have addressed a round-robin to him, requesting to know the size of his Lordship's thumb.

To interfere with the necessary exercise of paternal authority in the article of chastisement, is both inexpedient and unwarrantable, so long as the means employed are of the ordinary description, not putting life or limb in danger. But where the wholesome correction degenerates into outrage, and means of an unwarrantable nature are resorted to, the abuse

requires interference. In fact, it is too frequently the case, that temperate punishment for the good of the child, is put out of sight, and that there is substituted for it, the overflowing of brutal passion, or the gratification of revengeful feeling on the part of the parent, master or guardian. Every now and then we read of exemplifications of this coming before the magistracy. On the other hand, the depraved and incorrigible disposition of children sometimes tends to provocation, whose impulse it may not be easy to resist; but a little self-command even here may prevent all risk of consequences that would take the case from among those of proper chastisement, and make it fit matter for justiciary investigation.

If parents are very properly amenable to public authority for the abuse of that with which the author of nature has invested them, still more so are masters both with regard to apprentices and pupils. In the case of the former there are duties on both sides, resembling those of the parental bond, and in the latter the tutor is the delegate of the father. If no especial agreement is entered into on that point, it is an understood matter that the master shall, in the administration of authority, be guided by his discretion, and it is a point of prudence as well as honour with sensible parents not to interfere, on the complaints of children, with this necessary prerogative, unless there be cause to suspect that it has been exercised beyond the limits of propriety.

It is true that, for his own character and fortune's sake, a teacher will, in general, be cautious how he incurs a charge of cruelty towards those committed to his care, or runs the risk of injuring the health,

or bodily well-being of his pupils. But now and then a case occurs of accusation against one of this order, which is well founded: and certainly the person who is addicted to intemperate chastisement, is doubly unfit to have the education of youth intrusted to him, if we consider the risk that the health of the children runs, and (it may be added,) the danger in which they are placed, from a furious paroxysm on the part of the master—or the unseemly pattern set before them of self-mismanagement, and all its hideous consequences, by one whose duty it is to teach by example as well as by precept. Of magistratorial punishments I shall notice that only which is military.

It having been ascertained that there was some abuse connected with this article of discipline in the British army, a great noise was made about it some years ago, which seems to have had the effect of reducing it under strict regulation. It cannot be altogether done away with in our service, I apprehend. In England, and in garrison, it may be little if at all wanted, as there is the resource of solitary confinement. On active service, the alternative must be this punishment, or none at all: for the spirit of British legislation cannot allow of men's lives being taken, in the manner of other armies that profess to hold this practice in abhorrence.

The most odious circumstances connected with the system are quite done away with. Soldiers can no longer be flogged when, and in what way a commanding officer pleases. It is the award of solemn deliberation and temperate decision by a court martial, which he may have the power of remitting, in whole or in part, but to which he cannot add. Nor

can a blow be inflicted on a soldier in the British army by any of his superiors without committing a breach both of law and custom.

This punishment is carried into execution under circumstances of the highest decorum, and precaution as to the safety of the culprit; and a medical officer must not only be present, but attentively watchful over the state of the prisoner previous to the infliction of a single lash, and during the progress of the affair. If he sees or apprehends any cause that may render it dangerous to put the sentence in execution, or, after it has begun to be carried into effect, which forbids its completion, he is to declare it; and his interference must be respected.

As this is one of the most unpleasant duties belonging to the regimental surgeon, and from which the inexperienced would gladly shrink, I consider it right to offer a few remarks with reference to the medical bearings of such cases *.

The attending surgeon should be aware of the state of the prisoner's health, in order that he may prevent the application of a stimulus that might be improper in many diseases, or the risk of bad consequences from the inflammation excited in certain states of the body. On this latter point, however, he must be cautious, lest he should not be borne out by the actual circumstances of the case. During the punishment he must be attentive to the countenance of the prisoner, watching for appearances of syncope, or any other indication of an unusual nature.

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* Private practitioners, in this country, are frequently employed, in the absence of military surgeons, to act for them, so that it may be advantageous to them to peruse what is to be said on this point.

The most common event that happens is a pretended inability to endure, and attempts, on the part of the culprit, to obtain the surgeon's interference. It is necessary therefore to be guarded against imposition. As long as the man exclaims, and shrinks from the lash, there is no reason to interfere; and generally, when every other appearance of syncope is put on, the eye, and the pulsation of the heart will detect the imposture. Under the ordinary amount of punishment, few men become exhausted. I have seen a thousand lashes received without complaint, and the back healed so rapidly that in about ten days the patient was dismissed cured. On the other hand, I have seen it necessary, though very rarely, to remove the prisoner when but a small part of the punishment had been inflicted. If the surgeon has a competent knowledge of the principles of his profession, he will be in little danger of mistake, provided he be attentive. Let him bear in mind, whatever his sentiments may be concerning the nature of the punishment, that he has nothing to do with the merits of the case, and if the prisoner is able to endure the award, he has no business to stop the course of law or justice. If he gives way to this feeling once or twice he will find himself unpleasantly situated, unless he can shew satisfactory cause for his interference.

After punishment the prisoner is admitted into the hospital; and however slight the chastisement may have been, or however little laceration, this should *in every instance* be done, where practicable. We know not what course any ailment may take; and we cannot trust the soldier with his case in his own hands—it is every way a proper precau-

tion. The surgeon will act imprudently if he lets him out of his care until the consequences of the punishment are completely removed. At first the part affected is to be covered with linen cloths, steeped in warm water, diminishing the temperature very gradually. The ecchymosis increases for some time, and a superficial ulceration comes on; after which the healing process succeeds, and no bad consequence is, in general, to be looked for. Of course the constitutional treatment at first must be of the anti-phlogistic kind: and many a punishment, in the estimation of him who receives it, has for its severest part the wholesome and necessary restraint of the hospital.

I shall add to these cursory observations, a case which may perhaps be considered as placing the question of military punishment more properly among the first class of questions; but I am not of this opinion—considering the verdict to be in reality founded on the repugnance generally felt towards this form of punishment, and not upon the real truth of the matter as given in evidence.

On Monday, July 22, 1822, an inquest was held at York barracks, arising out of the following circumstances.

A soldier had, according to sentence of a court martial, received 300 lashes, for theft, on June 22. He was sent to the hospital, and five days afterwards the regiment marched from Hull to York, the punished man being considered by the surgeon able to travel. After the second day's march mortification was discovered in his back, and he laboured under a smart fever. Next morning the mortification had increased, but the fever had subsided, and there being no proper professional person under whose

charge to leave him, he was taken to York, whence he walked to the barracks, and was placed under the care of the surgeon of the regiment there stationed. According to this gentleman's evidence, the mortification ceased on the 11th of the month; but the patient sunk under debility, in consequence of which he could not take the requisite nourishment. The debility was ascribed to the consequence of three years' residence in the West Indies. He was removed from Hull in extremely hot weather, and must have been much jolted in the cart. But the deceased himself had informed the witness that a servant, in removing a portmanteau from the waggon, *let it fall upon his back*, when the mortification ensued. Witness informed the jury that he had opened the body, and found the lungs in a state of putrefaction.

One of the jury described the body to be in a state of putrefaction, and that the lungs were so only as a natural result (ten days after death) *. He added, that *the man's bones were as bare of skin and flesh as if his back had been scraped with a knife.*

Verdict—"That the deceased received 300 lashes, and that he died of the same, and of the fever, mortification, and debility arising therefrom." Of course the story of the portmanteau must have been disbelieved, or else no man of common sense could have overlooked such a circumstance †.

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* This was a very confident statement on the part of a juryman. See the article "Infanticide," on the subject of putrid lungs, and Appendix XXII.

† The above is a rational, and an accurate account of this case; although a somewhat different one has been communicated to an honourable gentleman who has laboured in the legislature for the abolition of this species of military punishment. I took the liberty

upon reading his speech to forward him a copy of this work, and one also to a gallant general (under whose command I have had the honour to serve,) who took a different view of the matter, and one perfectly accordant with my own. In a note with which I was favoured on the occasion, he stated that he had never known a fatal result from *the flogging* alone. There is a considerable number of cases given in Hamilton's Regimental Surgeon, which discountenance these opinions as to the physical effects which some well-meaning persons entertain. Medical officers do not like to attend punishments; and of course it is not to be wished that they ever should: but the apprehension that prevails as to its *risk* and cruelty is in great measure imaginary. Accidental results we cannot control; but in no instance are sinister consequences to be looked for, where there is due intelligence and attention on the part of the surgeon.

SECTION IV.

STUPRUM.

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 deception, 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 civilized 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 equity 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 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; indeed

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* Blackstone's Commentaries.

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. In the case of adult females, reputed *virgins*, a circumstantial account of the transaction is required; and to prove the *accomplishment* of the crime so as to satisfy the law, and bring the offender to capital punishment, the evidence must be of the clearest nature, and to the fullest extent. Sometimes, where this depends on the female, the accused escapes conviction from inability on her part to make decided statements. In this way a man got off lately at the Middlesex Sessions, because the girl (aged about fifteen) was, from intellectual disabilities, unable to exhibit the legal perspicuity required in her evidence. 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 afford 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 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 extra-professional readers.

The crime is of a peculiarly detestable and cruel description when committed on the person of a child: the suffering is great, and there can be no

compensation to the infant in the way of gratification. 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 very often 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 state 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 sufficient. The natural tendency of the undilated vagina is to narrowness, both from its contractility and the pressure of surrounding parts. It may, how-

ever, 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

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* 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.

† See Appendix XXIX.

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 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 *.

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 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

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* A very melancholy event occurred a few years ago in one of our principal manufacturing towns. A young lady having been accused by her intended husband of a dereliction of conduct in the article of chastity, drowned herself. When the inquest was held, the coroner desired the surgeons to examine particularly into the physical evidence as to this matter; and their report did away with every shadow of criminality. Cases such as these shew the great importance of knowledge on delicate points. It is a pity Miss R—— did not avail herself of the resource to which she was compelled to submit when too late. I know a case of a lady, perhaps about 40 years of age, who contemplated entering the matrimonial state, but imagined she had a fatal obstacle in her personal construction. To satisfy herself, (perhaps before resorting to the Serpentine, or a pair of garters,) she very properly consulted an accoucheur, with whom she had no personal acquaintance, and who, to this hour, knows nothing more of her than is here related. Upon due examination, it was happily discovered that she possessed the somewhat rare appendage of a very strong and perfect hymen.

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;* or at least bruises and ecchymoses about the nates and neighbouring parts. 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 uncontaminated 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 ne-

* Histoire Naturelle de l'Homme.

cessarily unaccompanied by that resistance 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 pre-existence 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 be possible (considering the many blunders of a similar kind which might be quoted in medical history) for a discharge of purulent matter from an excoriated or lacerated part, (under implicit assumption of the above reason for the commission of rape) to be deemed by an inconsiderate surgeon the specific consequence of gonorrhœal contagion.

Women have frequently been violated under circumstances 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 deflorari posse *."

The fact of conception used to be taken into consideration in weighing the proofs of violation; it having been erroneously imagined that forcible copulation was never followed by pregnancy. A female may certainly be impregnated both by violence and without consciousness of sexual contact †.

Something that may almost be called a rape, or at least an attempt to commit one, has been charged against the female sex. Valentinus details a case of this nature ‡, the demerits of which consisted in the libidinous dealings of a girl aged thirteen, with a little boy in his fifth year, in whom the practices which she carried on created considerable injury, a violent paraphymosis, accompanied with great irritation, being the consequence.

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* Valentinus. Novellæ Medico-Legales, Cas. I.

† Appendix XXX.

‡ Ut supra, Cas. IX.

CLASS III.

The third class of questions consists of those that relate to disqualifications 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 extensive field before us; yet, though some topics of great importance are to be discussed, a number of them may be esteemed more as matters of curiosity than of real practical importance. Upon these I shall touch very lightly; while indeed of the others I can pretend to trace but the *summa fastigia.*

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 in general, and at the same time assigns to him no responsibility 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 primary arrangement.

Section I. *Moral* disqualifications, connected with physical considerations.

Section II. Disqualifications strictly *physical.*

Section III. Disqualifications *pretended,* or *imputed,* without foundation.

SECTION I.

MORAL DISQUALIFICATIONS.

MUCH 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 and the transient changes that characterize the physical system; or how, on the other hand, this latter 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—even if they were, it would not be our province to decide upon such questions.

There is but one subject, though a very important one indeed, that falls to be taken notice of under this section; one on which writers have gone into great length, but upon which I shall confine myself to general observations.

INSANITY.

This unhappy condition disqualifies 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 liberty, and is not held responsible for criminal acts. It is

therefore a subject which frequently calls for judiciary enquiry.

The disordered state of the intellectual faculties admits of two well-founded distinctions—Alienation and Fatuity—or the subjects of enquiry may be separated into those who are *mad*, and those who are *idiots*. Insanity manifests itself under a great variety of forms, while the disease remains identically the same; and although some who have paid much attention to it, discountenance the distinction of *Melancholia* from *Mania*—still, as the view which is here to be taken, refers to the ability which persons afflicted with mental disorders possess as to the care of their affairs and of themselves, and also to their capacity of distinguishing between right and wrong, I shall separate the details into the following heads—*Mania*, *Melancholia*, and *Fatuitas*—not disputing the propriety of withholding pathological distinction.

§ i. *Of Mania.*

By MANIA is to be understood that 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 and a protrusion 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 long fasting without any apparent inconvenience. If proper observa-

tion 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 long fasting is a characteristic of mania, we must not omit to observe, that an unusual voraciousness, and propensity to swallow indiscriminately whatever comes 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 maniac is to be distinguished also by the usurpation of one idea over all his faculties, which powerfully influences his speech and conduct. Of course, his reasonings are absurd, either in themselves, or in their relations. To this hallucination, he is ever prone to recur, and he is far more the sport of its impulse than healthy minds are acted upon by any impression however powerful.

Whatever may be the predominant chimera, it often happens that the maniac will reason correctly from false premises; but frequently the disease may not be apparent, from the propriety with which the patient will discourse and conduct himself on all other subjects and occasions, until the morbid notion is either excited, or obtrudes itself.

These hallucinations may be as numerous as the subjects of thought or feeling, and therefore the distinctions that have been attempted in madness, according to the predominant idea, are quite inadmissible. "A man whose hallucination is politics, is mad exactly in the same way as the man whose hallucination is law *." But there is a great variety

* Dr. John Johnstone, Medical Jurisprudence—*Madness.*

of forms in which the disorder manifests itself; depending in some measure upon the temper and disposition of the patient. He whose passions are strong and propensities depraved in the ordinary state, and more especially who is not much disposed to regulate or restrain them, will become the furious maniac: and there are others, whose natural disposition, and whose imagination are fraught with an agreeable bias, who will probably enjoy that

> "Pleasure in madness
> Which none but madmen know."

With regard to the *diagnosis* of madness, I shall convey all that seems required to be said here in the words of Dr. Johnstone. "In *delirium* there is an obvious bodily disease, which occasions a peculiar action of the brain: there is no one predominant idea, but a wild and incoherent jumble of ideas. In madness there is frequently no visible bodily disease: there is always some predominant idea: external objects make nearly the same impression as when the mind is whole, till the hallucination interferes and deranges all the trains of thought with which it is intermixed. From *idiocy* madness is readily distinguished. The idiot cannot reason, the madman reasons falsely; the idiot acts from animal appetency, he has no will; the madman wills, but his reason being disturbed, his actions are not suitable to the actual relations of society.

"In appearance too, the discriminating marks are striking. The *delirious* is flushed with fever, or shrunken with emaciation and debility; the *madman* stares wildly, sometimes gaily, sometimes gloomily; the *idiot* is pallid, and often deformed,

his countenance unmeaning, and without illumination, gaping, drivelling, grinning*."

Like other diseases, this one seems to have its pre-disposing and exciting causes.

It is not the disease of any particular temperament; and perhaps the most common predisposition is connected with an obscure, and, as far as the patient is concerned, an inevitable formation of the parts more immediately implicated. This he derives from his progenitors. The hereditary nature of insanity is fully established; but perplexity may sometimes be occasioned, where the existing members of the person's family have not shewn any symptoms of the disease, and both his parents 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 in 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 them†.

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 belonging to families that had never shewn any disposition to the disorder, have become permanently deranged for the remain-

* On Madness, p. 23.

† See hereafter the chapter on Hereditary Peculiarities.

der 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 disposed 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, comport themselves like 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 in-

deed 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, for all its consequences he must necessarily be held responsible.

Among the exciting causes of mania, the suppression of accustomed evacuations must be considered; and the restoration of these often removes the mental affection.

It not unfrequently manifests itself in the puerperal state.

LUNACY is a term in very common use to denote *insanity;* and is derived from a notion that the disorder depends on or is connected with the changes of the moon. This must be rejected without qualification; but there is a very general belief in temporary insanity, of which it is sufficient, perhaps, to say, that there must be such an appearance where there is but a single hallucination.

If I rightly understand the author already quoted, who has written so sensibly on this subject; and who says that "madness has no *lucid intervals*," it appears that what have been so designated, are but the remission of symptoms; and that a man at these times is as certainly mad, as another one is under the dominion of an ague, between the paroxysms, as well as during their continuance. "A man," says he, "at any given moment is either mad or not—his brain and sensorial powers must either actuate him to the actions of the sound mind or not. He may appear rational when he is not—he may converse upon indifferent subjects with apparent reason one minute, and the next may strangle you in a fit of frenzy! But can this be termed a lucid interval*!"

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* Dr. John Johnstone, *ubi supra.*

§ ii. *Melancholia.*

I wish not to be understood as considering this in any other light than a manifestation of *insanity*, in a different form from that which has been considered above. Here the mind dwells upon some painful notion, and frequently labours under some apprehension, which plunges the unfortunate individual into the most gloomy state, accompanied by indifference as to personal comfort, or urges 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; while 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," engrosses them entirely. 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, if they will not listen to the never-varying story of his apprehensions.

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, conveying a piteous impression to the minds of others—this, though it may be feigned to a certain degree, at last reaches a state 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.

Melancholy is often characterized, if not caused by religious anxiety. Religion is one of the most powerful influencing principles, where it exists in the sound mind, and may produce the most important consequences where the intellect is weak or unsettled. Many well-meaning people affect to censure the term "religious melancholy" as an erroneous coupling of words; but, if it must not be said that they are themselves under delusion, or that there is a prose-

* That is to say, the temperament has been so named from observing its physical characters most generally in melancholy persons.

lytizing purpose to be served, it is clear that they have no acquaintance with the disease of Insanity.

With regard to diagnosis, there is less occasion to lay down rules of discriminating between real and pretended melancholia, or betwixt that manifestation of insanity 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. This disease has been so well described by Dr. Cullen, that I shall merely refer the reader to that author for the proper marks of diagnosis *.

Mania and Melancholia not unfrequently alternate; and the latter has been even considered as the incipient stage of the former. They who labour under it are apparently fit for society, or at least not unfitted for remaining in it. The coercion they may require will be solely on their own account.

§ iii. *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. Mania not unfrequently subsides into this deplorable, and it may be said, hopeless state.

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* First Lines, 1222. 1587, &c. The recent work of Dr. Reid must not be passed over unnoticed. Its elegant style enlivens even the dismal theme.

Where it exists, it unfits the individual for the management of his own affairs, for entering into any social connection, for performing 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.

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 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 excretory discharges—particularly of the saliva. They 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 remissions, or, more properly speaking, their alternations of excitement to some degree of intellectual energy.

§ iv. *Practical Application.*

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 persons from situations to which a greedy eye has been cast by others, on the score of mental incapacity; 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 or equal have not been in the power of the practitioner. A well-known writer on this express subject states, " that no member of the medical profession would directly state an individual to be insane, without being able,

* See note below, concerning Lord Ferrers.

satisfactorily to his own reason and conscientious feelings, to exhibit from his conversation, his actions, or his writings, unequivocal proofs of his derangement *." The question presents itself—Can no one do this satisfactorily but a medical man? And the author now quoted 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 maintained that men professionally conversant with these maladies will be better judges of their existence than those who have derived their ideas 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.

The spirit of British justice has seldom been more amiably manifested than in the case of Hadfield, who was tried for shooting at his late Majesty, but, being found insane, was committed to a proper asylum, and is still within the walls of Bethlem Hospital. There is reason to conclude that, in other cases, the same spirit of moderation, and respect for the lights to be derived from science, might have produced similar results. It has been repeatedly observed concerning Lord Ferrers, that he was not *compos mentis*, and that his execution was at least rigorous justice †.

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* Medical Jurisprudence, as it relates to Insanity, &c. by John Haslam, M.D. p. 5.

† Lawrence, Earl Ferrers, was executed for murder in 1760. When it was enquired of the prisoner, at the bar of the House of

In 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, this subterfuge has not been allowed—and persons decidedly disposed to insanity, have been held responsible for deeds committed by them, in what have 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

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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 ineffectually 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*, in rather a forcible manner.

* See Appendix XXX.

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.

Dr. Haslam states * that in the course of his very extensive experience he had seen but two attempts to impose on the score of insanity, and in both instances the deception was managed too clumsily to succeed.

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 ingenious 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

* Med. Jurisprudence, as it relates to Insanity, &c. p. 60.

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 unfounded resentments; and whether he meditates his own destruction, or seeks to take away the life of another *."

With regard to the question of recovery, in these disorders, as in others, we must take into consideration the cause or causes.

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* 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 purpose 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 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 inattentiveness, 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 uncontrolled 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 expected 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 constituted to enquire into the state of his mind, would be the strongest bar to the plea of insanity in a criminal court, who after such proceedings, would be little disposed to credit the theories of medical metaphysicians." P. 68, 69.

Of hereditary disposition, it may be remarked, that as to complete or permanent recovery, our expectations must necessarily be slender. Here although 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 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.

Insanity is often combined with epilepsy and palsy; which cases are of a very hopeless nature—indicating the existence of some irremediable cause. In general, where the cause is manifest, and particularly where removeable, the prognosis may be favourable.

Dissections have taught us nothing practically useful with regard to this disease. Morbid appearances have been found in the brain and cerebral appendages of those who have died insane, or in a state induced thereby—such as tumours, indurations, determinations of blood, and some other deviations from the healthy state*; which have in other cases been wanting, or which have been found where no insanity had existed.

In taking the causes of insanity into account for the purpose in view, we are to draw the proper in-

* The case given in Appendix IV. illustrates these.

ference 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.; and the greater the derangement among these, the more unfavourable must necessarily be the prognosis. In like manner, resistance to the ordinary effects 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.

"If he be found to act as he did in health, if when the hallucinations of his insanity are mentioned, he does not dwell upon them, does not associate them wrongly, does not act improperly, does not stare wildly; if this state be tried frequently, and be always found corresponding and uniform; if he sleep better, complain of weariness on taking exercise, and wish for food, then it may

be determined safely, in a few weeks, that the madness has disappeared *."

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.

Legal interference, in cases of *fatuity*, is often requisite to assign the management of property, and the care of the IDIOT to proper persons—and the evidence of medical men may be required to verify the existence of the disorder. 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 by the simulation of this state upon 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 †.

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* Johnstone, p. 27.

† In the Appendix XXXI. some remarks on the above subject will be given, that are not so conveniently applicable here.

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 question; 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 now mentioned.

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 some degree at least. We see many remarkable instances of superiority in point of exertion on the part of those who are afflicted with some of these privations. 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, to whom the access of knowledge seemed debarred by the want of the ordinary channels through which it flows upon others, we have been gratified by the contemplation of astonishing results.

In this view of the subject, the duty of the practitioner will be confined to verifying the existence

of the disqualification, and pronouncing on its curability or incurability. In the blind, there are ample means of coming to the former conclusion; and the consideration of those cases where it does not really exist, will come under another head. There are many duties which a person even born blind, may be quite adequate to discharge; but I apprehend, that to pronounce upon these by no means falls within our province. Such matters are generally understood; and admiration is not unfrequently excited by the contemplation of what these sons and daughters of misfortune can accomplish, under the influence of an industrious disposition; for the neglect of which, many who are gifted with the full use of their faculties, ought to take shame to themselves.

There is a class of unfortunates, still more perhaps to be commiserated than those who are deprived of the blessing of vision only—as they are by natural construction shut out from the comforts and advantages of social intercourse through defect in another organ. Congenital and incurable deafness renders the subject of it doubly pitiable, as it leads to incapacity of imparting his wants, by being unable to speak. Where this is the case, there can be no doubt of the unfitness of the subject for many situations in civilized life. Happily, however, the combination of benevolence and ingenuity has devised the way of imparting to these claimants on our *justice* the means of acquiring and displaying intelligence—of being useful and profitable to themselves and others—though still necessarily under limitations and inconveniences; which very circumstance may be, happily, the cause of their rarely clashing with the sinister doings of ordinary life.

Now and then, however, they are the unfortunate objects of public attention, on the score of criminal allegations, and the manner of dealing with them has always been a subject of serious consideration. In the Appendix will be found some illustration on this point*. Either deafness or dumbness may exist, the one without the other; but, in such cases, they are incidental events, and ought to be susceptible of explanation, as arising from some assignable cause. Neither the one nor the other of itself, can be said to unfit the person from playing his part in the ordinary economy of life, or bearing his responsibility for the actions he may commit. Sometimes the latter is connected with insanity—but when that is the case, we must rely upon finding it associated with less equivocal indications of the state of the mind.

To these remarks, many might be added on the subject of morbid disqualifications. They are numerous and valid enough where they exist; but are so essentially interwoven with the ordinary calls on the attention of the physician, that they require no especial notice here. Some of them it may be necessary to allude to in the more particular application of disqualifications that we next proceed to consider.

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* Appendix XXXII.

CHAPTER II.

DISQUALIFICATIONS FOR MILITARY SERVICE.

THESE evidently refer to two circumstances—viz. admission to the service, and continuance therein.

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 approval*:—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 scrophulous affec-

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* 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 individual,

tion of the glands; that he has the perfect 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 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 cause of rejection. Such are internal organic derangements—as enlargement of the spleen, liver, &c. which at no great distance of time may be considered certain to interfere with the efficiency of the soldier, though at

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and would render enquiry into his history necessary, the probability in such a case 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, evidence of which is of course unfavourable to pardoning.

* To this should be added the faculty of speech. A dumb man cannot be a soldier; and great stuttering may interfere with the proper discharge of some of his duties. A man with bad teeth should be scrupulously examined; for the want of some of these unfits him for biting off the end of the cartridge; besides conclusions that may thence be drawn as to general unhealthiness.

† Instructions for the regulation of army hospitals.

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 honourable and amiable feelings, to misapply the resources that are provided, at his country's expence, for his country's defenders. Great caution should be observed as to pulmonary complaints in particular, however slight they may appear; and general appearances as to health and vigour should be taken into account. Men of leucophlegmatic aspect are in general rendered so from disease, and they ought to be considered (to use a well-known military phrase) "suspicious 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 unavoidably contracted them—(at least as long as medical aid can be of advantage,) unless at 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 he may be able 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 supported, 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 if compelled to wear a helmet, or other defensive, hard and heavy military headdress, 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, which 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 thinly 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 to dismiss them. A soldier may lose an eye, and yet be able bodied; or he may be still more seriously injured, and yet be fit to perform a duty 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.

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 the 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 that bed 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 this statement that the medical attendants of our military establishments are licensed tormentors, *secundum artem*, of the suffering and the dying. The well-disposed 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: abuses on this score are readily detected, and as readily made matter of irksome consequence to the imprudent practitioner. From 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 good-will of their patients; whereby harshness is rendered a rare occurrence towards the truly 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

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* 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 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.

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.

CHAPTER III.

DISQUALIFICATIONS FOR THE MATRIMONIAL STATE.

These may be either moral or physical. Into the former, with reference to this particular application, there can hardly be occasion to enquire; and it may never happen to the medical practitioner to be called into the Ecclesiastical Court, on a case of unsoundness or deficiency of intellectual vigour.

Our observations will therefore be confined to physical incapacities. These may furnish questions of the most important, and of a very intricate nature. They do not the less belong to the Forensic duties of the physician, because occasions for their exercise are, in this country, apparently rare, and our tribunals do not resound with the eclât that would of course attend the public agitation of such matters. They are conducted with all possible quietness and privacy; and the reporting of their pro ceedings is discouraged. It is also true that, in these times, or at least in this country, the real occurrence of such pleas is not frequent; but the medical practitioner is often applied to on the fitness of individuals for entering the conjugal state, and also for assistance to remedy evils that till the connexion was formed had not been discovered, or not duly estimated.

The ostensible end of this compact is the continuation of the species; and though, perhaps, during the prior steps towards matrimonial engagements, this may be comparatively seldom the immediate im-

pulse, yet after the connection is actually formed, should this consequence not follow, the happiness of the connubial state would, in most instances, be impaired; and it has been singly matter of so serious a nature as to urge individuals to seek the dissolution of the connection, in order to form another, by which the desired object might 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 desire to avoid solitary existence; the want of those attentions which none but a female 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; nor is the fair partner always blind to other considerations than those of love and maternity. 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*.

§ i. *Impotentia*.

This is simply incapacity for the act of copulation. 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 necessarily *inepti quoad matrimonium.* But even among them there seems to have been considerable difference of powers in respect to the function in question.

They may be separated into several descriptions, one of which has been of great account in the East 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 indulgences they were intended 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 explained 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.

Another class of eunuchs are those who are reduced to that state for the gratification of the lovers of music: the consequence of the seminal œconomy being thus superseded is the acquisition of a rich voice, of a quality not frequently met with among the male sex. This practice is perhaps confined within very narrow limits, and unknown to this country, except by the occasional dsplay of its consequences, in the person of the castrato. Eunuchs again may be created by wounds, or other injuries, in those who have long possessed their masculine properties in full perfection. The testes may be destroyed by weapons, or may be extirpated on

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* 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 for even more than one attempt.

† Satire VI. line 365, &c.

account of disease, and there are even some disorders that waste them away.

I presume it would be a legal plea for the dissolution of marriage that a woman had been deceived into it with a 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 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 offers 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 *.

* 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

Three things are necessary to constitute 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 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 office of fecundation without any imperfection deducible from the result; and it should be observed, that where no known event has deprived a man of a 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

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derive from the warm bath in which they lie, greater power of secretion, than when descended out into their ordinary situation." I. § 244. Other writers have given a contrary opinion, but it is going unnecessarily far to argue the point. The existence of the testes, even though not apparent, admits of simple proof.

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, where other causes are 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 with this, some opening must be 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 tincæ into the uterus, whence it passes to the ovaria by the way of the Fallopian tubes. I shall merely observe that no obvious function of *vital* œconomy is thus excited; the operation thus performed would be a mere mechanical one, and 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 some other channel than that of the uterus *.

* A work on this subject, entitled, "Speculations on Impregna-

Some experiments instituted at Turin are imperfectly quoted in a late number of a Medical Journal *, which are represented as confirming the opinion that impregnation is effected by access of the *aura seminalis* to the uterus. As far as they are described, it appears to me that they are equally favourable to the opinion of impregnation by absorption from the surface of the vagina, or some analogous operation.

Which of these opinions is right I shall not attempt to assert; but, to return to the subject in question, we know that impregnation has often taken place where the urethra has opened in an unusual part, provided that the orifice was in that portion 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, schirrous enlargements about the neck of the bladder, enlargement of the prostrate gland, and whatever impedes the exit of the semen from the vesiculæ, whence it should pass to the urethra at the time of coition.

Impotence has often been alleged, where no visible defect could be discovered; and this has given

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tion in the Human Female," by R. Couper, M.D. &c. contains many facts and arguments in favour of the absorbent medium of impregnation, which to me are highly satisfactory.

* Edin. Med. and Surg. Journal, July, 1823, No. 76.

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 by 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 eclât: 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 objected to as mere presumptive evidence) there have not been wanting positive confessions, and even ocular demonstration to this effect! With regard to this sort of impotence, magic and witchcraft have been called to the aid of those who have vainly endeavoured to account for it. Mr. Hobhouse, in his

journey*, gives an illustration of the influence of imagination, in the way now alluded to, among the Athenians, whom he describes as the most credulous of all the Greeks. An unsuccessful suitor has recourse to charms on the marriage of his rival, tying the locks of his hair, with a certain form of words, and by every knot defers the bridegroom's happiness for a night. This tremendous operation is made known, and the unhappy husband, through credulity and shame, not unfrequently assists in effecting his own misfortune. An Archon of the traveller's acquaintance suffered this calamity during the first month of his marriage.

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 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 repre-

* Letter 32.

sented herself 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 pedantic 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

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* 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, and is now become rather a curious piece of literary history than of any importance otherwise. The account of the matter drawn up by Archbishop Abbot sets the whole affair in a very striking light; and shews to what lengths subserviency may drive. It was a most unbefitting plea to be decided upon by Churchmen, as his Grace himself insisted; and seems to have been conducted in not the most decorous manner. The Primate states that the Bishop of Winchester asked the Bishop of London in the Court openly, "how many times in a year a man was bound carnally to know his wife?"

As to the virginity of the lady, it is stated that it was afterwards told as a good joke on the part of some who were in the secret, that she, having, under pretence of delicacy, so arranged that she should be veiled during the inspection, a *bona fide* virgin, resembling her in shape, size, &c. was the person really examined.

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 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 examples 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 hesitate, and perhaps endure.

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

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* This period of probation was enjoined by the Canon Law, and was observed (if I mistake not) in the Essex case.

† 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.

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 from neglected 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.

Now and then 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.

§ ii. *Sterility.*

The distinction between this state and that just explained, essentially consists in aptitude for the act of intercourse, without the power 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 pre-

tended 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 only by the event of unfruitfulness in the married state, without any apparent 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 commerce.

This sterility may 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 something analogous to 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.

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 244, 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.

§ iii. *Diseases.*

Such as are incident to the parts of generation belong to the causes just considered; and their import with regard to the connubial connexion is too well understood by medical practitioners to require much notice. The great point for consideration is their curability; and in the male, for example, the impediment they offer exists generally in the pain and inconvenience he himself must endure were he to make the attempt. Thus (to say nothing of the symptoms of syphilis) a paraphymosis of a formidable description may be contracted innocently enough, and oppose an effectual barrier, *pro tempore*, to the exercise in question, but that is removable, and so with other ailments.

On the part of the woman, certain states of the uterine organs amount to *impotence*, such perhaps are prolapsus, or at all events inversion of the uterus, and there are others that virtually produce *sterility*, by causing the separation of the ovum at an early period of pregnancy. Such are hydatids, dropsy,

schirrus going on to cancer, leucorrhœa, and other derangements which may or may not be curable.

These and other infirmities, though not unfitting 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. When such questions are *privately* put to us, it will be our duty to consider them as seriously, as if we were to solve them in a court of justice.

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 entailing them on their offspring. 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.

Such references however with regard to the evitation of matrimony will be made prior to entering on that state; for we must suppose that persons of that rank in society which takes these things into consideration, will not do so scandalous an injury to the intended partner of the nuptial bed, as to contrast such an engagement *conscious* of an existing impediment, without revealing it, and putting it in the power of the other to act accordingly. At least the folly of such conduct may be considered a safeguard where the baseness of it might not perhaps be very operative. Infirmities contracted *after* marriage can hardly ever be sustained as a plea for divorce.

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. 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.

On the subject of *age* there is no occasion to say much. The law of the land has sufficiently provided for those cases that might happen at too tender an age; and after the attainment of majority there is no legal impediment on that score, at least where the truth is known, and there has been no decep-

tion. If parties advanced in life marry, or propose to marry in the hope of progeny, their medical adviser may be privately consulted with; and all that he can say is resolvable into very narrow limits. If the female has ceased to menstruate, the case, on her part, is hopeless; but with regard to the man, the question is relative. As long as there are the ordinary indications of aptitude for intercourse, the presumption must be favourable; for we know nothing *a priori* of sterility in the male, except under the existence of impotence.

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, and here recognising 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 when under consideration, I shall reserve it for the next class, 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 the 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 by designing rogues; though perhaps in some instances the individual 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 and sinister purposes. These cases however I shall leave to be dealt with according to the general good sense of society, which is more proper

* Page 315.

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 previous instructions could provide.

The diseases pretended may be external or internal; 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 equally by, 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, the 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 in the laboratory 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.

Rogues 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 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 in 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 friend of mine had occasion to examine a man who affected to have lost all power of moving one of his arms. Suspecting some roguery, and finding the lame arm apparently abandoned to the will of any other person, he endeavoured to throw it up in such a manner as to strike the *soi-disant* patient's face with the hand. It uniformly went clear over the head, until remarking that it was very singular that the face was not touched, on the next attempt the arm played its part very properly, and the face was struck, to the detection of the imposture.

In 1816 a soldier in the Royal African corps, named Drake, 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 York 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 †.

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 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

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* The details of this case will be found in Dr. Hennen's "Principles of Military Surgery." The account in the text was taken from the public prints of the period, and they are imperfect. Dr. James Johnson saw this man soon after his landing at Portsmouth, and ascertained very simply that he was an impostor. He asked for a piece of aloes in his *hearing*, saying he would put it into his mouth; and applying his finger at the same time to the temple, felt the contraction of the muscle caused by firm closure of the jaw.

† 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, p. 238.

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 examination 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 *.

* Med. Legale I. 360. There is a very amusing lesson on this subject in Shakespeare's play of King Henry VI. A man is brought before the king and royal family, who pretends to have been born blind, and to have been suddenly restored to sight by the miraculous power of St. Alban's shrine. The Duke of Gloucester shews him garments, the different colours of which he names readily, supposing no doubt that he has thereby given proofs of vision strong enough to satisfy the most stubborn unbeliever. On that point Duke Humphry expresses no doubt, but is not so well satisfied that he ever had been blind, and turns the tables very cleverly on him, by insisting that a man while blind may know colours very accurately, but, on being restored to sight, could not possibly tell them in this way. As the vagabond pretends also to be lame, and unable to walk, a supplementary miracle is performed by the protector himself, with the aid of a beadle and his whip.

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 the subject of conversation, that interest the individual strongly, 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 satisfactorily reported by Jussieu the botanist, of a Portuguese girl, aged fifteen, who had been born without a tongue*. We should 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

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* 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, 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.

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 overreached himself in pretending to have been a pupil of the celebrated Abbé Sicard, that he might have the advantage 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*.

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*.

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* 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.

That sores should be cherished, or even created by hospital patients, will excite little wonder after the following fact, for the truth of which I pledge myself, as the detection occurred under my own

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 seem to have imposed even on medical men; of the delusions of Joanna Southcott; of the 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 expect that whenever similar impostors may chuse to start, they will not have their due share of dupes and partizans, as in times past †.

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eye. In the ward of an hospital where I was doing duty myself at the time, and which ward was a large 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!

* Medical Commentaries, vol. IV.

† While this volume is passing through the press, a clumsy deception is performing by some who know better than to believe in what they are endeavouring to cram down the throats of those whom it is their duty to enlighten, and not to deceive. Prince Alexander Hohenlohe may be a deluded enthusiast; but it is difficult to admit the same excuse for others who have lent themselves to this ridiculous and dishonest affair.

In Dr. Hennen's work already quoted, (with which I had not the good fortune to be acquainted when the former edition of this book was in preparation) several illustrations of the foregoing nature, drawn from military life, are given. I could add numerous examples of this sort of physical chicanery from my own observation; but though they might amuse, perhaps enough has already been said for the purpose of instruction.

CLASS IV.

MISCELLANEOUS QUESTIONS.

UNDER this supplementary division a very numerous list of topics might be included; but I shall confine myself to a few, some of which, perhaps, might have been appended to certain former parts of the work, though not without doing unnecessary violence to the principle that has influenced the mode of arrangement, as far as it has been possible to carry it. Had this been done, the subject must have been passed over too lightly, or it must have interfered with the concatenation of the main topic in such a manner as to divert the attention of the reader, and appear more as a digression than would have been just.

The subjects being isolated, I must omit the intermediate subdivision into Sections, and pass at once to the details.

CHAPTER I.

UTERO-GESTATION.

I PREFER this designation of the subject, as being more comprehensive than *Pregnancy*, which in many of its bearings is included under it. It has a plurality of relations, some of which belong to the former class; 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 importance to conceal—as when it is illegitimate. The subject of its duration also involves questions of vast importance, *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.

§ i. *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.

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* An evil-disposed woman, on the false plea of pregnancy, may do great injury in various ways. She may lay a charge of procuring abortion against either man or woman; or if actually pregnant, may magnify some accident, trifling in itself, into a serious injury.

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 vascular body, termed the *ovarium*, 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 absorption, as already hinted at †, the action commences in the ovarium. Upon a subject of such obscurity, however, it is advisable to speak with caution. Some discoveries, 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

* This *cavity* I am inclined to doubt the existence of, at least in a womb, that never has been distended.

† Page 454.

‡ Page 177.

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 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 larger, 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 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 some time in the Fallopian tube. This may be necessary to open for itself a sufficient passage—the

opening at the uterine extremity not being larger, in the ordinary state, than would admit a hog's bristle. After its admission to the uterus, the ovum commences the process of increase; that cavity enlarging in a peculiar manner, along with its contents. The mouth of the pregnant uterus is closed by gelatinous matter, which seals it up, 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 shall not 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 term 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

* This subject has received some important contributions in the College Lectures of Sir E. Home on Comparative Anat.

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—an amount far from being satisfactory in cases of importance, 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 end of 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

* It may be possible in some cases to identify this by the coagulation of the blood—a change which the menstrual flux does not undergo.

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. In the case of Patience Ellis, already mentioned, (page 242) after the woman, eight months gone with child, was dead, a medical practitioner (who is said to have *examined* the body,) gave it as his opinion that she had probably died of dropsy! It was a case of murder by strangling. Pregnancy and ascites 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 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 that sense of motion which 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 woman herself: nor must we too easily credit the reports of unqualified persons; for 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

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* That of the demoiselle Famin, published in a separate form at Berlin and Paris, by Valentin, Maitre en Chirurgie de Paris, 1768.

can hardly be taken into account, when unaccompanied by other proofs. It may be effected by various circumstances—by 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 its termination, 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 superannuated 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 pur-

* In the Causes Celebres, Vol. VIII. 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 wonderful, as those unaccustomed to consider the subject have supposed.

† Aphoris. 39. Lib. V.

poses 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.

The bowels should be emptied the day before; and the urine should be evacuated previous to the examination. Let the woman 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, and then applying it to the abdomen, upon which 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 patient 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 concomitant 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.

§ ii. *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 as proper to it 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

* Cours de Medecine Legale.

this increase had been the gradual process of many months, the change to the opposite state is produced 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 return to the state in which we have described the parts previous to impregnation, now demands some 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 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 feel the uterus contracted like a round body within the loose folds of the abdominal parietes; and a very slight attention will discover that the vagina is enlarged and flabby, and that a fluid is issuing from it. This is 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 characterized 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 more 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 perinœum 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 have 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.

§ iii. *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 preg-

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* Papers by Sir E. Home, Philos. Trans. May, 1817, and January, 1819.

† Pages 177 and 482. This opinion receives confirmation from a preparation in the possession of Dr. Blundell, for an account of which see Med. Chir. Trans. Vol. X. 268.

‡ Erreurs populaires touchant la Medecine.

nancy. It is the case, however, even in quadrupeds of the same species, 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 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

* Burn's Justice, Art. *Bastard.*

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 even greater mistakes in reckoning may be accounted for on the same principle. The menstrual flux may 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; which is indeed a well known 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.

§ iv. *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 certain change occuring 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 even 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

* In the notes to Metzger, some instances are given; and Joubert, in the 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 hus-

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 comes on at an earlier period than among 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 Countess de Taxis had not become a mother, when, at the age of forty-two, she lost her husband. Marrying again, some years afterwards, she brought forth a healthy child, at the age of sixty-two *!

band. 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, Gynæcologia, mentions a Flemish girl, who, when nine years old, astonished her friends, by bringing forth a fine large son.

* Ephemerid. Curieux de la Nature.

The questions of extra-uterine conception and super-fœtation have not been noticed. The former undeniably takes place, but would be rather 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 *. It has been asserted that it takes place only where there is a double uterus; but this is not satisfactory to the advocates for its occurrence. In the present state of our knowledge on the subject, perhaps it is as well to avoid discussion here, into which were I to enter, I should be compelled to prolong it to an undue extent.

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* Med. Legale, I. § 299.

CHAPTER II.

SEXUAL AMBIGUITY.

An erroneous idea has been entertained that a monstrous combination existed in the same individual, so that such a being might have intercourse with either sex, or copulate *cum seipso!* All this is exploded; and the question of *Hermaphrodites* no longer occupies a place in our enquiries than as a matter of curiosity; nor does it belong to Forensic Medicine any more than *witchcraft*, a topic that formerly offered abundant scope for dissertation. But that cases occur, in which certain peculiarities of conformation, relative to 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 more than question; though some extraordinary approaches towards 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 as-

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* A particular account of whom is given in the London Medical Repository, and Medical and Physical Journal for June, 1818.

sociations 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, giving some 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 encouraged by the want of testes in the scrotum; and the notion of a scrotum with such contents in a female, has been suggested 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 abscission. 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 every female fœtus 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, 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 easy rectification. Sometimes, however,

it has been held unlawful for persons to assume the garb and character of the 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: falling sick at Thoulouse, the physician at the Hotel Dieu discovered 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, corporeal structure, and appearance in other respects. Having found her way to Paris, and shewn herself to 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 recently described 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

* Hist. de l'Academie Royale, &c. 1720.

† Lond. Med. Repository, Vol. XIII.

intention to prosecute the consideration of it. Monstrous productions of our species are 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 more commonly occur.

CHAPTER III.

PERSONAL IDENTITY.

Not a few important events have turned upon the question whether an individual be really the person pretended or not. Impostures of the greatest consequence have arisen, and been successfully maintained, because there were no means of discriminating between the person of the cheat and that of the character assumed. This has been particularly troublesome, where the real individual has been lost sight of in early life, or a period intervenes during which he is forgotten and great changes would naturally take place. The attempt of recent date to set up the claims of Louis XVII. must be in the recollection of every one: on the other hand, innocent persons have been arraigned for crimes committed by others to whom they bore striking resemblance. Of this we very lately had an exemplification at the Old Bailey; and many more might be brought forward.

Former works on Forensic Medicine abound in stories, and the reader will find some copious illustrations among the Causes Celebres. Foderé gives a minute account of the subject in a case wherein Louis was consulted, and for farther notice of which the reader may have recourse to the Appendix *.

When the question refers to a living person, and

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* Appendix XXXIII.

the resemblance is merely general, a medical man cannot be supposed to be a better discriminator than another; and even where the pretence is founded on marks and peculiarities, unless there be factitious imitation, I know not why recourse should be had to a practitioner more than to any other person, especially if he has no previous knowledge of such peculiarities. If they consist in spots, and these be artificially created, perhaps he might be able to verify that circumstance, and if of cicatrices, or marks of disease or injury, he may be able to detect inconsistencies between them and their alleged causes.

Perplexity may arise from changes taking place suddenly in the characteristics of the person, of which I have at present the knowledge of an instance. I had occasion to be at one of the public dispensaries, in the western part of the metropolis lately, when a tall, apparently well-made, and remarkably fair woman presented herself. She had been for some time under the care of the gentleman in attendance for a liver complaint. The singular clearness of her complexion attracted my notice, and the appearance of her eye-brows and eye-lashes added to its unusual expression—for they were in a manner *pied*, being a mixture of light brown and white hairs, of which the latter predominated. She is now about twenty-eight years of age, and the mother of two children.

When about the age of thirteen, she was much afflicted with head-aches; and did not menstruate till she was nearly twenty. At the former period, however, she went to bed one night, during the summer season, in her ordinary way and state of health; and about three in the morning was con-

scious of a sensation like fainting. She got up early (the nights being short) and found the whole of her hair had become grey *. It is now remarkably so; and, from enquiries which my friend, her physician, has since made, I learn that this is not confined to the scalp, but extends to the axillæ, pudenda, &c.

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 that 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. But, 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.

The most frequent source of difficulty, as to identification, however, is in dead bodies; and with re-

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* The same is related of Marie Antoinette, the unfortunate queen of France, but in her case ascribed to grief. See the recent work of Mad. Campan, vol. II.

gard to them the obscurity is sometimes very great, 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. Nor do I see in what way medical men can even here be better authority than people of sound judgment, except that they may speak with some precision as to the advance of the putrescent process being more quick in some circumstances and situations than in others.

On a trial which took place last summer at Edinburgh, for stealing dead bodies, one of these was sworn to by a witness to be that of his sister, which he knew by a decrepitude, and certain marks which characterized the person of the deceased. On the ground of the change wrought by putrefaction (the body having been interred nine weeks before the recognition took place,) it was attempted to throw a doubt over this statement; and medical gentlemen were called upon for their opinion. Dr. Barclay stated that the longest period he ever knew, during which the features remained recognisable, was a fortnight, in the instance of a Lascar. He remarked that much depended on the previous illness; and we know that putrefaction is greatly influenced by the nature of the ground or situation in which the body is placed. Being questioned as to the probable appearance of a body which had died on the 10th, been buried on the 15th of January, taken up on the 13th of March, and claimed the day following, Dr. B. said, "The scarf skin would be very nearly pealed off, and the hair in a very loose state. Some bodies become decomposed in a few days after death—others remain longer. Bodies so long after death are, in general, better recognised by some defor-

mity than by the characters of the skin. An instance occurred last winter, in which some friends of a lame person, understanding that the body had been brought to his rooms, came to claim it. Witness ordered it to be delivered up; but Dr. Thatcher caused an artificial subject, made of leather, to be set before the applicants, and they claimed this instead of the real subject." I lately saw a corpse, that there was reason to conclude had been eight days in the water, in which the nasal cartilage was so flattened as to make it difficult to say whether it had been so during life, or not—though it was more than probable that it had been produced by pressure under water. The countenance was so much acted on, that the body was not claimed, though there was strong reason to believe that the nearest relatives had seen it, and identified it by a mark on one of the thighs, but declined owning it, to avoid the expense of the funeral.

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 between whom and her husband a fight had taken place, with sharp instruments, 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.

In cases where appearances have given rise to suspicion as to the manner in which the deceased came by his death, great perplexity has arisen from the difficulty of ascertaining whose corpse it was. A very interesting example of this occurred in the year 1817, in the county of Huntingdon. A body was found in a small wood near St. Ives. A hat was on the face, with the arms folded across, forming a pillow for the head—and the attitude altogether conveyed the impression of a person asleep. On closer inspection, the following horrific spectacle was discovered. "An empty embowelled trunk—a scull bare, bleached, and dissevered from the neck—hands from the arms —arms from the shoulders—legs from the thighs, &c.; all from exposure to a summer's heat, a winter's cold, and the ravages of rapacious insects, animals, and birds, melted down and rolled asunder, leaving no traces of the once pleasing, anxious being which animated them all. Neither were there letters, papers, or property of any kind (saving a silver hunting watch, and two razors, cased,) found upon the body. But, by the initials "C. B." on a pocket-handkerchief and stocking top, and the aid of one witness, it was soon identified, and proved to be that of the late Charles Blake, aged twenty-six, and recently the unfortunate occupant of a farm near Peterborough, from whence the pressure of the times drove him, about eighteen months since, to an obscure lodging in Huntingdon—which he wandered from early one morning in May last," *(eleven*

months prior to the discovery of the body!) " telling his host that if he returned not to dinner, not to expect him until seen."

Some melancholy circumstances are added, for which I must refer the reader to my authority*. It was presumed that he had destroyed himself by laudanum, a small phial of which was found lying by his side.

The identification of persons has been attempted from the mere skeleton; but it is unnecessary to do more than hint that the aid of moral evidence must in almost every such case be indispensable. An inquest was held at Norwich, in July, 1822, on a skeleton accidentally found, in a sand-pit, by some workmen. The jury, after viewing the skeleton, and hearing some witnesses, returned a verdict of wilful murder against some person or persons unknown. A surgeon gave it as his opinion that it was a male skeleton; and a person was taken up on suspicion.

The mere circumstance of finding a skeleton in a sand-pit, can be no evidence of murder; we are therefore quite in the dark as to the grounds for this verdict. In the curious and interesting defence of Eugene Aram, who was tried, condemned, and executed for a murder committed many years before, anno 1759, he argued ingeniously enough against the skeleton that had been found being that of the person alleged to have been murdered by him—although there was a fracture in the scull, and the piece beaten inwards, which could not be replaced but from within. Upon this he argued that it might have been from natural decay, or

* Literary Gazette, April, 1817.

if by violence, inflicted after, as well as before death—for upon the ground (which he had taken up) that the skeleton had lain long in the cave where it was found, and which had been a hermitage, and a likely place of sepulture, he conceived that the violence might have been inflicted in times of disorder, when in searching for treasure, &c. the very graves and coffins were violated—or in a battle, which was said to have taken place in or near the spot in question. He impeached the fairness of the conclusion as to the sex of the skeleton, but upon this the mystery is not worth much argument. From a portion of a skeleton, or from one greatly decayed, there might be some difficulty; but, in an entire, and tolerably undecayed one, an anatomist should be able to draw a conclusion as to sex at least. Notwithstanding the circumstances dwelt upon by the prisoner in his own favour, with considerable ability, after conviction, he gave the lie to his ingenuity, by confessing the crime, and corroborating the facts which were given in evidence against him *.

* There is an interesting story of the discovery of three skeletons, and their being identified with much probability, in a paper by Mr. Skene, contained in the Transactions of the Scottish Antiquarian Society, recently published.

CHAPTER IV.

SURVIVORSHIP AND INSURANCE OF LIVES.

THE question of *survival* has occupied a considerable share of attention among Medico-legal writers. But however important it may be to determine the descent of property by the fact of one person outliving another, in a case where they both die from the same cause, or under the same circumstances, it is but rarely that even physiology can afford more than presumptive grounds for conclusion.

Upon this point the European codes, being generally founded on the Roman law, have a common feature. That of the French 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 possibility of knowing which died first, the presumption as to survivorship shall be determined according 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 completed 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 *."

The data by which we can form a professional opinion in such cases will hardly admit of formal description. But a few very general facts can with propriety be quoted—to which, if the limits of the work would allow, exemplifications might be added, in great variety.

Where one common accident kills several persons by similarity of lesion, 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,

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* Code Napoleon. Titre 1er. des Successions, ch. i. § 6. 270, &c.

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 presented 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, it might perhaps be concluded that this froth would be more abundant. But this, it must be confessed, is not an article upon which much primary reliance can be placed; and probably 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

* Page 223, &c.

marrow, &c. In the instance of a public execution, where a father and a son were hanged together, and in which there might have been litigation about the succession to some property, the matter was decided by the spectators having distinctly observed that the one shewed signs of being convulsed after the other had become motionless.

Persons have perished together from hunger. "Hippocrates has recorded that children are more affected by abstinence than young persons—these than the middle aged, and these more than old men*." The use of water merely is said to enable persons longer to resist death by starvation.

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 too commenced at that very hour.

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* Some observations on this subject will be found in a paper inserted in Vol. II. of the Manchester Memoirs.

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 decision 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 Courtesy*. In order however to obtain this courtesy, 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 courtesy. 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 courtesy *.

* 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.

In 1806, the cause of Fisher v. Palmer, tried in the court of Exchequer at Westminster Hall, arose out of the grounds now quoted. Fisher 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 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

* Page 20.

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 *.

There are medical duties connected with INSURANCE OF LIVES; and in litigations, arising out of these, the point at issue may be the manner in which these duties have been performed.

It is quite unnecessary to offer any explanation of the œconomy of institutions for this purpose; for nothing is better understood among the intelligent in this country than their general object. In few words I shall observe, that a certain sum of money is to be forfeited by the company on the death of the person whose life is insured, a certain premium or per centage being paid to them during the life of the party. Accordingly it appears at once that the greater probability there is of the life being protracted, the less will be the premium, &c. If we reverse the agreement, and consider it as one by which, for a certain sum deposited at once, the company agrees to pay a certain annual sum, (or *annuity*, as it is termed,) during a person's life, it still depends on the same principle what shall be the amount of the deposit.

The probabilities of life depend upon the age, constitution, health, profession or pursuits, and habits of the individual insured. On all of these it is the province of the physician to form, and his duty to deliver, an opinion. As to the age, there may be doubts, in the absence of positive evidence, and

* 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.

the probability of that stated may be referred to the practitioner, though this is so rarely done, that I know of no adult case which I can bring forward to illustrate the point*. As to health—the influence of the trade, occupation or profession on the health, and the person's habits as to diet and regimen are strictly matters for the consideration of medical men.

Accordingly it is the usage to make a reference on the part of the person whose life it is proposed to insure, to some of his friends, (one of whom must be a professional man, well acquainted with his constitution and habits,) for information on this point; besides which, for greater security, the directors appoint a medical officer, before whom, (where practicable,) it is customary for the party to appear, that this practitioner may satisfy himself, and report to his constituents as to the propriety of insuring the life in question. The enquiries put to the medical friend of the party relate to his state of health, specifying certain diseases with which they require to know whether he is affected, and whether in general he labours under any that tend to shorten life; whether his habits are temperate or otherwise, and in fact whether he is, in the practitioner's opinion, a proper person to have his life insured. Although to this the referee does not actually answer upon oath, yet the compact into which, as a good citizen, and as a respectable member of the profession, he has entered, to keep faith in the discharge

* The question of *ages*, which occupies a place in many works on Medical Jurisprudence, has not been formally discussed in the present one, because practical applications of the physiological characteristics are in this country rare; and the means of verification well understood. The reader will find a sufficiently copious article on the subject in Paris and Fonblanque. Vol. I.

of his duties, renders his certificate sacred. He speaks, or ought to speak from knowledge of the party, and of the circumstances in question: the physician who examines the state of health, &c. of one whom he has no previous knowledge of may not ascertain every thing; but as far as his own investigation can be carried, I apprehend, he is at liberty to go, should there be ground for doubt. It may be considered also as part of his duty to inculcate upon the person in question the necessary objects for him to study in the preservation of his health: more especially where there may be circumstances which, though not amounting to prohibition, may require caution on the part of the insured.

By want of this caution it is possible that an insurance may be forfeited. Policies are void if the insured dies by his own hand, by justice, or in a duel; and it is no unfair extent of the principle to be jealous of dissipation and other avoidable matters that place life in danger. The premium is made special in certain cases; and the exposure to risk by long voyages, by military service, residence in unhealthy climates, &c. becomes a matter of special consideration in granting policies of insurance.

CHAPTER V.

HEREDITARY PECULIARITIES.

The supposed number of hereditary diseases has been reduced by authors. Some have rejected all acute disorders, and even certain of a chronic nature that had long borne this reputation. Others again have rejected the idea of such transmission altogether; but in the face of strong proofs in favour of it. Although their causes are so deeply obscured that attempts hitherto made to elucidate them have been in vain, it is unnecessary to argue that they must be connected with, or dependent upon certain conformations of the organs in which they are known to have their seat. As every person knows that children resemble their parents in outward conformation, and that frequently in so remarkable a manner as to excite great curiosity and attention, why should the fact of similar resemblance be denied as to internal parts? And if the existence of these resemblances between parent and offspring, through repeated generations, be evident, it is obviously right to infer the derivation of the habit, or conformation from the progenitor.

There is a curious fact with regard to family peculiarities that may be properly noticed here. A whole generation of children will sometimes be found not possessing any striking or evident resemblance to

the parent, while their progeny again will manifest the marks of the race.

Portal * and Dr. Paris † have quoted a very striking instance of this resemblance, that used to be related by Dr. James Gregory in his lectures. The following is the account of it which I heard the Professor deliver, in his observations on gout, to illustrate hereditary disposition. Being on a visit in the country, the portrait of an ancestor of the family, who had been Chancellor of Scotland about the time of the restoration, attracted his notice, on account of the high nose and prominent cheek bones. He observed that the profile of a lady then in the house was very like the portrait. Walking out a little afterwards he found some people building a hay-stack; and *the Chancellor* at work among them with a pitch-fork in his hand. The steward informed him that there was another man still more like the Chancellor, of whom indeed there were many resemblances in the parish. The body of this personage had been embalmed, and, the coffin having mouldered away, was preserved in the state of a mummy, in which the doctor could still distinguish the high nose, &c. Tradition alleged that the Chancellor had left a number of natural children, who were chiefly of the lower classes; and the clergyman informed him that the man, who so much resembled his great ancestor, had nine children, not one of whom had the high nose, which was remarkable again among some of his grand-children.

The obvious application of this fact to our pur-

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* Considerations sur la nature, &c. des maladies de Famille, et des maladies hereditaires, &c. p. 16. troizieme edit. Paris. 1814.

† Medical Jurisprudence, I. 220.

pose is, that the absence of resemblance between parents and children is no proof of illegitimacy.

A volume might easily be filled with illustrations of the foregoing part of the subject; and much curious matter is to be found among sensible writers, some of which is rather staggering—as the story, related by Stahl, of a man who had lost an eye, and married a woman who was blind of that opposite to the defective side of her husband. This couple had a son and a daughter, the former corresponding in feature to the sire, even to the eye, having but one, and the daughter, who was the perfect image of the mother, being affected like her in the eye of the same side *. This must be pronounced accidental, as to the blemishes, otherwise we can no longer consider as a fable the story of the officer, who had lost a leg in the wars, begetting unicrural children; or, as some versions have it, with one leg of the animal, and the other of the vegetable kingdom.

It is to be remarked that some diseases have been erroneously set down as hereditary, and others, which, perhaps, are of that nature, have been unduly magnified into an importance that does not necessarily belong to them. For some precise opinions on this subject we are indebted to the late Dr. Adams, in whose short publication † there are useful hints as to the further prosecution of the subject; some of which I shall here present.

Dr. Adams distinguishes between *family* and *hereditary* peculiarities of constitution; the former being confined to a single generation, and the latter being

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* This is quoted by Guitard in his "Recherches sur les maladies hereditaires, Paris 1803," without any manifestation of incredulity.

† A philosophical treatise on the hereditary peculiarities of the human race, &c. Second Edit. Lond. 1815.

transmitted from one generation to another. The only hereditary or family diseases that can with propriety be called so, are those which appear at birth, and are termed *congenital;* all others are but *susceptibilities* to certain diseases. These susceptibilities are divided into two sorts, the one where the disease does not exist at birth, but is afterwards induced without any external or evident causes, and the other where the operation of some external cause is necessary in order to induce the disease. The former of these our author styles a *disposition* to the disease, and the latter a *predisposition.*

Into the illustrations of this arrangement it is impossible to go; but it would be improper not to convey some notion of the utility the author had in view.

Congenital diseases are more generally family than hereditary: many of them being mortal cannot be transmitted in this way. Some families have a *disposition* to diseases which in others are *congenital,* and *predispositions* to diseases in the same organs are also found in certain families, while in others again the *disposition* exists.

When the *susceptibility* to a disease is so great as to amount to a *disposition* there can be but little hope of preventing it. When it is so slight as to amount merely to a *predisposition,* we have rarely any means of ascertaining the fact till the disease manifests itself; but we may hope to prevent it by avoiding, or to cure it by removing the external cause that is necessary to induce it. I shall confine the exemplification to the articles of Pulmonary Consumption and Gout.

In that kind of Consumption which affects several brothers and sisters about the same age, the

parents are often healthy, or at least free from this disposition; but the fate of some of their children gives an early presentiment concerning others, born afterwards of similar complexion, features, and temper. The scrophulous consumption is never excited into action but in certain climates, by a removal from which the disease is often cured.

"When gout appears at an early age in a temperate subject, when it invades the cottage, or is seen in hospitals, we cannot question that the susceptibility is such as amounts to a *disposition*, requiring no external causes to produce it. When the disease follows intemperate or sedentary indulgences, as exciting causes, the susceptibility accounts only to a *predisposition*, and though this predisposition is often hereditary, yet the disease itself will be found in more instances original than hereditary."

Dr. Adams remarks further, "that if no provision had been made in the construction of animals to prevent it, hereditary diseases would by degrees have become universal; whereas there is every reason to believe that they lessen in the human race, as society improves: and we shall see that so important an end is not left to the uncertainty of human institutions." This last hint relates to the divine prohibition of intermarriages among blood-relations, of the wisdom of which there is ample evidence in the phenomena of nature. All animals degenerate if the breed is not crossed—a law from the unfavourable influence of which the human species is far from exempt. Indeed the consequences of *breeding-in*, as it is termed, among families, are the more conspicuous among men than among the inferior animals, as the human character is so much more marked, and the peculiarities so much stronger.

The prohibition alluded to he considers, as far as we can judge, sufficient to prevent the too great influence of the hereditary proneness to deterioration, " since the number of maniacs does not increase in proportion to our increased population, and the great existing causes of madness." There are other considerations that must, however, be admitted in accounting for this.

Dr. Adams is of opinion that where the predisposition exists, it is of no consequence to the future progeny whether the disease has been excited or not—a conclusion which he draws from the fact of gout attacking those who live luxuriously, though their ancestry never felt the disease—an exemption attributable to the absence of the exciting cause.

The concluding part of this enquiry, as well as the notes, is worth the consideration of the Medical Jurist. I shall merely transcribe the two following inferences, viz. " That all interference with the dictates of nature, beyond the expression of revealed will, appears unnecessary," and " that to lessen anxiety, as well as from a regard to the moral principle, family peculiarities, instead of being carefully concealed, should be accurately traced and faithfully recorded, with a delicacy suited to the subject, and with a discrimination adapted to the only purpose for which such registers can be useful *."

I might now perhaps be expected to subjoin some remarks on particular maladies, understood or admitted to be hereditary. But the length to which this would extend the present article precludes the undertaking. With regard to the purposes to which

* Inquiry, p. 41.

the investigation is applicable, they are surely known to the reader by this time. Some of them have already been considered as unfitting their subject for certain situations; and the disposition to these and others may be matter of anxiety to the individuals themselves, or to their friends, leading them to consult with medical men before entering into the married state, pursuing certain professions, repairing to particular climates, &c. or as to diet, regimen, and various points of self-management.

Two remarks, however, present themselves, with which it may not be unappropriate to conclude this chapter.

In the first place. It is necessary to keep in mind the distinction between hereditary diseases depending upon formation, and those connate, which are produced by contagion in the uterus—of which nature there is little reason to doubt that examples have been furnished. Secondly—that the existence of both by no means favours the doctrine of the influential power of the maternal imagination. Notwithstanding the singular and well authenticated accounts that lead towards the establishment of this doctrine, it is certainly one to which no sound reason has yet been shewn for adhering, and against which many powerful arguments could be brought. It is too obscure a point, however, and will probably ever remain so, to admit of direct proof, or any thing of a demonstrative nature *.

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* Appendix XXXIV.

CHAPTER VI.

ON MEDICAL EVIDENCE.

However learned, or however experienced the medical practitioner may be in all matters relating to his ordinary professional duties; and with whatever success and reputation he may practise these, we often find that he acquits himself indifferently in a court of justice. Some of the causes are manifest; and several, perhaps the most important and powerful, appear to me removeable, if their removal be attempted in the proper manner.

1. One of the most conspicuous, perhaps, is the little attention that has been paid to the unaccustomed nature of the duty we are called upon to discharge. With regard to the profession at large it is no slander to say that they barely knew of the existence of such a science, as that which is now copiously laid open to them, until within the last very few years. Had they been inclined to bestow some share of attention upon it, they did not possess the means. It may, and by some will I know, be said that due attention to the other branches of medical education will enable one to answer all demands upon his resources. I shall not stop to argue against this principle, for its influence is too widely spread to be overturned by a few abstract observations—this must, and shortly will be effected by practical arguments of another nature; but if we are to admit it as sufficient to

supersede the necessity of studying this as a separate branch, it is equally applicable to set aside some others which are esteemed of paramount importance.

2. The want of self-possession, which attaches to so many when placed before the public in circumstances to which they are unaccustomed, will account for some of those displays, where attempts are made to take advantage of the situation of the witness, and

3. A disposition, if not an intention to favour one side of the case—witnesses, even when professional, being very frequently somewhat in the situation of parties. We read of medical witnesses for the prosecution, of others for the defence; but wherever there is gross difference in testimony between such there must be something wrong.

I am not going, however, to enter at large into these causes, and others that might be quoted along with them. My intention is to attempt the assistance of the practitioner, who is called into courts of justice to give evidence, supposing him unacquainted with a few considerations that may be useful to him.

Whatever the subject may be upon which he is to be questioned, his reputation may depend much upon the manner in which he acquits himself; and this again must have for its chief foundation his knowledge of the matter. It may happen that he has had experience on the subject; and that is generally considered the most satisfactory knowledge. But although experience may be so far in a person's own power, it is not altogether so; and if physicians were never entitled to exercise their art until qualified *by experience*, in the present sense of the word, it is obvious that the art could never be

exercised, for personal observation must have a beginning. A man of science, however, may be able to speak and act to the purpose from the knowledge he is master of, through the experience of others. But even where supposed knowledge of a subject from experience has furnished a practitioner with a good share of confidence and self possession, on going about the duty under consideration, all this has often failed him, because it has turned out to be a partial experience, or in other words, that it has been derived from a view of the subject under different relations from that which is now under investigation. Thus—a man-midwife may have seen thousands of dead new-born children, and may never have observed any particular phenomenon, on which in the present case much depends, merely because it never was the object of his attention. Another practitioner may swear—in a case of death from any supposed unusual cause—that he never *saw*, in many instances of a similar nature, such or such an appearance; because such an appearance was never the subject of his attention, or perhaps known to him; and yet such statements, *founded upon experience*, shall be esteemed good evidence, whereas the experience of this person is in reality worth nothing as to the point at issue.

On the other hand he who has read the best authors upon the subject, and prepared himself for *every* practical purpose by a due course of study and enquiry, is at least equally qualified to make the proper application of science to enquiries of justice, with him whose knowledge has consisted rather in the discovery of facts, than the accounting for them by principles already established. In philosophy

the former would be considered as a tyro, and the latter rather in the light of a master.

Upon this ground, attempts have been made to lay down rules for the guidance of medical men in giving their evidence. Dr. Hutchinson * directs us, on one point, (and the direction must be intended to apply to others) to advance our judgments in the most precise and simple manner, but not to enter into any arguments or apologies for our opinions; nor to attempt to give them weight by adducing those of any other writer, as the application of these to the subject, will not be recognised by the court. "He (the witness) is supposed," adds the Dr. "by the legal authorities to be sufficiently acquainted with the known physiological laws which relate to the subject under consideration, and it is his own interpretation of what he has observed, that is here required."

These injunctions have been objected to in a review of that Dissertation in the Edinburgh Medical and Surgical Journal †; where the able writer gives it as his opinion, that they could not be followed without a compromise of the rights and dignity of the profession, as well as the force of the witness's own evidence—medical testimony being little else than a reference to authority. In this view of the matter, I am disposed to join; and to consider the argument of Dr. Crell, (to whose evidence the reviewer refers us) urged on the trial of Spencer Cowper ‡, to be at least a fair retort. That gentleman, proposing to give the opinions of several an-

* On Infanticide, § 20.
† No. 76, July 1823.
‡ Appendix XXII.

cient authors, was desired by the Court to tell his own observations. He replied, that he saw no reason why he should not quote the fathers of his profession in the case, as well as the gentlemen of the long robe who quoted Coke upon Littleton in others. His real reason, however, was more to the purpose, viz. that *it must be reading as well as a man's own experience that will make any one a physician.*—After all, his evidence was worth little; and, now-a-days, would be worth nothing.

Dr. Hutchinson's injunctions, seem to relate to *written reports,* and not to oral examination. It is not by the former that medical testimony is given on such occasions in this country. On the continent, where formalities supply too often the place of what is real and solid, the framing of reports is a matter of importance; and it is, on more accounts than that of the furtherance of justice, necessary that those whose duty it is to frame them should be instructed how they are to do so. But, in the courts of Great Britain, the physician appears for the most part in the simple capacity of a witness. He is either examined *viva voce,* as to his knowledge of a particular event, or his opinion is required on a fact that may be submitted to him—to which exposure every member of the profession is liable. He prepares himself by no course of study foreign to that of his proper profession, and observes no formalities, but those of prudence and decorum. Juridical disputation and legal casuistry can hardly combine with medical reasoning, or illustrate physical laws; so that it is the *prudentia Medicinæ* rather than the *prudentia Juris,* that we ought to cultivate—even with a view to Forensic application.

The authors of "Medical Jurisprudence" have favoured us with some observations on the subject of Medical Evidence, in which the law of evidence, generally, is applied to this branch of it*. I shall not follow them into the forms of citation, or the course for obtaining the witness's expences. It is right that the practitioner should be solicitous about these; but as they are a subject about which too many are, perhaps, better informed than they are upon matters that appear to me of far more importance, I shall pass it over. Nor shall I point out the danger they run from not attending to a *subpœna*—supposing that when such a mandate is served, it will, of course, be obeyed.

The practitioner being once in court, his situation there will vary according to circumstances. He may, for instance, be examined on a fact, or be called upon to speak to a matter of opinion, within his province. Lawyers are accustomed to consider their own opinions as authority, in law; and are therefore apt to attach great importance to those pronounced in the medical sciences. This may be consistent with the elucidation of truth where the opinion is that of a qualified person—but unfortunately the rude and raw conceits of those who are the least entitled to give an opinion, are too frequently considered sufficient; or such are in the first instance examined in the same manner as if they were established authorities. Too much latitude has certainly been observed in the acceptance of professional witnesses. If a man is yet unqualified in the opinion of his own profession to treat the sick, it is surely inconsistent if not absurd, to set him forward

* Vol. I. p. 153. 399.

as the expounder of science in its rarer and more obscure bearings—and yet the evidence of students and apprentices would seem to be as satisfactory as that of the first physicians and surgeons of the land. Gentlemen of the long robe would be grievously offended if it should become the fashion to consider the opinions of attorney's clerks as of equal importance with their own.

I do not know any advice on the subject of giving evidence, which can profit the witness, beyond making himself master, in the first instance, of the relations of the medical and chemical sciences to those applications which have furnished the topics already discussed—in other words, to study Forensic Medicine. The practitioner may now lay his account with being examined as to the attention he has paid to this branch—and probably the authority of his evidence will somewhat depend upon the answer he is able to give. Next to this I would recommend him to refresh his memory on the subject about which he is to be examined before he goes into court; and if the case be one in the prior investigation of which he has been concerned, the accuracy with which he has pursued that investigation will be of the greatest consequence. I have formerly enjoined the noting down of appearances, &c. on dissecting bodies; and the same practice should be observed in every investigation with which recollection will afterwards have to do. In making these notes, the more perfect they are, the practitioner will find from them the greater benefit—for notes taken at the time of enquiry may be used by him to refresh his memory, or to enable him to speak with accuracy—but he must, for this purpose, use the originals.

As to what is or is not evidence, in law, it is enough to bear in mind that all witnesses must speak from what they themselves know—they cannot give testimony on the report of others. In a propensity to go beyond this, the witness will be immediately checked; therefore, although to avoid such checks, may be for his comfort and respectability, I do not apprehend that it is so much his business to attend to the regularity of evidence, as it is theirs who by study and practice are more properly conversant with it.

It will contribute greatly to the respectability of the practitioner, and to the elucidation of truth, if, before going into court, he should compare notes with such other professional persons as may be concerned in the matter. I am sure it must be quite unnecessary to say that this is not recommended with the view of agreeing in a story. But when we consider how seldom a practitioner is able, or perhaps furnished with the opportunity to give such a statement on professional matters, in open court, as may be perfectly intelligible to a *confrere*, and how much risk, as well perhaps as temptation may thereby arise, productive of differences, that explanation of the grounds of opinion, and technical descriptions might prevent—the warrantable nature of the advice will readily appear. I have been informed of an awkward circumstance that arose from neglecting this advice. A practitioner was subpœnaed to give evidence on a trial, and, by way of insuring greater weight to his opinions, caused a physician of eminence to be called also. No interview or communication having previously taken place between them, the person first alluded to gave his evidence, which, when the other was called

forth, instead of being corroborated as was expected, was combated in some material points *. I shall not carry this exhortation farther, by counselling medical men to deal liberally towards one another. This doctrine is not left for me to teach. Urbanity and deference are not incompatible with discrepancy of opinion.

There is a consideration which creates much personal apprehension about making a professional appearance in a court of justice. The life, the reputation, the fortune of an individual, and the happiness of many others, often depend on what we say; 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. There is a dread also on the part of many practitioners (and one which I have repeatedly heard expressed,) that by speaking doubtfully they may lead to the shedding of innocent blood. It might perhaps be urged, that it would, even so, be not less their duty to speak with doubt where they are unable to do so with certainty—but the apprehension is in fact raised by a bugbear. The mild

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* Dr. Percival gives the same caution, the force of which is well illustrated by a case somewhat analogous to the above. Med. Ethics, chap. iv. § 18.

and humane spirit of British justice eagerly avails itself of doubtful testimony to give the accused the benefit of it; and if there is any error on the subject, it is in the great degree of this eagerness—an error, for the practitioner in this respect, on the safe side.

This leads to the recollection of a most important feature in the examination of witnesses. Let a person prepare, as he may, for the delivery of his testimony, he is surprised, and probably vexed at the very different turn the matter takes, from that which he had anticipated. The advocate has a purpose in view, for which perhaps the elucidation of the truth may not be convenient. He may therefore exert himself to repress the information which the medical man is disposed and able to afford. It may be that he aims at drawing the witness into certain admissions, the force of which he does not perceive, until inferences are drawn, by no means those which he would sanction, and which he may not have the self-possession to protest against, or of which he may not indeed be informed until too late. But where this occurs, I cannot help thinking that the witness is justly blameable to some extent—for 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 discharge of duty.

If 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, of his own accord, to supply 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.

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 partly referred to the comparative rarity of calls for such practice. Many have passed through a long and busy course of professional life without having been once summoned to give testimony in a court; but any security that may be built upon this, is founded on the most unwarrantable presumption; for when he least looks for the summoning officer, he may call him forth to a trial of skill, the upshot of which may be the loss of a hard-earned reputation.

With regard to the usages of the court in which he may have to deliver his evidence, the knowledge which every well-informed man should possess, will be nearly the whole of what is necessary for him in particular to attain. I need not again 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 may arise from inability *to suppress information*, as it is often his duty to do in the management of the sick. Observations 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, have been copiously scattered through the preceding pages; and to the work at large, I must refer for illustrations as to the nature and manner of Medical Evidence †.

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* This has been already alluded to under the head of *Insurance of Lives.*

† See also some judicious observations on this subject, in Dr. Haslam on Med. Jurisprudence as it relates to Madness.

APPENDIX.

I. Page 5.

"In the month of September 1745, M. Rigaudeaux, surgeon-accoucheur at Douai, was summoned one morning, at five o'clock, to attend a woman in labour, about a league distant. He arrived about half-past eight, and was informed that the patient had been dead two hours, having gone off in a convulsive fit. The pains had come on at 4 p. m. and had been extremely violent during the night. The body was already prepared for interment; and, on examining it, he could discover no indications of life—the os uteri was sufficiently dilated to enable him to bring away the child by the feet. It appeared to be dead also, but by persevering in the means of resuscitation, at the end of three hours some indications of vitality encouraged them to continue their exertions, which were ultimately crowned with complete success.

"M. R. again carefully inspected the mother, and was confirmed in the belief of her death. But, although she had been in that state for seven hours, the arms and legs retained their flexibility. Stimulants were applied in vain; and he took his leave, recommending that the interment should be deferred until the flexibility was lost, with some instructions about the application of stimulants. At five o'clock a messenger came to inform him that she had revived about half-past three. The mother and child were both alive three years afterwards. *Journal des Sçavans* 1749." *Bruhier, sur l'incertitude des signes de la Mort.* I. ch. v. § 3. This author had the story from Rigaudeaux himself.

II. Page 7.

This was the case of a stout young country girl, who, having been brought to bed at the hotel Dieu, walked to the hospital Salpetriere on the second day, to avoid a malady that had carried off several patients in the former. She was so much exhausted by the exertion that she fainted on her arrival; and though she recovered in the first instance, she was reputed dead upon a recurrence of the fit. The attendant sent notice to Louis that there was a subject for him; and his pupils, without examining, carried her off to the anatomical theatre. Next morning the professor was informed that moans and the like noises had been heard in the theatre. On repairing thither, the subject (really dead now) gave evidence of having in vain struggled to disentangle herself from the winding sheet. One leg was thrust from the bier, and an arm rested on the bar of an adjoining table. *Lettre II.*

III. Page 8.

"The Moors, according to their religion, cannot think the departed happy till they are under ground. They are washed while yet warm,

and the greatest consolation the sick man's friend can have, is to see him smile while this operation is performing, as they look on that as a sign of approbation, in the deceased, of what is doing, not supposing such an appearance to be a convulsion occasioned by washing, and exposing to the cold air the unfortunate person before life has taken its final departure. This accounts for the frequent instances that occur here of people being buried alive; many of the Moors say a third of the people are lost in this manner." *Tully's Narrative of ten year's Residence at Tripoli.*

IV. Page 24.

The following case was mentioned in the public prints in the beginning of the year 1823; but I am indebted to a professional friend, who was a witness of the most interesting parts of the affair, for the accurate notice I am here enabled to insert.

A stout young man had been long subject to epilepsy, which became combined with madness, on account of which it was necessary to remove him to a private asylum in the neighbourhood of London; there he died suddenly in a violent fit of the first mentioned disease. The body was removed to the residence of his friends, soon after death, where the necessary preparations previous to interment were resorted to. On paying attention to the body, it was found that the limbs were quite pliable, that the eye was neither collapsed nor glazed, and that the whole features retained their full natural appearance, as during life. A surgeon, that for years had been in the habit of attending him, was sent for; who, although he could find no signs of vitality, prudently recommended that the interment should not take place until decomposition should begin to manifest itself. In the farther course of two or three days, appearances still continuing the same, a physician was called in, who concurred in the recommendation that had been already given. Fifteen days, from the supposed time of his death, had elapsed, when my informant had an opportunity of inspecting the body; and at this time the countenance retained the appearance described, though the eye seemed beginning to sink, and a lividity had commenced on the surface of the abdomen: the joints were still flexible *. At this time a very eminent professor of anatomy viewed the body, and, considering the hesitation that had prevailed to be altogether unfounded, appointed the following day to examine it internally. The head was accordingly opened, and a considerable effusion of blood was found in the posterior part of the cranium, between the scull and dura mater, and between the membranes and substance of the brain. No serum was detected in the ventricles, but the pineal gland was gritty, and the brain itself remarkably hard. This was sixteen days after death; and on the day following the body was interred.

A clamour then arose among the neighbours that he had been prematurely handed over to the anatomist; the body was exhumed, an inquest was held, and the evidence of the medical men required. The jury returned a verdict of "Apoplexy."

My friend was never able to obtain satisfactory information as to the temperature of the body; and it seems that no attempts were made to resuscitate—on the contrary, the subject remained all the time on a deal board.

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* See page 18, second note.

V. Page 27.

The circumstance here alluded to occurred, in broad day, in the middle of the city of Coimbra. The woman had sunk after a severe labour, and both mother and child were conveyed on the same bier, under the usual circumstances, immediately after delivery, preceded by priests, and without hurry, or any thing to denote consciousness of doing wrong. The discovery of vitality did not seem to be made till after the service had been concluded within the church, and the corpses were bringing out to the grave, which was adjacent to the church door. The alarm was then given in the presence of four or five English gentlemen besides myself. One of my companions, who immediately obtained a sight of the bodies, declared that he saw motion. I cannot say that the superficial view I obtained quickly afterwards could enable me to form any opinion; and the proper medical authority arriving at that instant, the bier was conveyed back again to the church, the door of which was closed, and therewith all my knowledge of the circumstance.

The allusion made to this case in the former edition of these "Principles" has been animadverted upon by the learned authors of "Medical Jurisprudence," who consider it as not illustrating the difficulty of discrimination, because the fact was noticed by the casual observer. I have merely to answer that the case has not been brought forward as one of difficulty, but as an occurrence of such mistakes, shewing the necessity for discriminating. It is perhaps necessary for me to add in my own vindication, that I had no share in any part of the business, being but an individual in a promiscuous crowd, and that had I been at liberty to have interfered, or able to have done any good, the matter fell into the proper hands immediately.

VI. Page 28. 30.

The Case of the Honourable Colonel Townshend.

"Colonel Townshend, a gentleman of excellent natural parts, and of great honour and integrity, had for many years been afflicted with constant vomitings, which had made his life painful and miserable. During the whole time of his illness he had observed the strictest regimen, living on the softest vegetables, and lightest animal foods, drinking ass's milk daily, even in the camp; and for common drink, Bristol water, which the summer before his death he had drank on the spot. But his illness increasing, and his strength decaying, he came from Bristol to Bath in a litter, in autumn, and lay at the Bell inn. Dr. Baynard, who is since dead, and I, were called to him, and attended him twice a day for about the space of a week, but, his vomitings continuing still incessant and obstinate against all remedies, we despaired of his recovery. While he was in this condition he sent for us early one morning: we waited on him, with Mr. Skrine, his apothecary (since dead also); we found his senses clear, and his mind calm, his nurse and several servants were about him. He had made his will and settled his affairs. He told us he had sent for us to give him some account of an odd sensation he had for some time observed and felt in himself, which was that, composing himself, he could *die* or *expire* when he pleased, and yet by an effort, or some how, he could come to life again: which it seems he had sometimes tried before he had sent for us. We heard this with sur-

prise; but as it was not to be accounted for from tried common principles, we could hardly believe the fact as he related it, much less give any account of it; unless he should please to make the experiment before us, which we were unwilling he should do, lest, in his weak condition he might carry it too far. He continued to talk very distinctly and sensibly above a quarter of an hour about this (to him) surprising sensation, and insisted so much on our seeing the trial made, that we were at last forced to comply.

"We all three felt his pulse first: it was distinct, though small and thready; and his heart had its usual beating. *He composed himself on his back*, and lay in a still posture some time; while I held his right hand, Dr. B. laid his hand on his heart, and Mr. S. held a clean looking-glass to his mouth. I found his pulse sink gradually, till at last I could not feel any, by the most exact and nice touch. Dr. Baynard could not feel the least motion in his heart, nor Mr. Skrine the least soil of breath on the bright mirror he held to his mouth. Then each of us, by turn, examined his arm, heart, and breath, but could not by the nicest scrutiny discover the least symptom of life in him. We reasoned a long time about this odd appearance as well as we could, and all of us judging it inexplicable and unaccountable, and, finding he still continued in that condition, we began to conclude indeed that he had carried the experiment too far, and at last were satisfied that he was actually dead, and were just ready to leave him. This continued about half an hour, by nine o'clock in the morning, in autumn. As we were going away, we observed some motion about the body, and upon examination found his pulse, and the motion of his heart gradually returning; he began to breathe gently, and speak softly: we were all astonished to the last degree, at this unexpected change, and after some further conversation with him, and among ourselves, went away fully satisfied as to all the particulars of this fact, but confounded and puzzled, and not able to form any rational scheme that might account for it.

"He afterwards called for his attorney, added a codicil to his will, settled legacies on his servants, received the sacrament, and calmly and composedly expired about five or six o'clock that evening."

I shall add the account of the appearances on dissection, under the impression that it by no means exhibits the real state of the case.

"Next day he was opened, (as he had ordered) his body was the soundest and best made I had ever seen; his lungs were 'fair' [what does this mean?] large and sound, his heart 'big' and strong, and his intestines sweet and clean; his stomach was of a due proportion, the coats sound and thick, and the villous membrane quite entire: but when we came to examine the kidneys, though the left was perfectly sound, and of a just size, the right was about four times as big, distended like a blown bladder, and yielding, as if full of pap; he having often passed a wheyish liquor after his urine during his illness. Upon opening this kidney, we found it quite full of a white chalky matter, like plaister of Paris, and all the fleshy substance dissolved and worn away, by what I called a nephritic cancer. This had been the source of all his misery; and the symptomatic vomitings from the irritation on the consentient nerves, had quite starved and worn him down. I have narrated the facts as I saw and observed them deliberately and distinctly, and shall leave to the philosophic reader to make what inferences he thinks fit; the truth of the material circumstances I will warrant." *Dr. Cheyne on the English Malady.*

VII. Page 29.

A gentleman was playing at cards in an evening party, when he was observed suddenly to lean against the lady who sat next him, in a strange manner; but it was quickly discovered that he was seized with a fit. Medical aid was immediately sent for, and it was apparent that apoplexy was the matter. A vein was opened in each arm, but blood could not be obtained, and he was pronounced dead. The body was laid in a room of the same house, and two servants were appointed to sit up with it. These persons fell asleep, and continued a considerable time in that state. On awaking, the room was found deluged with blood, from the orifices that had been made in the arms, and had not been secured.

It is fair to suppose that had due attention been paid, this hæmorrhage might have been rendered salutary, instead of proceeding to a fatal extent. The case was related in my hearing by a very respectable surgeon, deceased, at one of the meetings of the London Medical Society.

VIII. Page 30.

This reference has been by an oversight misplaced. The case more especially alluded to has already been given. [App. IV.] Another has been recorded in the public prints of very recent date; which excited my curiosity so much, that I had the circumstances drawn up for insertion here. Upon making the necessary previous inquiries as to its authenticity, I have been informed, that the whole story of *the Hammersmith trance* is a fable, coined, no doubt, for the unworthy purpose of filling up a newspaper column.

In addition to what has been said as to the profound exhaustion that is observed after child-birth, I can vouch for the fact of a lady having been put on board a vessel, and carried from Bermuda to New York, in that state, for further medical advice. She had remained long in the same way on former occasions of that nature, and her friends in their anxiety injudiciously resorted to this alternative, which brought on a disorder that terminated fatally. She had not been roused at the end of the passage, though she regained her consciousness, &c. prior to the manifestation of the disorder under which she died.

IX. Page 44.

I have followed the example of most writers in the preservation of the title by which this phenomenon is known, aware that it is in all probability erroneously applied. In the Edinburgh Medical and Surgical Journal for October 1823, we are helped to a more appropriate method of designation. In quoting a recent case from the French periodicals they consider it not as evidence of spontaneous inflammation, but of "preternatural combustibility." Upon this a less exceptionable name might be founded, but we may as well wait a little longer before attempting accurate nomenclature.

The following *general* facts have been noticed by writers on this curious topic. i. That in the great majority of cases the subjects of this combustion have been habitual drinkers of alcohol; and some have made use of it, or other inflammable substances externally about their persons, but a little while before the phenomenon took place. ii. They

have mostly been of the female sex, and either of a very fat, or very lean habit of body. iii. For the most part, if not in every instance, it has taken place in advanced life. iv. According to certain authors, some burning substance has always been found to have been in the apartment, at least, if not to have come in contact with the person. v. The body has never been found entirely consumed; part always being merely roasted, and perhaps the extremities unchanged, while the great mass has been reduced to a very small portion of greasy stinking light charcoal. vi. Furniture, &c. have been but little acted on by the combustion, and then only when in immediate contact with the body; but these, together with the walls and roof of the apartment, have been covered with the more volatile parts of the fœtid powder just mentioned. vii. The course of the combustion has always been extremely rapid. viii. Where the patient has lived a while after the event, gangrene, and (as some express it) putrefaction accompanied this species of burning, in a manner unknown in others.

It would seem farther that the flame is of a peculiar nature, or at least occasionally exhibits phenomena not usual; for, according to the principal writer on the subject*, the application of water, instead of extinguishing increases the activity of the combustion.

Foderé, with his habitual diffuseness, carries this subject to some length, and gives some account of most of the cases that had been noticed, and of the authors who have alluded to the subject down to the time at which he wrote†. By far the greater number of these cases have been observed on the continent of Europe; but the event has occurred in different parts of the globe. One is recorded as having taken place in the province of Massachusets; and it has attracted observation in England‡. In some instances there have been peculiarities in the phenomena; but the general facts do not hitherto admit of many exceptions. A very remarkable instance is quoted from an Italian Journal§, by Foderé and other writers, in which the subject was visited immediately on the combustion taking place, and lived several days afterwards. It teaches little, however, respecting the cause, and other interesting circumstances connected with these mysterious cases.

Two instances, in particular, are mentioned where persons were accused and condemned on a charge of murder, in consequence of bodies having been found consumed in this manner; therefore, if we cannot acquire a knowledge of the nature of the combustion, we should be acquainted with its phenomena at least—very different indeed from the appearances of bodies that have been burnt in the common way, in which we know that attempts have been made to destroy such evidence of murder as might be obtained from the state of the corpse in cases of violent death.

The following are sources of information, in addition to those already alluded to. GENTLEMAN'S MAG. 1736. A woman, aged 62, who had been in the habit of rubbing herself with camphor, Annual Register, 1763. LITERARY GAZETTE, Jan. 29, 1820, (copied from a French provincial journal) A woman, aged 55, an intemperate drinker. Too much has been said about the notice taken of the subject in the very small, but really meritorious work of M. VIGNE, " De la Medecine Legale."

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* Lair. Essai sur les combustions humaines, &c.

† Med. Legale, III. § 672 et seq.

‡ Annual Register 1775, case of Mary Clues.

§ Published at Florence in Oct. 1776. The case is reported by Jos. Battaglia, surgeon at Ponte Bosio; the subject was Don Gio-Maria Bertholi, a priest.

He hazards a conjecture as to the excitement of the combustion, similar to that in the text—but puts a query whether it may not be produced by the contact of external fire with the *inflammable principle* that "makes its escape from the primæ viæ!" &c. He leans, however, to the electric spark as the exciting cause, acting on the hydrogen of the alcohol*. A case is given in THE MEDICAL AND PHYSICAL JOURNAL for April, 1821; and there is an article on this subject in the NEW MEDICAL AND PHYSICAL JOURNAL for May, 1815, in which the reader will find still further references. Two of the last recorded (one of which is not much to the purpose even if authentic) are to be found in No. LXXVII. of the EDINBURGH MEDICAL AND SURGICAL JOURNAL, (for Oct. 1823.) The particulars were sworn to before a magistrate; but as such oaths, when *voluntary*, are generally made by those who have a purpose to serve or profit to gain, and are the prostituted refuge of *quacks and other rogues*, the circumstance is strong ground for refusing belief. Since these another has made its appearance, and will be found in the Journal referred to in the note below.

X. Page 46.

Concerning the regulations under which the Coroner's summons is to be issued—the manner of impannelling a jury, &c. I must refer my readers, who are desirous of information, to law books; such, for instance, as those that relate to the duties of Magistrates. Medical men should certainly make themselves acquainted with the occasions and forms of holding inquests; as such investigations are often of the utmost importance to them.

I consider it sufficient here to say, that they are called for upon any fatal event, which takes place in an unnatural or unusual manner, or wherever there may be cause for supposing that such has been the case, or where rumours to that effect have prevailed. Upon these latter grounds, bodies are not unfrequently disinterred by authority of the Coroner, and submitted to the inspection of medical men, in order to ascertain, if possible, the nature of the cause of death.

If a corpse be found in a place where, in the usual course of affairs, it ought not to be, it must not be disposed of until the Coroner's warrant either authorises its interment in the regular manner, or that it should be buried as directed by the law of suicide (page 306); and this warrant he cannot issue until after he has held his inquest, and the Jury has returned their verdict as to the nature of the event. Too often it happens, that the verdict is precipitate, and even unfounded; and this affords some elucidation of the matter hinted at in the last chapter of the text, relating to Medical Evidence†. Juries grudge their attendance, and Coroner's Juries are not always composed of the most intelligent members—very often because the bounds within which they must be found, do not afford great choice of the best qualified materials. Medical men too frequently grudge their attendance also; and I have no hesitation in saying, that the circumstances, under which their attendance is frequently required, are grievous. But parish surgeons enter on their office with a knowledge of what they are liable to; and should not be impatient when required to illuminate a Coroner's Jury. Impatience, however, is often glaringly manifested by all parties; and if the *forms of*

* The evolution of this principle in the bodies of spirit drinkers seems to be an opinion now gaining ground. See Medico-Chir. Review for Oct. 1826.

† And which is dwelt upon at greater length in my work on that subject.

an inquest can be got through, without more than superficial enquiries, so much the better.

I shall now confine myself to a few remarks on the more ordinary terms in which the verdicts of Coroner's Juries are rendered; merely premising, that they may be as various as the events to which they have relation; and counselling the reader to seek for more copious illustrations in the common newspapers—hardly one of which does not contain something of this nature.

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 healthy action the maintenance of life depends. In many such cases, a specific statement is recorded, and we therefore often meet with the terms *Apoplexy*, &c.

Of Accidental Death I shall merely say that it means a death of some violent nature, or from some unusual or unnatural cause, extraneous to the body. Bursting of a blood vessel, or fatal lesion of some vital organ from a mere morbid cause, would less properly belong to accident, than to the former case, if not to *Death by the Visitation of God;* under which, usage seems to comprehend those cases where no marks of a suspicious nature are discovered, but where there is at the same time no positive or satisfactory evidence as to the cause of death. This verdict is returned in many cases of aged persons dying suddenly, and might be proper in some diseases—as spasmodic affections of the stomach, &c. where they prove suddenly fatal. The term is ambiguous, for "visitation" ordinarily implies something in the nature of punishment. However, it seems merely to signify that in the opinion of the Jury the event is one of the inscrutable occurrences in the administration of Providence, for which it would be vain to attempt to account.

Of the term *Homicide*, which literally implies killing a man, there are various modifications. It may be *culpable*, as when one person kills another, by firing a gun at him not knowing, or not believing it to be loaded —it being an improper act to handle fire-arms in a manner which may injure: or it may be *justifiable*, as when a person kills another in his own defence. In the first case, the verdict would probably be *Manslaughter*.

Of *Wilful Murder* so many elucidations are given throughout the text, that a single word here is unnecessary, beyond a caution to medical witnesses as to the share they ought or ought not to have in procuring such a verdict by their evidence. Although the power of life and death does not rest with the Coroner, and the real merits of the case may be established afterwards by other means than those to which he may have resorted; yet the charge, and subsequent imprisonment, of a person whose innocence may be made as clear as noon-day, are perhaps almost as ruinous to him as an ignominious end itself. It is scandalous to see how often the evidence of the same person leads to different results, when given before the Coroner, and when delivered in presence of a Judge. Let the practitioner reflect that indifference, when speaking on oath, is allied to perjury; and that, if sworn in the parlour of a village ale-house, before a dozen or two of his simple neighbours, his responsibility is not less awful than when stuck up in a county hall, before wigs, robes and gowns, cross-examiners, brow-beaters, and short-hand writers.

Enough has been said on the subject of SUICIDE to supersede the necessity of explanatory matter on the term *Felo de se*. I shall merely remark, that the verdict is no doubt returned with perfect justice when

ever it is given; but that, in the opinion of all medical authors who have turned their minds to the subject, it is often withheld where it is with equal propriety due. I will not go so far as to say that this verdict was seldom issued against a person of what is called "consideration"—but there is no impropriety in affirming that it has, in almost every instance, been confined to the cases of those charged, or, at least, suspected of crimes beyond that of their own destruction. The very last instance of any notoriety was certainly a clear proof of this assertion; and what renders it the more worthy of notice was, not merely the nature of the affair, but the fact of it being the last example in which the old law was put in force.

In this case the power of the Coroner was so strikingly exemplified, and the event itself was so extraordinary, that a few words concerning it may be added. A young gentleman and his father were found dead in one apartment, each lying on his back, with their feet towards each other —the elder with clean gloves on, and the younger with his fingers soiled in the way that is noticed in those who discharge fire-arms. The previous report of pistols and other circumstances were given in evidence, in such a manner as to convince not only the Jury, but the world at large, that the double crimes of parricide and felonious suicide had been committed by the son: a verdict of *Felo de se* was accordingly returned, and the body was interred by night at a "quatre bras." The new law was about to pass at this very time, and the ceremony of the stake was omitted. Soon afterwards the corpse was removed, and suffered to be re-inhumed in the ordinary burial-ground of one of the London workhouses. In this instance, the plea of insanity was urged, and with such force, that if we compare the evidence to that effect with the apology for evidence that is commonly accepted, it is unavoidable to conclude that had it been simply a case of self-murder, the verdict would have been different.

"*That the deceased destroyed himself in a temporary fit of derangement*," is of all others the meaning of the majority of such verdicts, whatever may be the means of destruction, or the precise terms employed to express the same. Juries have been too much in the habit of coming to such decisions, if we consider the principle that should influence them; for it is rarely derived from medical testimony. Under the head of "Suicide," in the text, some observations will be found on this subject, to which I am unwilling to add; and other remarks, relating to it, were hazarded upon accusations of *Infanticide*, in the truth of which I am the more confirmed, from the approbation they have met with in a highly respectable quarter*.

With one word to my professional brethren I shall leave the subject. I counsel them to beware of aiding by their observations, or of countenancing by an unbecoming acquiescence, such a bias in a Coroner's Jury to make free with the term "*Insanity*," on similar occasions. The verdict saves public agitation and disgust (now indeed to a very trifling amount); and *may* save property—but at what expense? No less than stamping on a family, totally free perhaps from any disposition of the kind, the character of having a disposition to this hereditary malady.

There are other descriptions of verdicts which it would be impossible here to discuss; nor, as they consist in general of a short specific statement of the peculiar circumstances to which they relate, would there be much use in attempting to exemplify them. The best source of examples is the newspapers of the day.

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* Medical Jurisprudence, Vol. III. p. 120.

XI. Page 52.

We have, in too many instances, had occasion to regret the appearance not merely of arrogance, but even of *party zeal* in medical witnesses. A sense of duty to the profession, and a strong conviction of the advantages every individual belonging to it would derive from cultivating *independent* habits, not only of acting, but of feeling, (and if possible, of *thinking*,) on such occasions, urges me to confess that it has had an inconvenient influence even upon highly honourable minds. A degree of it is peculiarly difficult to avoid when it is thrown upon us with the impetus of a feeling of humanity—but even here *humanum est (sæpe) errare*.

The subject of the inquest now alluded to was represented to have received injury in the notorious affray that took place at Manchester on the 16th August, 1819, in consequence of which he died, at the distance of several weeks.

I have neither hesitation nor delicacy, on my own part, after reading all the evidence, and all the professional opinions recorded upon the occasion, in saying that, under the circumstances, there was no chance of coming to any unquestionable conclusion as to the immediate cause of death. The deceased seemed, indeed, to have received considerable injury on the day alluded to, from wounds and bruises; but he appeared also to have both neglected himself and to have indulged in unsuitable excesses. Moreover, on opening the body, there were strong marks of extensive visceral inflammation, which might have been caused by the injuries in question; but which might have been co-existent, or even subsequent, without having been ascribable to them. All this was little better than conjecture, or, at the most, but matter of *probability*. The forensic puzzling, squabbling, and uproar, are matter of *fact*, and stand upon record. So, I am really vexed to add, do the ridiculous and intemperate expressions made use of by an eminent practitioner. I will not give them unnecessary notoriety by repeating them: those who may be desirous of seeing to what a pitch of absurdity people of respectability may be hurried by an intemperate spirit, can turn to the record themselves *; and the lesson to be inculcated is—that no authority, and no example can justify a departure from the observances of forbearance and decorum in the discharge of duty.

In my own mind, I must admit the possibility of the death of Lees without the interference of violence, if (as there is much reason to suppose) at the time of receiving the injuries, he was labouring under pleuritic inflammation; as persons sometimes go about under that disease till within a very short period of their death. The violence would have aggravated such a disorder, and *might* have caused it—but without this, such a disorder, in a person of the habits imputed to Lees, could hardly terminate favourably, if neglected.

XII. Page 64.

The most important questions of this nature that may be asked a medical practitioner, are given where this article is referred to: the following are some occasional examples.

In the year 1699 Lords Warwick and Mohun were tried by the House of Peers for murder. At that remote period, as to Forensic Medicine

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* I have found it my duty to quote the evidence at large in the Appendix to my Analysis.

in this country, a surgeon who had examined the body was censured by the Lord High Steward for being unable to say whether two wounds were inflicted by the same weapon or not. He was told that it was his duty as a surgeon to give information, as well with what sort of instrument the wound was given, as the length and depth of the wound. On the trial of Beddingfield and Ringe, quoted at page 240, two persons were produced as medical witnesses, who underwent an examination of a very searching nature. Mr. Sparham, the first one, was interrogated in the following manner. (It will be seen by referring to the case *, that there was question of strangling, founded on black marks seen on the neck of the deceased.) He was asked—Suppose a man is seized with an apoplexy, or any fit that occasions his death, what appearance would the face and neck have? *A.* In apoplexies they have *froth in the mouth.* Q. Is the face ever black and swelled? *A.* A little livid colour. Q. Would it not be black? *A.* No. Q. Is there any kind of natural death that would occasion the neck to appear black? *A.* No. Q. Suppose a vein broke in the neck, would it make the face and throat black? *A.* No.

In the celebrated laurel-water case, which will come especially under notice below †, Mr. John Hunter was subjected to a general examination; and indeed this occurrence is so very frequent that we need not seek farther for formal exemplifications. It may be useful, however, to remind, that counsel, in cross-examining, will be very glad to avail themselves of an opening to find a flaw in a medical man's qualifications (which, unhappily, it has too often been easy to do) and if every other scheme fails, the amount of his *experience* is required, by which is meant what he has seen with his eyes—a very slender foundation for a man to build his opinions on. To this many yield under a mistaken persuasion of a *plead-guilty* kind, and acquiesce in their own insufficiency, very probably because they are as devoid of other information as that which (after all) seeing might not have imparted to them.

XIII. Page 52. 72.

Mr. Hunter's paper "On the digestion of the stomach after death," was presented in the year 1772. The appearances in the stomach referred to are not the only instances in which persons have made erroneous conclusions—taking that for evidence of something antecedent to death, which can be produced only after it. Such also, Mr. Hunter remarks, is the case with coagula in the heart, which have often been taken for polypi. The living principle enables animal matter to resist many powers that will act readily on it, after that principle has been withdrawn. Thus if the living hand could be introduced into the living stomach, it would not be acted on by the digestive powers of that organ; but after it has lost the vital principle it would undergo the changes that any other portion of animal substance is known to endure. Mr. Hunter states, that there are very few dead bodies in which the stomach is not, at its great end, in some degree digested; to be sensible of which nothing more is necessary than to compare the inner surface of this portion with that of the sound parts: these will appear soft, spongy, and granulated, without distinct blood-vessels, opaque and thick; the other will be smooth, thin, and more transparent; the ramifications of the vessels will be seen on the surface; and by pressing the blood from the

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* Analysis, page 290.

† Page 558, and given almost at large in the Analysis, pages 180 and 250.

larger branches to the smaller, it will pass out at the digested extremities, and appear like drops upon the surface.

The first two cases in which Mr. Hunter observed these appearances, were of persons who had died from fracture of the scull, which led him to conclude that they might be peculiar to such cases*: but, finding that many did not exhibit them, and, meeting with them in death from other causes, he found they were most frequent in those who died violent deaths.

In the observations of Dr. Yelloly, an account of twenty dissections is given, in which the patients died of various diseases, but in all of which, excepting one, was vascularity of the stomach: that was a case in which ulceration of the villous coat of the small intestines was found.

He then details the cases of five criminals who had undergone the sentence of the law, in all of whom the vessels of the stomach were more or less injected, and in one the same appearance pervaded the whole intestinal canal.

Concerning these appearances he remarks, in general, that they preserve their distinctness for a short time only, that they exist in the body of the villous coat, and that careful dissection discovers a fine net work of veins between the villous and muscular coat, from which the minute vascularity of the former proceeds. It often presents a starred appearance, but he had never been able to produce the effusion spoken of by Mr. Hunter.

This vascularity is wholly nervous, and he ascribes it in great measure to the laxity of the medium in which the blood-vessels of that organ are placed, and to the great number with which it is supplied.

I must refer those who have access to it to the paper itself, which is of considerable length, and contains some particular references to the Forensic connexion of the subject.

XIV. Page 105.

I have engaged to make some allusion to a few conspicuous trials that have taken place on the subject of poisoning by arsenic. In doing so, I shall confine myself to a remark or two on the peculiarities that belong to them in point of medical evidence, or some other circumstance more immediately connected with the science of medicine.

In 1765, two respectable individuals were tried and condemned for poisoning a near relative by arsenic. Another charge (of a capital nature in Scotland) was coupled with this, which forms no part of the case for our consideration. I allude to the affair of the OGILVIES. The brother was actually executed; but the wife escaped from prison. The evidence given by the medical men was of the wildest description, and, together with their conduct, would now-a-days be censured. They judged solely from the external aspect of the body that the deceased had been poisoned by arsenic; and one of them believed that after five or six days every thing would have been in such a state of putrefaction, that had the body been opened the poison could not have been detected. This opinion arose, however, from the low state of science at the period.

In the year 1752, MARY BLANDY was tried at Oxford for the murder of her father by administering arsenic to him. There were certain strange circumstances connected with the design and management of

* This affords an important lesson on the caution with which premises and inferences should be connected together in our observations. "Post hoc, ergo propter hoc"—sæpe non sequitur.

the business, which would not be so strictly to our purpose, if quoted here. Dr. Addington, who attended the deceased, and directed the subsequent researches into the state of the body, seems to have taken pains in the experimental detection, unusual at that time. But the science of these matters, compared to the present state of things, was as yet unknown. It is a curious illustration of the inefficacy of zeal without knowledge, though for the latter we are infinitely indebted to the former. Dr. A. attended Mr. Blandy during his illness; was a careful observer, and a minute reporter of the dissection of the body; and, as matters then were, an acute experimenter for the Forensic application of the case.

Having obtained some of the powder that had been administered, he boiled ten grains in four ounces of clear water; filtered, and separated the fluid into five equal parts; these he placed in a like number of glasses. Into one he poured a few drops of *spirit of sal ammoniac*, which threw down a few particles of *pale* sediment. Into a second some of the *lixivium of tartar*, which gave a *white* cloud, that hung a little above the middle of the glass. The third he tried with strong *spirit of vitriol*; the fourth with some *spirit of salt*, both which gave a considerable precipitation of a *lightish* coloured substance, which, in the former, hardened into glittering crystals, sticking to the sides and bottom of the glass. In the fifth glass he made use of *syrup of violets*, which produced a beautiful *pale green* tincture. Having made similar experiments on a similar preparation of white arsenic, the results were exactly the same. However, besides these reasons for concluding that the powder administered to the deceased was arsenic, he further states, that it had the same colour, consistence, and *insipid* taste as arsenic, and, that thrown on red hot iron, it gave out the thick white fumes and garlic smell. Dr. Paris remarks that four of the substances thus employed will produce no effect on a pure solution of white arsenic; and, as to the syrup of violets, the green tinge produced by its application, if evidence of any thing, would denote some alkaline admixture in the arsenic, or water. Dr. P. states, that the arsenic, as sold by druggists, is often adulterated with sulphate of lime *.

The case of Eliza Fenning, who was tried in April 1815, must be fresh in the recollection of many. The circumstances connected with it gave rise to much interest not only at the time, but even afterwards. The surmises that were thrown out after the condemnation and execution of the unfortunate prisoner as to her innocence, I shall pass over. The fact was established that arsenic had been administered to certain individuals, but who the person was that administered it, we have no occasion to stop to enquire.

The prisoner had lived servant a few weeks with a Mr. and Mrs. Turner, and one day having made some dumplings for the family dinner, it was observed by her mistress that the dough did not rise—that when divided into dumplings they were of an unusual shape, which shape they retained. She also observed that when they came upon the table they were black and heavy, instead of being white and light. She ate part of one of them, and in a few minutes afterwards, felt very faint, with an excruciating pain, increasing every minute. She went up stairs, became sick, and retched violently, and at the same time observed her head to be swollen. Her husband and father, who had also partaken of the dumplings, were likewise taken very ill. The lady observed her tongue and chest were swollen. An apprentice also who

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* Medical Jurisprudence, II. 249. Analysis, page 198.

had eaten of the dumplings was taken ill. Poison being suspected, on diluting the remains of the substance, of which the dumplings had been made, in the pan, and, decanting it off, a white powder was discovered at the bottom. The knives that had been made use of in eating the dumplings were, according to the testimony of one of the prosecutors, blackened.

The surgeon, who was examined, stated, that he had no doubt of the persons having taken arsenic by the symptoms (an opinion far too confident, according to the ground here stated). He found in the sediment from the washing of the dish before mentioned, half a tea-spoonful of a white powder, which he found to be arsenic. He says also that he had no doubt of arsenic, when cut with a knife, producing blackness upon it. Experiments were afterwards made, and have since been detailed, which prove that arsenic will neither prevent yeast dough from rising, *nor blacken knives;* and as far as the symptoms are given in the evidence of the parties who endured them, while it must be allowed that they *might* have been produced by arsenic, I have no hesitation in saying, that of themselves they did not warrant any professional man, on so solemn an occasion, to pronounce them the effect of arsenic*.

The most important conflict of medical testimony, recorded in this country, as arising from the administration of this particular poison, took place on the trial of Robert Sawle Donnall, from which an extract has already been given above. (Page 95.) Every proof was offered short of the actual production of the metal in substance; and I know, from excellent authority, that the verdict was matter of great astonishment. Of course all the moral circumstances of the case are of no importance to that view of the enquiry which may be useful here. The motives, conduct, and character of the accused do not belong to our province; and must be assumed to have been right, as a jury of his countrymen have asserted his innocence of the crime laid to his charge. I happen to know, however, that it was matter of consideration with those who had the management of the defence, whether they were to prefer the line which was adopted, and terminated successfully, or to stand upon the ground, that if the administration of arsenic to the deceased should have been established as a fact, they had the means of proving that it was not the act of the prisoner.

The scientific merits of the case were reduced to this alternative, either that the deceased lost her life by the poison of arsenic, or by cholera morbus; and the history of the affair, as affecting our business with it, is this.

The deceased (mother-in-law to the accused) was in good health on

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* I have been somewhat severe, perhaps, in my animadversions on this case, in my work on *Medical Evidence*—a severity of which I do not in the least repent. How any educated and thinking man could, on a public occasion, state that *he had no doubt* of a circumstance of which he had not the least knowledge, and of which a very slender knowledge would have taught him otherwise, is to me matter of amazement! A woman (in all probability innocent) was hanged for a crime of which the proofs hardly went to establish the commission, much less to bring it home to her: and the only medical witness being asked, "Will arsenic, cut with a knife, produce the appearance of blackness upon the knife?" answers, "*I have no doubt of it.*"

If the reader will take the trouble to refer to the comments on this evidence which I have *quoted* in my Analysis, he will be satisfied that arsenic *could* not, and therefore *did* not, blacken the knives in question. But another witness swore that the knives used at table *were blackened.* I have authority to explain this, by saying, that they had been employed in cutting pickled walnuts—a dish which formed part of the dinner on the day in question. This *ex post facto* discovery alone was wanting to render the case not only one of the most "*extraordinary,*" but one of the most * * * * * * that ever disgraced the annals of evidence.

Sunday; dined heartily, and principally upon boiled rabbit, smothered with onions; drank cocoa on the same day, in the prisoner's house; and, while taking the second cup, complained of being sick. She went home soon afterwards, where she was seized with violent retching and vomiting, which continued, more or less, attended with frequent cramps, till about midnight, when violent purging took place:—at eight o'clock next day (within fourteen hours from the time she was taken ill) she died. Dr. Edwards was called in, and saw her between four or five in the morning. On enquiring whether she had any pain, she said she felt heat in the stomach, and cramp in her legs; her pulse at this time being frequent and fluttering. He found that she was in great danger, but did not observe that she had any symptoms of cholera morbus at that time. The prisoner was attending her as apothecary; and from him Dr. Edwards took the requisite information concerning the history of the case. This gentleman also stated, that he never knew an instance of cholera morbus proving so rapidly fatal *.

After the death of Mrs. Downing, this gentleman was required by the coroner to examine the body; at which were also present Mr. Street a surgeon, and the prisoner,—in fact, the prisoner intended to operate, but was prevented by Dr. E. Mr. Street declined to perform, but assisted Dr. E. who undertook the duty himself. They opened the stomach, poured the contents into a basin, and examined them to ascertain whether they contained any thing heavy; but found nothing of that sort. The stomach itself was partially affected with stellated inflammation in the nervous coat. The villous coat was preternaturally softened, and could be scraped off by the nail, particularly at the under part, where the fluid lay. Such an inflammation Dr. E. considered could not be produced by any natural cause, *within the time*—in fact by nothing short of an active poison.

The contents of the stomach were afterwards deliberately examined †, and all the tests he employed, indicated, in his judgment, the presence of arsenic *in solution;* besides which he would have believed, from examination of the stomach and intestines only, that death had been produced by some corrosive substance.

On his cross-examination, he described the causes and symptoms of cholera morbus, and stated the medicine he had ordered to be of a purgative nature, which he had prescribed from an opinion that there was something in the stomach or bowels which required to be evacuated. He was also required to describe the tests he had used for the detection of arsenic. With sulphate of copper, which he first employed, he produced a *green* precipitate: the second test was nitrate of silver, which gave a *yellow* precipitate. In order, however, to ascertain whether any thing contained in the stomach would alter the appearances produced by the tests, he obtained some bile, and mixing it with water, found that the results of the application of the above-mentioned tests were not the same. He also tried an infusion of onions in boiling water, and a solution of tartarised antimony in the same manner; but with different results. He was examined further as to the mode of obtaining arsenic in substance from a solution, which would have been a perfectly satisfactory proof; but which he did not try, having too small a quantity of

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* The common course of the disease in this country is certainly longer, as stated by Dr. Edwards, and the extreme rapidity with which it proves mortal in India, could not fairly be urged against such an opinion. But since the trial in question, evidence has been given on this point of a more precise nature. See the case of Mrs. Smith—referred to below.

† Refer to note, page 52, &c. for their intermediate history.

the suspected substance left, after performing the other experiments*. He accounted for the small quantity of the poison from the frequent throwing up, and the purging, which would carry off large portions. He also stated that he threw away the results of the other tests, which would not have been so correct for the purpose of reduction; and seems to have considered that the residue of the untested solution, obtained by evaporation, was alone fit for this purpose—in which the Doctor was greatly mistaken; for the satisfaction derivable from the production of metallic poisons in their metallic state, is unimpeachable only when afforded from the precipitates caused by chemical agents. When it is produced from a distinct portion of the solution that has been tested, questions as to its identity might arise, for which in the other instances there could be no foundation. It may be highly proper to evaporate a portion of the fluid, and try the residue by fire; but the precipitates should always be collected, dried, and tried in that manner also—the chemical re-agents offering no impediment.

The examination of Mr. Street was merely corroborative. Dr. Edwards was twice recalled, but upon these occasions nothing requiring notice here was elicited.

The first professional witness for the defence was Dr. Adam Neale, who described *cholera morbus* as the most acute disease known in Great Britain, meaning by the term "acute" a disease, which runs its course in the most rapid manner—as proving fatal, when improperly treated, much within twenty-four hours—as exhibiting the symptoms described to have been present in the case of the deceased, and requiring to be treated by opium. He ascribed the morbid appearances discovered on dissection in the stomach to no cause but that disease, of which they are indications as well as others. He considered sulphate of copper, and nitrate of silver, as by no means infallible tests of the presence of arsenic; for, with a solution of phosphate of soda, lunar caustic would throw down a yellow precipitate, and also from a decoction of onions. On his cross-examination, he stated, that, by eating rabbit smothered in onions, the same fluid, viz. the juice of the latter, would be conveyed into the stomach. He considered the method of evaporation and subsequent production of metallic arsenic, to be the only complete test of its presence. He had never seen the body of a person opened who died of cholera morbus. He had seen a great many bodies opened, in which the appearances of the stomach were the same as those described by Dr. Edwards, and where there was no reason to suspect the administration of poison. Dr. Neale further made the following statements. That if sulphate of copper be contaminated with iron, or be not pure; if it be mixed with the carbonate of potash in solution, a yellow precipitate would be produced, and the two colours will produce green; that he had repeatedly tried and found, that in mixing the solution, if the sulphate of copper should be added to a decoction or infusion of onions, with a small quantity of the carbonate of potash, a green precipitate is also produced. This gentleman's examination concluded in the following manner. "Q. Supposing a person to have been eating boiled onions for dinner, and in the course of the night to have been vomiting or purging in a violent degree, would any particular portion of the juice of the onion be left in the stomach? *A.* Not in the stomach, in a great proportion; but, I think that enough may remain to affect the chemical test. Q. Notwithstanding the mixture of the onions with other food, is there sufficient to affect that in some degree?

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* A practical example of the importance of the caution given at page 94.

A. Yes, my Lord. Q. You have stated that you have seen many bodies opened, in which the stomach was in a state of inflammation, and in the state described by Dr. Edwards, and yet no actual poison present in those cases; what has been the state of the villous coat of the stomach in such cases? have you attended to that? *A.* No, I have not. Q. Then you have only observed as to the inflammation, and so on, but not to the villous coat of the stomach? *A.* Exactly so, my Lord, and not to the villous coat of the stomach"—which, however, destroys the force of the remark as to the sameness of the appearances.

Dr. Daniel confirmed, by his evidence, the tenour of Dr. Neale's; admitting, however, that the symptoms in question might be those of arsenic, or *any poison*, as well as of cholera morbus. He had seen this disease *nearly* fatal within fourteen hours, but never knew a case in which it did terminate fatally!!

The corroborative evidence of Mr. Tucker was given in a manner that savoured of eagerness to impeach the practice of Dr. Edwards; and some of the terms drew upon him the animadversion of the Judge. Beyond this it offers nothing to take notice of.

Dr. Cookworthy * was examined on the relevancy of the tests, which he condemned as inconclusive; but was more inclined to ascribe the morbid appearances to poison than appeared to be the case with the other witnesses in behalf of the prisoner. The only other medical witness who spoke to the pathological part of the case was Mr. Luscombe, of the Exeter hospital, who had never opened the body of a person who died of cholera morbus.

The prisoner received a very high character for humanity, from many respectable witnesses.

In this abstract, which is but that part of the case relating to the medical witnesses, I trust I have introduced nothing that can be construed into reflection upon the merits of it. In the beginning I observed that the verdict created astonishment, by which it is not to be inferred that I entertain any myself; but such was the case with some who were present at the trial. What the consequence must have been had Dr. Edwards produced the metal, is evident; but whether by pursuing his experiments one step farther such a production would have ensued, no man will presume to give an opinion †.

XV. Page 107.

I have avoided in the text all affectation of novel terminology, as it is to be supposed that the nomenclature of the pharmacopœia is the standard of the profession in general. I cannot however pass over in silence the great inconvenience, and even the risk that may accrue from the names by which these salts of mercury have been distinguished. The old terms *calomel* and *corrosive sublimate* could not well be confounded with each other. But when these were rejected, and *sub-mu-*

* In the account of the trial given in the Appendix to "Medical Jurisprudence," this gentleman is styled Mr. Cookworthy, which is incorrect both as to the fact, and the report of the trial, from which the account is extracted. In matters of opinion authority must go for a great deal, and on this score such an error might be of some importance.

† I regret that I have not room to introduce an abstract of the recent trial of Mrs. Smith (no relative of my own) for poisoning with arsenic; which the reader will do well to peruse in the Edinburgh Medical and Surgical Journal for April 1827. It is the most satisfactory and instructive exemplification of the importance of Toxological studies on record. The medical evidence on the trial above alluded to, will be found at large in the "Analysis."

riate and *muriate of mercury* adopted in their stead, there was not only the danger that depended on the similarity of sound between the old name of *sublimate*, and the new one of *sub-muriate*, but even in the minds of scientific men there was a risk of confusion between two preparations of the same bases, so nearly connected with each other. Nor do I see that this was removed by the substitution of the term *oxymuriate* for the sublimate, when that was discovered to be a preparation combined (according to the science of the day) with an excess of acid.

The farther discoveries of chemistry have explained to us more correctly that these two substances are combinations of mercury with chlorine, illustrating the theory of proportionals by exhibiting mercury united with twice the volume of this substance in the one, that it is in the other. Thus the corrosive sublimate being composed of one proportional of mercury, and two proportionals of chlorine, is a *bichloride* of mercury, or the *perchloride;* and calomel, consisting of one proportional of each, forms the *protochloride*. I still fear that the adoption of these two terms, viz. *protochloride* and *perchloride*, would not remove the objection on the score of danger, unless we would remove from the memory of those whose business it is to handle them, the names by which they formerly recognised them. On this account I have followed the example of many writers in calling them by their designations of *calomel* and *corrosive sublimate*.

XVI. Page 119.

I find upon reference to the manuscript, whence the case is taken, that the recurrence of salivation took place at the end of four *years;* when she miscarried at the fourth month, under much debility, accompanied with hæmorrhage. The salivation re-appeared under a course of bark and myrrh; opium and a blister being resorted to, after many remedies had failed, were followed by the remission spoken of, and on its return the patient spit a quart daily. Stimulants were administered for about twelve months, at the end of which it went off without any apparent cause. On the trial of Miss Butterfield, anno 1775, for the alleged murder of Mr. Scawen by mercurial poison, the prisoner seems to have been acquitted on the ground of a recurrence of salivation being possible, without a repetition of mercury. Several medical practitioners gave evidence to that purpose, founded on their own experience of the fact*.

XVII. Page 120.

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,

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* See "Analysis," page 234.

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."

XVIII. Page 131.

Connected with the case alluded to in the text, arose a very curious exemplification of the disadvantage under which the evidence of men of talent may be given, when memory, or self-possession is defective. It cannot injure the gentleman in question to introduce some notice of the matter, and the lesson cannot fail to be impressive.

The trial took place at Chelmsford, March 14, 1822. Dr. John Baddeley, of Chelmsford, gave it as his opinion that two drachms of copperas would produce death. On his cross-examination he admitted that he was confounding *verdigris* with *copperas*.

I shall take the liberty to suggest to medical practitioners, that when they are examined upon matters of science, and are not quite clear as to the import of the vulgar nomenclature, they ought to decline giving an answer. It is not imperative, surely, upon any man to answer a question that he does not understand. How far it is incumbent to know the said nomenclature, is another matter. If such names of common articles are still in common use, I cannot help thinking that we should understand them, and even if they are obsolete, to be acquainted with their former signification is desirable.

XIX. Page 133.

The term *colica pictonum* signifies with equal strictness the colic of the people of Poictou, or of painters. The disease may be produced by the influence of other causes, but is excited by the poison of lead, in the way in which artisans are exposed to it, without swallowing it in food.

XX. Page 161.

Nothing, in my opinion, can be more easy or more simple than to put a stop to the inadvertent distribution of poison from the shops of the apothecaries—provided there is an inclination so to do, on the part of those who have the power.

There can be no doubt that the former rests ultimately with the legislature of the country; but I think it matter of question whether the Royal College of Physicians does not possess it to a certain degree—if this be not the case, it ought to be so: and the object of their visits to the shops, or houses of the apothecaries must be a very inconsistent one if it does not involve the rectification of this greatest of evils which an apothecary can be led to commit.

It is clear, however, that nothing short of compulsion can hold out the prospect of an effectual remedy for this evil; an evil, if not altogether, yet, in great measure, unnecessary. The convenience of druggists, or more truly of druggists' journeymen and apprentices, I trust will soon be sacrificed to the preservation of human life; and I think I have

a suggestion to offer, in aid of any measures that may be yet in contemplation for this purpose, the effect of which will bear hard upon no one, not even the shopman; while I think it would contribute in no small degree to the public safety.

Let it be imperative on every seller of drugs and dispenser of medicines and medicinal preparations, to fix, *in the highest part of his shop*, a shelf on which the poisons that form part of the articles he has to issue, must be kept, *and nothing but these;* it may be expedient also to affix the word "POISONS" in a conspicuous manner over this shelf; the articles to be kept upon which are not numerous, and might be specifically pointed out.

This plan may be *added to* any other, whether colouring, labelling, or whatever may seem most advisable. It cannot be objected to by any chemist, druggist, or apothecary, except because it may give a little additional trouble. *To give this very trouble* is precisely what is meant. Inadvertencies may lead to mistakes, and hurry has created many of the most deplorable nature. But if a man, instead of pulling out the first drawer that comes to hand, or taking down one bottle instead of another, in the rapid manner in which too many are apt to go to work, has to climb to such a shelf, knowing what it contains, *poison* cannot be sold *by mistake*. He must have time to reflect what he is about, and if he dispenses poison now, it must be with some design. On the other hand, the general knowledge of such an arrangement will double the safety by putting it in the power of the purchaser to know whether any mistake is in the act of commission. The penalty for dispensing any of the specified articles from *some other part of the shop* cannot be too heavy, as nothing but the grossest misconduct could lead to it.

XXI. Page 184.

In my *Analysis of Medical Evidence*, I have given *the whole* testimony of the professional witnesses in this important case, as, indeed, I have done in more than forty other trials and judiciary investigations*; and I have thought it my duty to side with those medical jurists both at home and abroad, who have expressed their satisfaction as to Donnellan's guilt—and have drawn that satisfaction from the evidence only. I will not pretend to say that the moral or circumstantial proofs in this case *were* overlooked, or can be overlooked—and perhaps too much stress has been laid upon the professional testimony of the Crown witnesses.

On the other hand, the only *opinions* of this nature, which were set up against them, (for facts there were none,) were furnished by John Hunter, whose name was almost enough to overawe the court, jury, and witnesses altogether: but of all the displays of medical testimony which have come under my review, I am bound in candour (whatever may be the consequence) to say, that it is one of the least satisfactory. How far it was worthy of the illustrious Hunter, is of no present importance. This gentleman, appearing as a witness, was not master of his own measures; and such a situation is one in which the most eminent member of the faculty is almost sure to break down, if not well acquainted with his business. In the place of the note that stood here formerly, I shall substitute a quotation from the passages that relate to this subject in my *Analysis*.

"I have not entered upon this nearly appalling undertaking, unaware

* The volume alluded to has been so arranged and constructed, as to afford a copious supplement of practical illustration *of* the *Principles of Forensic Medicine*.

of the charge I may incur of temerity, if not of something worse; and of the probable consequences which those who swear by the name of HUNTER may stir themselves to inflict upon me. There are not wanting *orators*, both individual and congregated, who are proud to ingulf all personal and social distinction in that overwhelming appellation. A name thus rendered *perennius ære*, so slim an individual as myself could not possibly deface to the extent even of a superficial scratch, were he so inclined—which, in sober veracity, is the farthest thing from my thoughts. With those who may feel disposed to prate about illiberality, presumption, disturbing the fame of the departed, &c., I have to plead in vindication of an unaffected desire to maintain truth, should the cost even be chargeable to a great name, (which, by the way, can always better afford it than a small one,) *first*, *the claims* of truth, which I have been taught to consider paramount to those of all names whatever; *secondly*, the notoriety of the slander that has so long been current against men as honest as John Hunter, probably, and against medical testimony at large; *thirdly*, the impossibility on my part of having breathed a syllable on the subject during Mr. H.'s career; and, *lastly*, a disposition to admire and commend the illustrious individual in question, as strong as should be indulged in a mind somewhat impressed with a respect for philosophy, but by no means incapable of entertaining admiration for philosophers.

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"Mr. Hunter states* that he had a copy of the examination submitted to him in London: but the counsel for the prisoner immediately waives that matter, and hastens from a part of the affair rather awkward for his case. Whether, according to the law of evidence, or practice of the court, it was irregular to found any cross questions upon the voluntary or inadvertent allusion of a witness, on a point which was not gone into, I cannot say, but Mr. H. let quite enough out to warrant surprise that he did not come down better prepared on the occasion. * * * * * * At what time he had this examination submitted to him does not appear; but the history of the case tells us that the inquest was held on the 12th of September, and continued till the 14th of November: as the trial did not take place till the 30th of March in the year following, a period elapsed in which all the experiments that could have been devised in the prisoner's favour might have been made. During more than six months that the prisoner was in jail, we learn, from Mr. H. himself, that nothing of the kind had been done.

"It is impossible to imagine that the parties concerned in a case of such magnitude, and on behalf of a man of such consequence, could have remained either insensible as to what ought to be done, or idle in the accomplishment of it. It is impossible not to surmise that the case was stated to Mr. Hunter at an early period—and stated to him for some specific purpose, consonant with his known talents and pursuits. We are not at liberty, (setting aside the general impropriety of imputation,) for a reason that I shall presently assign, to suppose that Mr. H. *did* make experiments, with a particular view to this case; and I am confident that I place the matter in the light most favourable to his reputation, when I suppose that he went down to Warwick in a state of *premeditated ignorance*—if ignorance be a word at all allowable in reference to John Hunter. That he had a knowledge of the properties of laurel-water, he states himself. Knowing this, if we knew no more of him, is it possible, again, to conceive that he could have had two opinions con-

* See his evidence on the trial, as detailed in the work whence this quotation is taken.

cerning the ostensible merits of the case, and was not alive to the risk of going over the ground (for the sake of the culprit) that had been already, and with such consequences, traversed by the professional agents of public justice? He did the wisest thing he could for the cause in whose aid he was enlisted, provided there was a wish in his breast on behalf of the accused; and we may suppose that to have been the case, without the slightest impeachment of his integrity. There might have been friendship—there might have been a persuasion of Donnellan's innocence—men as shrewd have declared this to be their belief." *Analysis*, &c. page 185.

XXII. Page 225.

This trial took place in 1699; but as to throwing light upon the merits of the question respecting the signs of death by drowning, the medical witnesses might just as well have been left out of the list. Yet, though it elicited opinions to which later experience prohibits assent, it 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 opinion, 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 quoted from Ambrose Parè, (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 following passage is from the address of the judge when summing up the evidence. "The doctors and surgeons have talked a great deal to this purpose, and of the water's going into the lungs or the thorax; but unless you have more skill in anatomy than I, you won't be much edified by it."

The following observations, which are suggested by this very interesting trial, may not improperly be inserted. Those, who may (like myself) have been snatched from a watery grave, will at once appreciate their force; and they may be of use to others, when called upon to estimate the merits of a question as to this species of suffocation.

When people, not accustomed to be under water, as those who cannot swim or dive, are plunged into it, the noise of their fall, the new and yielding medium in which they find themselves, the want of support, or the rushing of the water into their nose, ears, &c. in short, the outrage upon sensation excites an extreme confusion and loss of judgment, under which they eagerly grasp at any thing which comes in contact with them, whether it may cause them to sink or swim. "A drowning man, grasping at a straw," is a strong figure of speech, to shew upon what slender or fallacious, even upon what fatal reliance a person in desperate circumstances will place the hope of relief, and in cases of common danger from drowning, as in shipwreck, it is extremely hazardous to get within the grasp of a person who cannot swim. The body was taken up at a distant period after interment, and the lungs were found to be free from putrefaction. This has reference to the note at page 405.

All the editions of the State Trials give the details of this affair, but there were some explanatory letters on both sides, which are to be found in the 8vo. set of Cobbett and Howell, vol. XIII.

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* Some further remarks on this gentleman's testimony, as bearing on another point will be found in the chapter on Medical Evidence. See page 529.

XXIII. Page 227.

Dr. Gibbs relates * that the place in which the subjects at Oxford were deposited, after serving the purpose of the anatomical lecturer, was a hole in the ground, thirteen or fourteen feet deep, with a small stream turned through it, to prevent offensive smells. Dr. Gibbs, on looking into it, observed that the flesh was quite white, and on drawing up the first piece, found it changed into this substance, which he compares to spermaceti.

He took a piece of the leanest part of a round of beef, and having inclosed it in a box full of holes, fastened it to a tree, and allowed it to remain floating in a river. On taking it up from time to time, it was found growing whiter and whiter, and at the end of a month, it was converted into the same substance. But, to prove that water will act upon whole carcases as well as upon pieces of flesh, a cow was buried where the water rose twice a-day over her, and after a short period, that part of the carcase over which the water ran became of this description, though the others were very offensive. Dr. Gibbs concludes, that though water will in almost every situation produce this effect, running water does it more rapidly.

The use we are to make of the knowledge of this fact is to form as correct an opinion as we can of the length of time a body may have been in the water. Dr. Male gives a very striking application of this corollary, in an instance that occurred nearly twenty years ago, to which I beg leave to refer †.

Dr. Gibbs relates further, that the adipocire procured from quadrupeds differs from that obtained from the human subject; the former not crystallizing like the latter. The substance in question has also been found about lungs that had lain in purulent or serous fluid effused into the cavity of the thorax.

XXIV. Page 237.

The case of a criminal named Gordon has been quoted as one in which the process of resuscitation, after execution, was attempted, though unsuccessfully. The following are the only particulars I have been able to glean concerning this story.

W. Gordon was executed at Tyburn, April 1733, for a highway robbery.

Mr. Chovet, a surgeon, having by frequent experiments on dogs, discovered that opening the windpipe would prevent the fatal consequences of the halter, undertook Gordon, and made an incision in his windpipe, the effect of which was, that when Gordon stopped his mouth, nostrils, and ears for some time, air enough came through the cavity to continue life. When hanged, he was observed to be alive after all the rest were dead; and when he had hung three quarters of an hour, being carried to a house in Tyburn road, he opened his mouth several times and groaned; and a vein being opened, he bled freely. It was thought that if he had been cut down five minutes sooner he might have recovered.

The well known story of Maggy Dickson who "came to herself" again, after hanging, when half-way home, is quite authentic; but at

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* Philosophical Trans. 1794, &c.

† Elements of Juridical Medicine, p. 192.

that time it was not the custom in Scotland to suspend criminals so long as might have been proper for securing the effect intended. To this day they do not, or till very lately at least they did not, hang so long as is the custom in England, though long enough to extinguish life over and over again. Those who are familiar with the topical reports of Edinburgh, know what is said concerning the execution of Brodie; but as it is not in my power to substantiate what I have good reason *to believe*, I shall not introduce it here.

There is no want of accounts illustrative of imperfect execution; many of which may be fabulous. In the year 1731, it was thought worthy of insertion in the Gentleman's Magazine, that one William Peters was committed to jail, in Ireland, being found *alive* on a journey, three days after he had *died* on the gibbet.

In the Annual Register for 1767, there is a more circumstantial account of a man named Redmond, who was sentenced to death at Cork, for a street robbery, and actually hanged for twenty-eight minutes; at the end of which the mob carried off the body to a place appointed, where a surgeon made an incision in the wind-pipe, and recovered him. It would appear that the law interfered with him afterwards, but that he received a pardon.

Old Brassbridge (in his Memoirs, called the Fruits of Experience,) tells a laughable story of a medical acquaintance of his own, having done this doubtful favour to an Irish criminal, who ever afterwards plagued him with incessant demands for money—saying, that "as his honour had brought him into the world, he was bound to support him."

XXV. Page 324.

This I hold to be a trial of distinguished importance. The points on which it bears, in its Forensic application, are such as can be appreciated only by a knowledge of the department, not (perhaps) very general. On all hands it is understood to relate to *Fœticide*, and many are aware that it has reference to *Toxicology*. It might be made very useful even beyond its medical relations.

It was a case of acquittal, however; and, on that account, we must not be so free in our application of its details as might otherwise seem allowable. At the same time I would take this opportunity of declaring that I hold it both allowable, and consistent with propriety, to discuss the merits of evidence connected with science, whatever may be the result of a trial as to facts and circumstantial testimony. There is not the least occasion to violate decorum, or to incur censure for undue interference with the course of justice. We look to the connexion of the evidence with medical science, and meddle not with the application that may be made of it to the decisions of the Forum.

The trial in question took place at the Lancaster Assizes in September 1808; and the prisoner was charged in the indictment with having poisoned Miss Burns, and with having given her poison to cause an abortion. The neighbours of the deceased had suspected her for some time to have been pregnant; and the servants of the house (for she resided in that of the prisoner) gave evidence as to her illness, which lasted about two days, during which no one attended her but the prisoner. The prisoner denied the fact of pregnancy, and in a conversation he had with one of the witnesses, assigned as a reason why she was NOT with child by him, that *he had the most tender and affectionate regard for her!*

It was given in evidence that the prisoner had stated himself, in conversation, to be skilled in anatomy and physic, and to have instructed some young men in it; that he knew how to prevent pregnancy; that he had shewn one witness an instrument, which consisted of a silver tube with a slide, at the end of which was a dart with three points. Other circumstances, partaking of the same nature, such as the articles that were found in the prisoner's apartments, were also sworn to.

The examination of the body, *post mortem*, presented appearances of a nature strongly calculated to corroborate the suspicion of sinister interference. These I do not propose to recapitulate; but shall merely remark that the uterus was found to be enlarged, and the os tincæ dilated; and that near the fundus there was a well-defined circular space, of a deeper colour than the rest of the internal surface; that this space was rough and rugged, and that a small fragment of what appeared to be the *placenta* still adhered to it: the blood-vessels opening upon it were as large as a crow-quill. The appearances about the vagina were also such as would be found after a recent delivery. These appearances, four highly respectable medical men considered as strong presumptive proof "that the deceased must have been delivered, a short time before her death, of a fœtus which had arrived nearly at maturity." They also considered certain other appearances in the stomach, &c. as indicative of poison; but this part of the case I prefer at present to put out of view.

These opinions were impugned by a physician. The appearances in the uterine system he considered to admit of explanation on the score of disease; dropsy or hydatids being adequate to cause enlargement in the uterus, and also to account for the dilatation of the vessels. Indeed he maintained that no such enlargement could have been found after delivery, without detecting a coagulum within, or unless fatal hæmorrhage had ensued, of which there was no proof. Altogether, the conduct of this gentleman seems to have been marked by an unusual disregard for the opinions of his "opponents," and with abundance of self-sufficiency. It was likewise the less authoritative as he did not see the uterus until several months after the dissection had taken place; and when to oppose his statements, drawn from appearances, to those of the parties who examined it in the recent state, and who were men of unquestionably equal talent and reputation with himself, was (to say the least of it,) highly imprudent. It seems the dissection was not carried to all the length it might have been proper to have gone; but the antagonist of those who did perform it, erects this circumstance into one of too much importance, and draws conclusions that it does not warrant.

Several controversial pamphlets appeared on the occasion, and attracted the notice of the journalists. One of the best articles concerning it is the review of these pamphlets in the Annual Medical Register for 1808, which contains some able and convincing animadversions.

XXVI. Page 367.

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 been 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 these 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 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 occurred through the ligature being neglected.

XXVII. Page 385.

The following is Dr. Hunter's account of this interesting case. "She was 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 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 servant 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 soldiers' 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

* Histoire de l'Academie Royale des Sciences, 1716.

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: the evidence of the woman who let the room would, in the eye of the law, be sufficient to do away with the misdemeanour even.

XXVIII. Page 396.

We have no degree precisely corresponding with that of Doctors in Surgery, known on the continent. This branch of the healing art is, in fact, as much the affair of the PHYSICIAN in the proper sense of the word, as the case of constitutional or internal maladies; and perhaps the truth is, that great attainments in the *science* of surgery are unfavourable to excellence in operating. We often see that the best operators are but slenderly furnished with theoretical knowledge, and even defective in that portion of practical acquirement which reading and study impart. The great mass of surgeons, according to the ordinary acceptation of the term, exercise the calling of the physician; and, with the exception of the *minor jobs* of manual application, consider themselves unfit or unwarranted to perform the operations of chirurgery. We have SURGEONS, properly so called, who are supposed to be qualified for every thing connected with cold iron: then there are *Surgeon-oculists*, and *Surgeon-aurists*; *Surgeon-dentists*, (some of whom will send their patients *down* to a tooth-drawer in cases for extraction) *Chiropodists* again; *Cuppers*, who bleed with the lancet, and *Cuppers* who do not. The *Barbers* are, de facto, surgeons, though no longer called so in our country: but even this ancient craft seems to have separated itself into two sects—the hair cutters and the shavers; and to have retained the sign, viz. the pole and ribbon, after losing the thing signified; for phlebotomy is not commonly practised among them. All this is quite consistent with ancient usage, but certainly unfavourable to surgery as a SCIENCE.

XXIX. Page 410.

So much has the existence of the HYMEN been disputed, that (simple as the verification of such a point in anatomy might appear,) authors have considered it necessary to bring forward their own testimony in its favour. I was one of several students at the anatomical theatre, Windmill-street, who saw it entire in a female subject apparently about twenty-four years of age. A friend of mine lately met with it in a female upwards of forty, who consulted him as to the healthy state of her organs, in the view of matrimony. As the parts were all perfect and sound, perhaps the existence of this apparent barrier to the new duties about to be required of her, was the cause of her apprehensions.

XXX. Page 414.

I shall abstract the following story as the *ne plus ultra* illustration that can be offered on this point. It has been quoted and requoted from the Causes Celebres. A young priest, travelling, happened to lodge in a house where a young girl had been laid out as a corpse. He offered his services to watch the body during the night. Taking a look at it he found sufficient charms to excite him to the commission of a very disgusting act, and set off early in the morning. On the morrow the sup-

posed defunct recovered; and at the end of nine months brought forth a child, to the great astonishment of herself as well as that of her friends. About this time the priest came back that way, and exhibiting great surprise at seeing the girl alive, acknowledged himself to be the father. The story adds, that he was absolved from his vows, having proved that he had taken them from compulsion, and married the lady.

XXX. Page 359.

QUERIES RELATING TO INFANTICIDE.

My object in giving these a very extensive circulation through the profession, in the year 1824, was to derive from the expected replies a mass of authentic materials, from which to prepare a useful work on the important duty of the medical practitioner in cases of judiciary investigation into the matter of vitality in new-born infants. It is by no means too late to accomplish this; and I avail myself of the present occasion to give further publicity to my intention, which, though delayed, is not abandoned. I therefore subjoin, in the form of a quotation, the article in question, as it appeared in the principal Medical Journals.

"There is no point in *Forensic Medicine* on which so much perplexity exists, and for the elucidation of which so little has in reality been done. I am persuaded that this is owing in great measure to want of due pains being fairly bestowed—for whether the existing state of knowledge be estimated positively or negatively, no one who has at all looked at the question can be unaware that there is much work to be gone through ere satisfactory conclusions can be formed.

"It is almost impossible for any individual to do justice to the problem; as few who possess the means can be supposed to have the leisure requisite to collect, arrange, and apply the necessary data. But I rely on the zeal and liberality of the profession, to aid me in so important an undertaking. I therefore solicit from those who may have opportunities of handling the bodies of new-born infants, a few items of information, which I hope will not occasion much trouble, and the aggregate of which, I trust, I may be enabled to apply with precision and advantage—so that the truth may be established, either the one way or the other, and to its due amount, with regard to certain doctrines that have been bandied about, for many years, without any fair or satisfactory estimate as to their practical import.

"Simple answers to the following queries form the object of the present application—premising that the subjects chosen must be perfect—that is, of ordinary developement, free from redundant parts, mutilation, disease, or putrefaction; and such as are *unquestionably* of the class to which they may be assigned; if in any particular instance there should be points in morbid anatomy which, in certain cases, might greatly assist in coming to appropriate conclusions, they should be stated.

"The subjects being classed, first, as STILL-BORN, or such as never respired; and, secondly, as VIVI-BORN, or those that have come into the world alive, but have died *within twelve hours;* the queries may be attended to in the following order:—

"CLASS I. *Subjects* STILL-BORN.

"1. The sex. 2. Period of *gestation* when born. 3. How long *known*, or *supposed* (as the case may be) to have been dead *in utero*. 4. The cause of death. 5. Nature of the labour. 6. Exterior aspect of the

body: α as to colour; β integrity; γ developement; δ formation; ε marks of violence, ecchymoses, or any peculiarity. 7. Length from the vertex to the under part of the heel. 8. Point at which the middle of the length of the body falls—to be given as regards its distance from the umbilicus. 9. Weight of the whole body, prior to any interference with its integrity—to be accurately given in ounces and fractions, stating the species of weight used. 10. Aspect of the lungs *in situ*, on opening the thorax, and form of the diaphragm. 11. Weight of the lungs, separated from all attachments—taking care not to spill the contents. 12. Weight of any fluid that may escape from the trachea, on holding the lungs over a vessel in the scale in an inverted position—but not squeezing them—and the fluid to be described. 13. Result of placing the lungs in a washing basin of water, first entire, then separately; i. e. the right and left lung each by itself, noting if there be any difference of buoyancy in either, and which; as also when cut in pieces, noting any morbid appearances in these organs. 14. Weight of the liver, &c. managed in the same way—with the exception of placing it in water. 15. State of the alimentary canal, in regard to contents. 16. State of the urinary bladder. 17. State of the gall-bladder. 18. State of the ductus arteriosus and venosus.

"CLASS II. *Subjects* VIVI-BORN.

"1. The sex. 2. Period of gestation when born. 3. First actions, α as to crying, a manifestation (in whatever way) of the respiratory process; β state of the umbilical cord; γ evacuations *per anum et urethram*. 4. Cause, manner, and time of death. Then assume the queries, as in the other cases.

"It is neither expected nor desired that any individual should take the trouble to furnish *a list*. One case, properly investigated, and clearly stated by an intelligent hand, will be worth hundreds of such as seem to have been collected, one hardly knows how. In order, however, to impart necessary satisfaction, as to the authenticity of the materials, it will be essential that those who may be pleased to transmit the result of their inquiries should verify them with their signatures; and, in all cases where practicable, I will scrupulously acknowledge the receipt of communications. These may be forwarded for me, addressed to the care of Messrs. Underwood, 32, Fleet-street, London."

XXX*. Page 430. XXXI. Page 435.

"It is necessary here to notice the opinions of lawyers on the subject of madness, and of what they term lucid intervals; and sorry am I to observe, that the consideration and mercy so generally characteristic of our laws, are, on these topics, not to be found. On the contrary, a principle seems to be adopted, which religion, morality, and law, have usually kept in the back-ground, though in human systems it cannot be entirely forgotten; that of reasoning from the possibility of abuse. In matters of property it is the opinion of lawyers, that the lucid interval is only to be determined by a return of soundness and reason. If a man were evidently mad on Monday and on Wednesday, the law pronounces that there was no lucid interval on the intervening day. In criminal matters the capacity for acting is determined not by the proximity of the past, or of the subsequent insanity. If there are signs of reason at the moment of the commission of a crime, more especially of a heinous crime, the law judges such signs of reason to constitute a lucid interval.

"In support of the first opinion we have the Chancery decision of Lord Thurlow, who emphatically observed at the time *that to decide otherwise would be letting bedlam loose upon mankind.* In support of the second, we have the venerable authority of Judge Hale (Historia Placitorum Coronæ, cap. iv.) and the comments upon his judgment in the trial of Lord Ferrers," &c.*

The subjects discussed in the text have lately come before the public, in their Forensic bearings, in a shape that affords great scope for illustration, and practical inference. If an authentic report of the case of Lord Portsmouth had been published, I should have been strongly tempted to have ventured a few remarks; but I decline to make use of the newspaper account, for more reasons than the trouble that would be imposed, by seeking out what might be to the purpose. All I shall say is, that it seems to have been managed as well as cases of the kind can be; and that, whatever may have appeared strange or at variance with sound doctrine during the progress of the inquiry, the result has been approved of by all who are capable of appreciating the merits of the case. I think I have met with a statement, that the law does not account the man an idiot, who can reckon as far as twenty (with two or three other equally simple tests;) and on the occasion alluded to, about half a dozen reverend divines are reported to have declared, that they would have thought themselves warranted to administer the sacrament to the noble Lord, *because he could follow suit at whist!*

In a case that came before Lord Eldon, (exparte Waddilove, in the matter of Langley) August 3, 1822, his Lordship is reported to have thus expressed himself; "Dr. L. to be sure, thought him of sound mind; but although he had a great respect in general for the opinion of medical gentlemen in cases of this kind, as being better than that of other individuals; yet, pronounced, as this had been, after a single interview of half an hour, without other opportunities of forming it, he could not allow it much weight. He must therefore institute another inquiry, and direct that all the affidavits be laid before Drs. Powell and Latham, whom he would then request to let him know their opinion of Mr. Langley's state of mind; not in regard to lunacy or idiocy, but as to his power of protecting himself and his property."

Dr. Haslam's recent pamphlet, denominated, "a letter to the Lord Chancellor on the nature and interpretation of *unsoundness of mind*, and *imbecility of intellect*," is worthy of attention; but requires some unusual exercise of it to comprehend the definite object. The professed intention is, to refute an opinion of there being an *unsound state of mind*, distinct from lunacy and idiocy.

XXXII. Page 439.

Born deaf, these unfortunates could not of themselves 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 the physical defects are by no means connected with intellectual imbecility—as the result of instruction has amply proved.

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* Dr. John Johnstone on Madness.

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 added on the topic. Our assistance will never be called for, but in a case of *suspected* or *pretended* deafness or dumbness.

"High Court of Justiciary, Edinburgh, July, 1817. The court proceeded to advise the information 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 pannel [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 information 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 Reston, were of a different opinion. From the evidence of Mr. Kinniburgh and Mr. Wood *, they were of opinion that the pannel 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 occurred. One Jones was arraigned at the Old Bailey in 1773, for stealing five guineas. He appeared to be deaf and dumb: a jury was impanelled to try whether he wilfully stood mute, or from the visitation of God: they returned a verdict '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 woman of the name of Fanny Lazarus, she was sworn an interpreter. He was tried, convicted, and transported. In the present case the pannel 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 observed by Lord Reston, that it would be an act of justice towards the pannel herself to bring her to trial; for if the court found she was a perfect *non-entity*, and could not be tried for a crime, it followed, as a natural consequence, that the unhappy 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."

XXXIII. Page 502.

The case here referred to, occurred in France in the prior part of last century; and is narrated in the Causes Celebres—a work by the way that throws the respectability of the French Judicature deeply into the shade. Not only are there too many instances on record to prove the polluted state of the streams of justice; but also the shameless and open venality, or the imperturbable stupidity of many of the judges, or probably both. I would recommend, as an amusing specimen of the contemptible state of these matters, Foderé's short abstract of the case, given in his first volume, § 75.

After a man had been condemned to the gallies, and spent two years

* Gentlemen connected with the Edinburgh Institution for the deaf and dumb.

there, on a most ridiculous and unprincipled pretence of his being an impostor, the matter was submitted to the Parliament of Paris, and the enlightened Professor Louis, among other considerations, had his attention particularly directed to the following points: 1. If it were possible to mistake a man of sixty, for one of forty-six. 2. If spots, called mother's marks *(enviés, desirances)* can establish a distinction. 3. If it were possible to be entirely mistaken as to the traits of resemblance over all the body of the one, with those of the other; and 4. If the cicatrices observed in the one proceeded from the same cause with those said to exist in the other.

The commentary which follows upon each of these points would hardly be read with patience, could I even reconcile myself to transcribe it. It suits the French language much better than it would the English; and I recommend it therefore to be perused in the original tongue.

XXXIV. Page 525.

Almost every teacher of those branches of science that relate to the economy of the pregnant state, is in the habit of recapitulating the valid objections to this delusion; so that there can hardly be any occasion to take particular notice of the subject here.

SUPPLEMENTARY NOTES.

XXXV. Page 79.

Sectio Cadaveris. For the purpose of ascertaining the nature, seat, or cause of a fatal malady, under ordinary circumstances, the methods resorted to are by no means the best. Surgeons often fail in obtaining the end desired by the clumsy and unanatomistlike manner in which they go to work. Parts are displaced, mangled, and often so altered in their aspect and relations, that it is impossible to put faith in their appearances, and sometimes inferences are drawn exceedingly wide of the truth. There would be no end to illustrations were we to indulge in them, and some very curious ones indeed are upon record.

I shall pass over the plans that have been recommended for dissecting bodies in ordinary cases, and even for opening them with a view to judiciary satisfaction in general, referring the reader to the manual of Rose, the French translation of which is not of difficult access *, and more particularly to the Thesis of Chaussier, published by Renard †,

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* Manuel d'Autopsie Cadaverique Medico-Legale, &c. du Docteur Rose, traduit par C. C. N. Mare.

† In a volume of tracts, entitled Medicine-Legale, &c. par Lecieux, Renard, Laisné, and Rieux, pupils of Chaussier. It is more easily obtained in this country in the above form; but Chaussier afterwards published it separately, with additional matter, and a few useful diagrams; for some account of which see Lond. Med. Repos. for July, 1824.

which I look upon as being by far the most valuable we have upon the subject. Our business on the present occasion relates to the search for the traces of poison in the primæ viæ—to which we shall therefore confine our attention.

In all cases of dissection, if other parts are to be examined (and as a medico-legal caution, I would say, that, for judiciary satisfaction, *every* part ought to be examined,) the visceral cavities should be left untouched till the last. It is therefore essential to examine superficial appearances, and even the contents of the cranium and the spine before proceeding to the thorax and abdomen. In laying open these parts of the body, let me recommend a departure from the accustomed modes of first cutting into the thorax through the cartilaginous portions of the ribs, and then making a triangular or a crucial incision through the parietes of the abdomen: the following method will facilitate the object in view materially.

Let a large elliptical incision be made, extending across the upper part of the sternum under the clavicles, and down each side of the thorax, over the lateral centre of the ribs, or thereabout; thence to the anterior and superior spinous process of each ilium, meeting by the direction of the groins at the pubis. In dividing the ribs, a saw will be necessary, as well as to cut the sternum transversely at the upper part. This bone is next to be elevated and separated (along with the integuments) from the internal soft parts, detaching the diaphragm as we proceed downwards—the ligament of the liver, and the parietes of the abdomen, until the whole of this large flap can be turned over the lower extremities.

The immediate result of this will be a general view of the viscera of both cavities in their proper position; and the greatest possible facility in examining them throughout their extent.

But, sometimes it may be inconvenient to expose the abdominal viscera so soon as they would be laid open in this manner; for it may be necessary to institute previously a careful examination of the contents of the thorax—so that in most cases, perhaps the following method may be preferable:—

A longitudinal incision may be made in the median line, from the superior extremity of the sternum to the point of the ensiform cartilage; then draw one in a transverse direction from the acromion of one scapula to that of the other, and a second from near the loose extremity of the fourth false rib on the one side to that of the opposite. The soft parts are to be dissected back from their attachments, forming two flaps.

Let the ribs and sternum be cut through; and removing the whole of the parts now separated, we shall be able to examine the contents of the thorax; but this is not all that will be requisite in cases of poisoning; for the whole of the alimentary canal, from the mouth downwards, will require investigation.

The best method of opening the mouth will be this:—Stretch the fore part of the neck as much as possible; cut through the lower lip, in the direction of the median line, and prolong it down to the top of the sternum; carry a transverse incision round the lower edge of the jaw; dissect back the soft parts till the lateral part of the neck is reached; saw through the jaw in the perpendicular or median direction, and dissect the two portions of the bone from its interior attachments, so as to be able to turn them back; draw the tongue forward and downward, and cut across the *velum pendulum*. We shall thus have easy access to the pharynx and œsophagus.

These passages should be laid open in all such cases; but a good dissector will require no instructions how to detach the passage to the stomach from other organs, so as to separate it along with this viscus

entire from the body. Having made the necessary arrangements for this purpose, and taken such a view of the other thoracic viscera as may be requisite, we are to lay open the abdomen in this way:—

Prolong the incisions, already made, round the groins, till they meet in the pubes: separate the parietes from the diaphragm; divide the ligamentous attachments, and turn the whole downwards, as already directed.

The next object is to remove the whole of the alimentary canal from the body, preserving the contents within until this be accomplished, and taking care not to alter its external aspect by unnecessary handling, cutting, or otherwise interfering. A ligature is to be securely placed on the upper part of the œsophagus; a second on the vessels that pass between the duodenum and the liver; and a third on the rectum: if there be præternatural openings, either in the stomach or elsewhere, care must be taken so to maintain their position, that none of the contents escape, and the use of pieces of sponge, for the purpose of absorption, will be advisable, perhaps, in preference to ligatures, which some have recommended to be placed upon these openings.

Various clean earthen vessels should be ready to receive the contents of the viscera—those of the stomach being kept separate from those of the small guts, and these again from the fœculent stuff of the large intestines. The viscera themselves should be placed upon a clean large sheet, folded several times, so as to absorb moisture, and laid on a table of sufficient dimensions. In such a way as to avoid unnecessary filth and confusion, the canal is to be laid open throughout its extent; and though it has been recommended to do this in a large earthen vessel, perhaps the examination will be more conveniently made upon the sheet. The intestines may be washed in warm distilled water, (which is afterwards to be carefully set aside,) and we may now examine their structure; any parts of which that are perforated or sloughed, or ulcerated, should be cut out and preserved in spirit.

Further, on the present occasion, it does not appear essentially necessary to go: upon the *sectio cadaveris* a whole book might be written, and for such a book I am collecting materials; we shall therefore conclude this note by a reference to another subject, too intimately connected with *post mortem* examinations, and too important to be passed silently over.

Some years ago, I had an opportunity of directing the attention of the profession to the method introduced in France of obviating the inconveniences arising from the putrescence of dead bodies*; since which, my friend, Mr. Alcock, has more laboriously, and, I hope, more successfully drawn up an account of this matter in a little volume, entitled, "An Essay on the use of Chlorurets of Oxide of Sodium and of Lime, as powerful disinfecting agents," &c. I believe the subject has attracted some of that notice which ought to be bestowed upon it, for it is one of the greatest importance. After the information laid before the public, by means of this book, and the various notices it has given rise to in scientific and other public journals, and after the facilities afforded to professional men in the way of providing themselves with these disinfecting agents, (which are manufactured on a cheap scale in this country,) the plea of danger from judiciary necrotomy will be, as it ought to be, universally scouted. I refer the reader to the details now alluded to for all necessary information on the subject.

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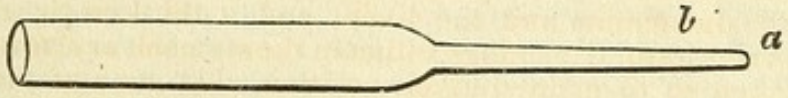
* Lond. Med. Repos. for 1824.

XXXVI. P. 98.

The detection of minute quantities of arsenic is accomplished by Berzelius in the following manner. See New Edin. Philos. Journ. for March, 1827, No. IV. The author remarks, that when the poison has been taken in the pulverulent or solid form, we can almost always detect the particles at once in the stomach; and so small a quantity as $\frac{1}{10}$ of a grain may be detected by his process with perfect certainty—but even the $\frac{1}{100}$ part of the grain is more than is absolutely necessary.

It consists chiefly in extending the sealed extremity of the glass tube in the following manner.



Place the suspected particle at the end of the tube *a*, and cover it up to *b* with dried charcoal powder: place the tube in a horizontal posture in the flame of a spirit-lamp, in such a manner that *a* shall be beyond the flame; heat the charcoal to redness, and then bring *a* into the flame. By this means, the arsenious acid is converted into gas, and in passing through the charcoal is reduced to the metallic form. We may then deal with the coating as directed in the text.

From solutions of arsenic, we are to obtain a precipitate (say a sulphuret) in the manner already pointed out; and this being separated and dried, is introduced into a tube, (such as that delineated above,) and brought up to *a*. Then a piece of steel pianoforte wire, (No. 11,) an inch in length, is inserted into the tube as far as the surface of the sulphuret. The steel wire is next to be heated in a spirit lamp, and the heat gradually raised in such a manner, that the sulphuret, in a state of vapour, passes along the surface of the glowing iron. In this way, sulphuret of iron, and sublimed metallic arsenic, are obtained. The operation ought to be conducted slowly.

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