

CHAPTER XI.

DROWNING.

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§ 927. I. *How producing death.*—The immediate cause of death in drowning has been the theme of considerable discussion. At present, however, from the numerous experiments made to determine this point, there can be but little doubt that the true cause of death in drowning is, *suffocation*. By this word is meant, the prevention of the ingress of air into the lungs. The truth of this statement will be apparent, by a consideration of the external and internal condition of the body after death from this cause.

Before, however, proceeding to describe the post-mortem appearances in the drowned, the act of drowning demands our attention. A person who falls alive into the water, and is unable to swim, sinks at once below the surface. Presently the impossibility of respiring forces him to struggle to reach the air, and the effort to respire is instinctively repressed until this is accomplished, when he gasps convulsively, and takes in with the air a certain quantity of water also, which is unavoidably swallowed. Sinking once more, the air in the lungs is partially expelled by an act of expiration, and bubbles are seen to

body; but the blood having become completely venous, is not long capable of affording the necessary stimulus to this organ.

§ 928. The rapidity with which life is extinguished by drowning depends upon the frequency and completeness of the renewal of the air in the lungs. If the individual have come several times to the surface of the water and breathed, he will, of course, not die so quickly as one who has not had this opportunity ; but it is probable that in cases of drowning, where the person has not been able to support himself above the water by any extraneous aid, life is extinct within five minutes. Where the submersion has been complete from the beginning, life can scarcely be prolonged more than two minutes. "Mr. Woolley, the surgical attendant at the Receiving House of the Royal Humane Society in Hyde Park, believes that very few lives are preserved after four minutes of complete submersion. In the year 1840, however, he met with a case in which a person recovered, although there was reason to believe that he had been five minutes under water, and a similar instance has since come under his observation." (s) In an account of the pearl-fishery, by the Rev. Mr. Corder, who resided several years at Columbo, he says "that he observed with attention the time during which many of the divers remained under water at the depth of seven fathoms. Some of them performed the dip within the space of one minute; others came up in one minute and twenty seconds. Some persons, who have frequently attended the fisheries and accompanied the divers to the banks, consider one minute and a half to be the longest period during which any diver remains under water. Other gentlemen, who are willing to allow the greatest latitude, say that they certainly never knew a diver to exceed two minutes." (t) The same observation was made by Dr. Lefevre, of Rochefort, relative to the Navarino sponge-divers; he says that there was not one who could remain entirely submerged for two consecutive minutes. (u) Nevertheless, some cases, said to be authentic, have been reported, in which recovery has taken place after a much longer period of submersion. (v) The only exception to this rapid death in complete submersion is when the person falling into the water is in a state of syncope. As it is known that one may remain without respiration and circulation, in a state of apparent death, for a few minutes, or even longer, it may be admitted that occasionally a person falling or thrown into the water may suddenly faint from terror, and be rescued before respiration has returned. In illustration of this fact, a case related by Plater is often cited. A woman, condemned to be drowned for infanticide, fainted away at the moment she was thrown into the water. She was left in it a quarter of an hour, and upon then being drawn out recovered her senses.

§ 929. II. *The time at which a drowned body will float, or rise again to the surface after having been once sunk, appears to be subject to considerable variation. It depends upon the rapidity of the access of decomposition, and the body therefore rises sooner in summer than in winter; upon the density of*

(s) Brodie's Lectures on Pathology and Surgery.

(t) Ibid.

(u) Med. Gaz. xvi. 608.

(v) Vid. Assoc. Med. Journ. April 22, 1853 ; Med. Gaz. vol. xxi. p. 448 ; Ibid. xxix. p. 78 ; and Med. Times, Dec. 2, 1848, p. 125.

the water itself (whether salt or fresh) ; upon the age and sex of the individual, children, females, and fat persons being comparatively buoyant; and also upon whether or not the body is clothed. The question is one not merely of scientific interest, but, as will be seen in the following case, may have important legal bearings.

Voltali and Adams v. The National Loan Fund Life Assurance Company. The action was brought by the plaintiffs, as assignees of this policy, to recover on a policy of insurance issued by the defendants upon the life of one Conrad Shoemaker. The insurance was for \$10,000, and the policy was issued on the 15th of May, 1850. The premium on the policy was payable quarterly in advance.

On the 23d of August, 1850, Shoemaker paid the premium for the quarter ending on the 15th of November, 1850. On the 4th of September, 1850, the plaintiffs alleged that Shoemaker was drowned, while on a fishing excursion with one Ottman, a German, in the waters of the bay of New York, about opposite to Hoboken, and nearest to the New Jersey shore. The theory of the defence substantially was, that Voltan, Martin, and Shoemaker (Germans) had entered into a conspiracy to defraud the insurance company, by causing an insurance to be effected for a large amount on the life of Shoemaker, and subsequently secreting and disposing of him.

To obtain a recovery, it was, of course, necessary that the plaintiffs should satisfy the jury of the death of Shoemaker. This they attempted to do 1st, by the testimony of Ottman, who swore to the circumstances of his drowning, and of the time and place, which was on the 4th of September, 1850, about dusk, in the Hudson River, opposite Hoboken, and near midway of the river; 2d, by showing that a body found floating on the river near Jersey City, on the 7th of September, 1850, was the body of Shoemaker.

This body was examined by the coroner of Jersey City, soon after being discovered. The skin was somewhat bleached, and the face disfigured ; a part of the lips being eaten off by crabs, lobsters, or fish of some kind. After examination, it was interred by direction of the coroner.

of the temperature that it is in the month of September, under from six to ten days. As Shoemaker was alleged to have been drowned on the 4th of September, the body was found floating on the 7th of September, three days afterwards; if it were universally true that bodies do not float until decomposition takes place, in the waters of the Hudson, under from six to ten days, then this could not be the body of Shoemaker.

The first witness sworn on the subject was *Dr. Baren P. Staats*. He testified that he had had occasion, in the course of his professional reading, to examine the subject as to how long a body will remain in the water before rising and floating. That it depends on the time of year, and the temperature of the water, and the size and make of the man. When the temperature is 65, he did not think any body would rise in from less than seven to ten days. On his cross-examination, he said he did not know that he could point out any book that he had consulted.

Dr. Benj. Budd was the next witness called. He testified that he was assistant-coroner in New York has had occasion to see many drowned bodies some one hundred and fifty. Never knew a body to rise in less than six days, unless some mechanical means were used to raise it. Should judge the body found at Jersey City to have been in the water from ten to twenty days. Has never known a body to be in the water less than seven days that was mutilated by fishes. Bodies that have been hooked up in three, four, or five days, have not that peculiar bleached appearance as those present that come up from seven to ten days. The body will not rise until decomposition has commenced. He is twenty-five years of age, and has only studied the book of experience. *Dr. Seth Qeer* was then called. He testified that he was coroner in New York for eighteen months, during which time he had examined between three and four hundred drowned bodies. The general rule as to the rising of drowned bodies in the harbor of New York, is from eight to ten days. In his judgment, from the description given, the body found at Jersey City, had been in the water two or three weeks. Never knew a body that had been in the water but three days, mutilated by fishes. The hotter the water, the sooner the body would bleach.

Andrew Blakeley was then called. He testified that he was deputy coroner in New York a little over two years, during which time he examined rising two hundred and fifty drowned bodies. Drowned bodies would rise in the summer months on an average of from six to ten days, as he found out by experience. He did not remember any case of rising when the body had been in the water but three days. He never saw a drowned body that had laid in the water but three days eaten by fishes. On his cross-examination, he stated that he had never read any medical book on the subject, nor did he know, except from testimony taken as coroner, of a body lying under water seven days. It takes a body from six to eight or ten days to get bleached. He means by bleaching, a soaking of the body a general softening and whitening of the body.

Henry G. Van Wie was called on the part of the plaintiff. He testified that he was coroner of the county of Albany for four years. Has held a good many inquests on drowned bodies. Has known two or three instances where

the bodies have risen in three or four days. In warm or sultry weather they will rise in from three to four days. They will bleach out directly in warm weather. They will be mutilated by fishes directly after decomposition takes place. Remembers an instance of holding an inquest on a body that drifted ashore, and had been drowned four, five, or six days. (This witness related the startling fact of holding, in one season, inquests on fifteen infants under three months old, found floating in cigar-boxes near the city of Albany cases, doubtless, of infanticide.)

Henry C. Allen, called for the plaintiffs. He testified that he had been coroner of Albany County for twelve or fourteen years. He never could make up his mind as to any definite time that a body would remain under water. He knew an instance of a girl of fourteen years of age, who was drowned on Friday at 12 o'clock, and floated on Sunday at 12 o'clock. She was drowned at Greenbush Ferry. Has known instances of bodies rising in five or six days ; sometimes sooner. Knew of one man, by the name of Moretn, who floated on the fourth or fifth day. The girl spoken of had turned a dark livid color. Females float sooner than males.

George E. Cutler called by plaintiffs. He testified that he was coroner of Jersey City. He knew of the case of a young man who was drowned on Sunday, about 7 or 8 o'clock in the morning, and on Tuesday or Wednesday succeeding, about 11 o'clock, he was found floating about two miles from the place where he was drowned. He knew of a female by the name of Smith, was seen alive on Wednesday evening, about seven o'clock ; on Wednesday, about 4 o'clock P. M., he was called to view the body floating. A person of temperate habits will blench very quick; those who have been iuvetei drinkers never will bleach.

John Osborn called by plaintiffs. He testified that he was coroner of bany County three years. Had occasion frequently to reclaim drowned bodies. Had known bodies to come up in two days, others not in several months. Had a case of an Irish girl. She had been drowned some two or three days ; it might have been four. Had another case of a man, McCarregan, an Irish auctioneer who rose in four or five days

bank in the evening. The body was found floating on the surface of the water the following morning. The bodies in these cases were clothed, and this, it is supposed, may have rendered them more buoyant, (xx)

§ 930. III. *Signs of death by drowning.* In the enumeration of the evidences of this mode of death, it is assumed that the inspection is made shortly after the act has occurred and before putrefaction has commenced. The *countenance* of the drowned is usually described as being natural and composed; the face is pale, but very soon becomes livid and swollen on exposure to the air, and especially in warm weather ; the eyes are half open, and the pupils dilated; a light froth is observable about the mouth and nostrils, and the swollen and livid tongue reaches to the margin of the lips. These signs are not exclusively characteristic of death by drowning they merely render the cause of death by suffocation probable.

§ 931. 1st. *Paleness and coldness of (he skin and culis anserina.* The first are ascribable merely to the presence of the body in a colder medium than the air, and are altogether destitute of significance as to the cause of death. The projection of the papilla; of the skin, commonly called goose- flesh, is deserving of more attention, for although it may have been caused by the coldness of the air, yet it cannot be produced upon a body already dead, by the chill of the water, unless, possibly, the body be thrown in while yet warm. Lffler very justly remarks, upon this sign(y) “If we should find a body drawn out of the water in the summer time, and the cutis anserina, on certain parts of the body not covered with the clothing, we should be fully warranted in the conclusion that it was due to the sensation of cold, and consequently that the individual was living on entering the water.” A singular case is reported in the second series of Casper’s observations, in which the opinion that a child two and a half years old was living when thrown into the water, rested partly upon this circumstance. The cutis anserina was very evident upon the right side of the body and upon one of the thighs. The head having been enveloped in a cloth, neither froth was found in the lungs nor water in the stomach. The fluidity of the blood and the culis anserina were, therefore, the only medical signs present.

§ 932. 2d. *Abrasion of the hands, mud and sand under the nails, and substances grasped in the hands.*—In the struggles made by a drowning person to save himself, he clutches wildly at every object in the water; hence, if it is not very deep, and the drowning person is near the bank, the fingers will most probably bear the marks of the sand or gravel, and weeds, sticks, &c., will remain firmly grasped in the hands. Unless the substances found in the hands be such as are peculiar to the water, the other marks of injury upon them may have been received in a struggle upon the shore, or in a fall down a precipitous bank. Or, indeed, they may be produced after death by the hands striking against substances at the bottom of the stream. Again, in many instances, these signs are not found at all—a fact which may be explained by the absence of struggling when the person enters the water in a state of unconsciousness from intoxication or other causes. Likewise, if the water be very

(xx) Med. Jur., 5th ed. p. 696.

(y) Henk. Zeitsch., 1844, 3 H. p. 6. Der Tod durch Ertrinken.

deep, the body will not have reached the bottom until all its energies are lost and life is extinct.

§ 933. 3d. *Water and froth in the lungs.*—The fact that water is drawn into the lungs by persons who die by drowning, is, as a general fact, perfectly well established. It is found, either in substance, or mixed with air and mucus constituting froth. When found in substance, it may have been imbibed during life or have penetrated after death. If it have entered during life, it must be identical with the medium in which it is presumed the person was drowned, and sometimes it will contain mud, sand or gravel, which has been dissolved or suspended in the water. Devergie relates a case in which sand and gravel were found in the trachea, and another is reported by Blumhardt, (z) of an epileptic who, having fallen into a shallow brook, was drowned, and on postmortem examination, his trachea was found to contain from three to four drachms of sand and gravel. Metzger (a) examined the body of a newborn child that was drowned in the drain of a slaughter-house. The whole of the trachea to its bifurcation was filled with the liquid refuse. **The presence of water in the lungs is not, however, a proof that it was taken in while the person was living. The fact that water will penetrate the lungs of a dead body, which is submerged, rests mainly upon the authority of Orfila, who made experiments which fully demonstrate its possibility.** It is, indeed, true that most other experimenters have not succeeded, but they have made their trials, either with dead animals or with still-born children. Lffler, however, in his experiments upon puppies, found that if the head were kept in a more or less elevated position, and the jaws separated by a piece of cork, the water readily penetrated after death into the lungs. The observations of Orfila being upon the dead human body, are more to the purpose. He found that, by placing the body in a bath-tub and coloring the water with lamp black or indigo, the colored water could afterwards be found in the subdivisions of the bronchial tubes. In one case even, in which the body, thirty hours after death, was placed *upon its stomach* in the colored water, the water had penetrated as far as the middle of the trachea. Perhaps, as a general rule, water will not be found in the lungs if the person did not

the cause of death. Although found to a certain extent in other modes of suffocation, such as hanging and in epilepsy and extensive bronchitis, it does not present in these cases the same distinctive characters by which it may be recognized in death by drowning. In the cases referred to, it is very small in quantity, often bloody, and being composed entirely of the mucous secretion of the trachea mixed with air, is viscid, in larger bubbles and closely adherent to the sides of the tube. The watery froth of the drowned is on the contrary abundant, foamy, made up of an infinite number of small bubbles which are easily separable, and which soon dissolve on exposure to the air. It often extends from the mouth to the smaller bronchial tubes, but is generally more limited in extent.

The *absence of froth* from the lungs cannot, however, be assigned as a proof that the person did not die from drowning. Experiments have shown that in certain cases of drowning it is not formed. These are cases in which, from any cause, the person has not risen to the surface to breathe. Piorry, Orfila and others, have shown that when animals are completely immersed in water and forcibly held there until dead, no froth is found in their lungs; but if, on the contrary, they are allowed to struggle and come to the surface, it is formed abundantly. Again, from its very nature, this sign is evanescent. If the body have lain for several days in the water, if it have been removed from the water with the head depending, or finally, if the inspection be not made soon after its removal, especially if the weather be warm, the froth that may possibly have existed, will no longer be found. In Dr. Ogston's observations, the watery froth in the lungs was not found later than fifty-five and a half hours after drowning in summer, and the fourth day in winter. This author states, also, that he met with a case of poisoning with laudanum, in which a light watery froth like that of the drowned was found in the trachea.(b)

§ 935. Hence we may conclude, that the more extensively the froth is found in the respiratory passages, the greater will be the probability of death having taken place by drowning, and of the struggle having been active and prolonged before the extinction of life. Unless there are marks of strangulation upon the body, pathological proof of bronchial catarrh, or evidence that the person has been subject to epilepsy, the sign is positive and conclusive of death by drowning. If, on the other hand, no froth is found, this circumstance is no proof that the person did not die by drowning, unless the inspection was made soon after death, the body having been carefully removed from the water, or unless other injuries sufficient to have caused death were discovered. Even then, it cannot be regarded as conclusive.

4th. *Water in the stomach.* Water is always swallowed in greater or less quantity, by a drowning person who retains sufficient consciousness to make a struggle for life. It will not, however, always be found, if the inspection have been delayed for a long while, or if the popular means have been employed to restore him to life, by getting rid of the water in the stomach. Furthermore, there are certain cases in which the person falls into the water already asphyxiated, or stunned by a blow or a fall, in which case, consciousness not exist-

(b) Lond. Med. Gai. 1851, p. 762.

ing, no straggle will be made, and, consequently, no water swallowed. When, however, water is found in the stomach, it may have been swallowed immediately before the presumed accident. Casper(c) relates an interesting case in which a child two years old, playing in the neighborhood of a stream, being thirsty, drank eagerly a large quantity of water given to him by his nurse. She left him for a moment, and on her return, found that he had fallen into the water and was already drowned. In this case, the usual signs of suffocation were wanting, there was no watery froth in the trachea or bronchia, but the blood was remarkably fluid, and the stomach filled with water. Hence it is necessary to observe whether the fluid in the stomach is identical with that in which the person apparently was drowned, for although the result will frequently be a negative one, yet it is often possible to detect sand, gravel, parts of water-plants, &c., in the oesophagus and stomach, which it is highly improbable would have been voluntarily swallowed. If the individual be discovered lying in a morass, a stagnant pool, or a privy well, there will be, of course, no difficulty in recognizing the liquids from such places, if found in the stomach.

§ 936. The objection to the evidence from the presence of water in the lungs, that it may have penetrated thither after death, cannot be applied to the sign under discussion. Experiments by Riedell, Champeaux and Faisolle, Maschka, Viborg, Kansler, Orfila, and Piorry, on the dead bodies of animals and men, have fully established the certainty, that water does not enter the stomach *after death*, unless putrefaction is far advanced. Hence the conclusion is warranted, that if the water can be recognized as identical with that in which the individual apparently was drowned (unless it was drunk previous to submersion) he must have swallowed it in his drowning struggles.

§ 937. 5th. *The general signs of death by asphyona* are found on drowned persons. Contrary to the once prevailing opinion, that apoplexy was the cause of death in drowning, an extravasation of blood in the brain is rarely met with in the drowned. Those who are predisposed to apoplexy, and who suddenly enter cold water, particularly when the stomach is full, may be struck with apoplexy ; or those who fall on the head, from a height into the water, may rupture one of the cerebral vessels but the reader should bear in mind

the rapture of the pulmonary vesicles and the escape of air mixed with water from them into the intra-vesicular structure, as a distinctive sign of death by drowning, and as being available, therefore, in helping to determine whether a body found in the water was thrown there after death, or is that of a person who died by drowning. Such lungs are remarkable for retaining their natural shape, and for their unusual weight. The heart always contains in its right half, fluid or loosely coagulated blood, and is distended with it if the lungs are at the same time overloaded.

According to some authors, the blood is always completely fluid, but this statement is liable to exceptions, as coagulated blood has been found in some well authenticated cases of drowning, and also in experiments upon animals who have been killed in this way.^(f) The abdominal organs are usually found much congested, especially the liver and kidneys. If the drowning have taken place during the process of digestion, the stomach, as observed by Orfila, presents a violet color. The bladder sometimes contains urine, at others not ; as a sign of drowning, it is of the most complete insignificance. Retraction of the penis is given by Casper as a sign peculiar to death by drowning.

§ 938. 6th. *Marks of violence.*—The first point to be determined in all cases where marks of violence are discovered upon the bodies of persons found in the water, is, whether the individual was really drowned. This is rendered necessary by the fact that persons are not unfrequently thrown into the water dead, or supposed to be dead, after criminal violence has been employed, and it is hoped in this way to conceal the cause of death. Moreover, suicides endeavor sometimes to destroy themselves by drowning, when they have failed by other means. If it can be shown, from an absence of the signs of drowning before enumerated, that the person was probably dead at the time of submersion, it will, of course, not be necessary to consider the possibility of the injuries having been accidentally received at that time. The character and extent of the wounds or other injuries will often enable us to determine very nearly at what period they were received. Indeed, it is only by a careful examination of these, and a comparison of them with those which could possibly be made accidentally in drowning, or immediately afterwards, that we can hope to approach to a correct judgment of the case. A person falling from a height into the water, may sustain various severe injuries, especially if the water be shallow, and he fall upon the head. Fractures and even dislocations have been produced by this means. The first may be caused by sudden, violent contact with some hard body in the water, or at its bottom; the second is illustrated in the case of a man who for a wager jumped from the parapet of London Bridge, and dislocated both arms, probably in consequence of holding them in a horizontal position. Besides these injuries, various contusions and lacerations may occur in drowning or immediately after it, from accidental violence, sustained by the person in his drowning struggles, his body being possibly thrown against projecting rocks, roots of trees, or sharp pieces of wood or iron. Sometimes a mark, similar to that made in hanging, is found upon the neck of persons who have been accidentally drowned, and caused by

(f) Taylor, MeJ. Jur.

the pressure of the collar or fastening of the dress rendered tense by imbibition of water.

A case is recorded(g) in which the body of an old man, who had voluntarily drowned himself, was drawn out of the water by means of a rope fastened round the neck for the purpose. This was done probably half an hour after death. The thyroid cartilage was broken into several pieces, and there was a distinct ecchymosis over it, made by the rope.

It is the province of the physician to determine whether these injuries could have been produced in this fortuitous manner, but most of the circumstances which throw light upon these doubtful cases come properly under the cognizance of the jury. There are some injuries, on the other hand, which are of such a nature as to indicate that they were inflicted previous to drowning. They are such as cannot be attributed to any cause incidental to drowning, but must have been either self-inflicted or homicidal. They are stabs, gunshot wounds, incised wounds of the neck, &c. In estimating the cause, nature, and effect of these injuries, the physician will be governed by the facts referred to in the chapter on Wounds, since evidently the circumstance of subsequent immersion will not materially affect the distinction between homicide and suicide. If, however, the body have lain long in the water, and especially if the process of putrefaction have begun, the information derivable from the marks of violence upon the body will be greatly impaired in value. Not only will the coagula, wherever the water has gained access, be dissolved and washed away, but the size, direction, and color of the wound will be altered. The cause of this fact will be fully apparent from a consideration of the structural changes made by the process of decomposition.

§ 939. 7th. *Putrefaction, &c.*—A body which is taken out of the water presents a pale and bleached appearance, which is more striking the warmer the temperature of the water. In summer it is observable in a few hours ; in winter, not until several days after death. After the body has been removed from the water, and while still fresh, the face and head, the neck and the breast as far as the middle of the sternum, acquire one after the other a brick-red appearance. But the putrefactive process very soon begins and spots of a

undergoes a marked change. The development of gas becomes so great as to cause the body to float, and in the course of the second week, the skin becomes emphysematous, the cuticle loose, and the parts of the body which are above the surface of the water acquire tints of green, blue, and brown, and become dry and parchment-like. If the body has rolled about in the water, as will be the case where the current is rapid, these changes take place more gradually. If taken out of the water about this time, the features become in a few hours scarcely recognizable, in consequence of the swelling and discoloration, the latter being blackish-green ; the whole of the body is swelled and puffy, and the scrotum often distended to the size of a child's head. The penis, on the contrary, is very much shrunken. The internal organs, with the exception of the brain, are comparatively fresh in their appearance. If the body, however, have remained in the water, and the weather be cool, few changes worthy of note take place during the next six or seven weeks. But about the third or fourth month the skin has become so much eroded in various places, but especially over the inguinal region, that perforations will be found leading to the various cavities of the body. In consequence, the gases generated by decomposition escape, and the body sinks again in the water. The skin and the muscular tissue become transformed into incrustations of adipocere, and the bones are so loosely held together, that portions of the skeleton are apt to be separated. The time which a body has lain in the water cannot be determined with any precision, after the process of putrefaction has once commenced. The rapidity and character of the alterations which it undergoes vary according to age, sex, habit of body, temperature of the water and the air, depth of the water, and whether salt or fresh, stagnant or running, the attacks of fish and birds of prey, and finally whether the body is clothed or not.

Hence, it may be inferred from these remarks, how easily, after the body has lain some time in the water, the external features of wounds and other injuries may be masked by the progress of putrefaction and the imbibition of water by the skin.

§ 941. IV. *Accidental or otherwise.* Infants and the infirm and aged may be accidentally drowned in very shallow water, as may also, indeed, adults who fall into it, the mouth downward, in a fit of epilepsy or helpless from intoxication. A man was in the act of leaving a privy, when he was seized with an epileptic fit and fell with his face in a piece of dirty water, which did not exceed a foot and a half in breadth, with a depth of from three to four inches. When discovered after death, only his mouth and nostrils and one cheek were found to have been under water.(h) Moreover, persons bent on

(h) Dr. Ogston, Med. Gaz. May 2, 1851. Dr. Taylor, in his critique of the medical evidence in the case of Kirwan (Dublin Quarterly Jour. Jan. 1853), says: " Persons while bathing, or exposed to the chance of drowning, are often seized with fits which may prove suddenly fatal, although they may allow of a short struggle ; the 'fit may arise from syncope, apoplexy or epilepsy. Either of the last conditions would, in my opinion, reconcile all the medical circumstances of this remarkable case. It is the result of twenty years' experience in the investigation of these cases, that the resistance which a healthy and vigorous person can offer to the assault of a murderer, intent upon drowning or suffocating him or her, is in general such as to lead to the infliction of a greater amount of violence than is necessary to insure the death of the victim. The absence of any marks of violence or wounds on the body of Mrs. Kirwan, excepting such small abrasions as might have resulted from accident, may be

suicide, have been known to destroy themselves in this way ; a case is related by Dr. Smith in which a woman thrust her head into an opening which she had made in the ice and so perished. Where, however, persons are found drowned in shallow water, the natural presumption will be that they have been forcibly held there by one or more murderers. It is only by the absence of any marks of violence, that we may infer that the act may have been suicidal or accidental.

§ 942. The presence of ligatures upon the hands and feet, and of weight; attached to the body, rebuts the presumption of accidental drowning, but does not prove that it was homicidal. In a case which occurred in Paris, the body of a man was found in the river, his neck, legs, and hands being fastened together by a cord furnished with slip knots. It was proved that he had died by drowning, and had himself secured the cord, to insure a more speedy death.(i) If, however, as is remarked by Mr. Taylor, the limbs bear evidence of violent constriction from the cord, and especially if these marks are found on the forepart of the neck or on *both wrists*, the presumption of murder becomes very strong. In another case, the body of a man was found in the water, with his legs tied together, over the trowsers, below the knee. The right wrist was fastened in a noose, and the free end of the cord, after passing around the body, was loosely tied or wrapped around the left. This latter circumstance, together with the absence of marks of violence, rendered it probable that this also was a case of suicide.(j)
