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COURSE OF LECTURES ON PHYSIOLOGY AND SURGERY.

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(From the Manuscript of Dr. Thomas Shute.)

LECTURE XIII.

ON STOPPING OF BLEEDING.

HÆMORRHAGE is the natural consequence of a division of a vessel. Bleeding has two different effects: one the answering of salutary purposes, such as promoting the union of parts, as in simple fractures, wounds, &c. The other has a destructive tendency, where large vessels are divided, which sometimes happens in simple fractures, also in amputations and aneurysms. Bleeding in such cases proves fatal, if not remedied: these last are here to be spoken of.

Stopping the hæmorrhage consists in shutting the mouth of the bleeding vessel; which, as it generally arises from accident, is sometimes very difficult to do, on account of its being deep-seated. This is the most difficult thing in surgery, when the vessel cannot be clearly seen, because the needle is to be passed at random, and the bleeding increases the embarrassment. Different methods are recommended to stop bleeding; these may be divided into three—stimulant, chemical, and mechanical.

The first of these, perhaps, can only answer with small vessels; large vessels probably have not the power of contracting under any stimulus, sufficiently to resist the impetus of blood. Many things are recommended as styptics—I think that oil of turpentine is the best. I observed the contraction of the vessels in amputating a finger at Lisbon; the vessels gradually contracted and stopped the hæmorrhage; I then cut off the ends of the vessels, when they again bled freely, and gradually contracted again, but were longer in doing so than at first.

Before the application of any styptic, the vessel should be wiped as clean as possible, that it may come in immediate contact with them. At present there is a styptic in London which was brought from France; it is a powder. It has been tried on the stump of an ass; but in this case the tourniquet was kept on for half an hour, and the stump bound up very tight, therefore the trial was not a fair one.

The chemical applications are such as destroy a part, and by that means form an eschar on the bleeding vessels. The actual cautery acts in this manner: as vessels in bones have not the power of contracting so readily as in soft parts, the actual cautery may therefore be used to advantage. It may also be necessary in scirrhus gums and other

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diseased parts, for in such the vessels have not so strong a contractile power.

The cautery should not be applied too hot, because then it forms a cinder, which is easily separated, and the hæmorrhage renewed. It should be near a red heat. The iron should be as thick as can be admitted of, because it will retain the heat the better. I think that hot water might be applied to advantage, because it would constrict the vessels and preserve the moisture of the parts. Acids have been applied, and they are found to answer in small vessels.*

The mechanical means may be divided into two kinds—one, the coagulation of the blood making a pressure on the vessels; this, perhaps, can only succeed in small vessels. It may be increased by art, as by the application of spongy bodies: lint in some degree answers this purpose, also flower, cobweb, and the scraping of hats.

Agaric of oak some years ago was supposed to have extraordinary virtues in stopping hæmorrhage; it was supposed to possess properties peculiar to itself, but no such were found; it was received with great warmth by hospital surgeons, but their trials of it, and relations of its success, were not fairly performed and stated. They used to cause an artificial retardment of the blood's motion for several days, and bind up the stump very tight, which means alone were sufficient to accomplish the end, but the auxiliaries were not mentioned. The agaric cannot be trusted to, because the coagululum may be separated from the vessels some days after. The spongy substances act by increasing the surface for coagulation, by which the blood coagulates quicker.

The second method is by compression; this is the last resource in large vessels, and the only one which ought to be trusted to. It is painful in the application, therefore it is supposed by some to produce spasms, locked jaws, &c. But such symptoms are unjustly attributed to the ligature, for they as frequently occur where no such means have been used. They were supposed to be owing to the tying a nerve, but I have purposely tied the radial nerve with the artery, and it has produced no bad symptoms; I have also experimentally included the nerves in stumps, without this being attended with any particular symptoms. I think the tying a nerve of as little a consequence as any part.

There are two methods of tying the ligature, one with the needle, the other with the tenaculum; the last can only be used in some cases, such as in stumps.

The needle includes more than is necessary. This in some cases is necessary, where the artery is not sound; but where the artery is sound, there, simply including it is sufficient. In old people, where the artery has become ossified or lost its elasticity, it is better to take in a good deal of the

* Both these last act by coagulating the juices and contracting the vessels.

surrounding parts, which will produce adhesions of a larger surface. The ligature should be tight in proportion to the quantity enclosed, and the ligature thicker, which will prevent its getting slack so soon by ulceration. Where the artery is situated in a muscle, the needle will include the least of the surrounding parts, because the muscle adheres so strongly to the vessel, that in drawing it out, the surrounding portion of muscle will follow in the form of a cone; the ligature, therefore, must be made on the base of this cone, including more than need be done with a needle. When the artery is sound, and situated in the cellular membrane, it may easily be drawn out, and the tenaculum be used with safety, but only in such cases.

On the dressing of wounds.

Wounds, considered simply as such, come under one class of dressing. The difference must arise from the nature of parts; as some will require ligature, others to be kept open, &c. Dry lint has been the general application. This perhaps was at first used on account of its stopping hæmorrhage, and has since been continued indiscriminately, where on such account it was not at all necessary. It is the very worst application, for by the coagulable lymph it often adheres firmly to the wound, granulations shoot up and unite over the threads, embarrassing the surgeon to remove them. It adheres particularly firm to the tunica vaginalis, and is sometimes removed with great difficulty, after the operation of incision has been performed for the radical cure of hydrocele. By being loaded with blood, in a few hours it becomes extremely hard, and is then one of the most uneasy applications that can be used. The best application is such as keeps soft, moist, and has no continuity of surface: a poultice is therefore the best. They should be large, and hence in some cases they are very inconvenient. They are generally made too thin, which is inconvenient, because they do not retain their figure. They are generally made of stale bread and milk, which does not make a good poultice, because it breaks in several parts. The meal of linseed makes the best poultice, because it preserves its moisture, continuity, and is made without trouble. All that is required in making it, is to stir as much as is found necessary in boiling-hot water. When digestion has begun, then the application may be varied to what may be thought best.

LECTURE XIV.

INTRODUCTION TO POISONS.

These lectures are chiefly to be confined to animal poisons. The idea of poison is very vague. It is usually applied to such substances as will produce disease, increase it, or alter one disease to another that is worse. There are some substances which when given in health are poisons, yet in disease are medicines, producing health. To this idea quantity must be annexed, for the most innocent food may kill by its quantity, which never can be called a poison. Quantity alone is not sufficient, there must be some specific quality in the substance also to produce disease, without which it does not give the idea of poison. If the specific

quality of a substance does not produce disease, unless it is given in a certain quantity, then it is a medicine and not a poison; for there are many substances which will kill if given beyond a certain quantity, which will produce salutary effects, if given in a less quantity.

To our ideas of poison a concealed action is joined; for instance, if a man kill himself by swallowing a piece of glass, it would not be said he had poisoned himself, because its action would be supposed to be that of tearing or cutting the stomach; but if a man should die from swallowing powdered glass, then he would be said to be poisoned, because the manner of its action would not be understood. Hair, if swallowed when long, will do no hurt, yet if it were cut fine, it would kill; therefore it would be then called poisonous, because its action was not understood. A surfeit produced by drinking cold water when a person is hot, is not said to poison, because it is known that the body must be in that particular state to produce such effect. Eating of mussels will produce a poisonous effect under some unknown circumstances of the constitution; mussels are therefore said sometimes to poison, because such circumstances are not known.

No good definition of poison can perhaps be given. Our ideas of such appear to be annexed to substances whose form and deleterious properties are not understood.

The manner of giving and receiving poisons has caused superstitious notions about them, creating horror in the minds of people, and causing them to suppose themselves poisoned, when they had complaints they did not understand; and also to suppose others poisoned when they died suddenly, although their death was natural. The ancients reckoned all powerful substances poisonous; but afterwards finding that many procured health when given in small quantities, they then changed their opinion, and called them medicines. The matter of the small-pox appears to come under such definition, for the smallest quantity appears capable of producing the disease; but it will produce such effect but once in the same constitution, therefore it does not fall under the definition.

The attacks may be of three kinds, local, constitutional, or compound. Local poisons are those whose actions are confined; as the itch and cancer. Constitutional poisons are such as affect the constitution primarily; as the jail fever. The third, or compound, may be divided into two; such as affect the constitution by its sympathizing with a part, and those which affect the constitution by absorption. Of the first kind are poisoned arrows. Nux vomica, and in some people honey, will produce such effect. Of the second kind of compound is the venereal virus, this first affecting a part, and afterwards the constitution, by absorption.

The small-pox has three modes of attacking the constitution: locally, and then constitutionally, or the constitution primarily, as when it is received in the natural way. The chicken-pox, measles, &c., are capable of contaminating, as in the second and third kind. There is a fourth mode, which is by contact and absorption into the constitution without any local affection. In this manner the plague is received and can be traced into the constitution. Some of these poisons can only be introduced into the constitution

by contact; therefore, if the local affection be removed, the disease will be prevented. Thus, if the part infected by inoculation with variolous matter be removed by caustic, the disease will not take effect. It is the same in a chancre.

Those poisons which affect the constitution locally first, generally lie some time inactive. There are usually stated times of their producing local effects after they are received, that is, of inflaming and ulcerating the part after the local effects are produced; the constitution is affected nearly at the same time in all. Thus variolous matter generally produces its local effects in two or three ways: the bite of a mad dog in about six weeks.

Poisons are produced from vegetable, mineral, and animal substances. Poisons from mineral substances act mechanically, chemically, and on life, from their universal stimulus. Vegetable poisons act more powerfully than mineral. Animal poisons never act mechanically, sometimes chemically, but most frequently on life. There are many substances which are now called medicinal, that were by the ancients called poisons, they not knowing the quantity which might be given without producing mischief. Nothing shows the variety of combinations of matter more than the variety of different poisons.

The following tables point out the species of poisons already mentioned.

ANOTHER VIEW OF POISONS.