

I cannot conclude this long scroll without recommending it strongly to the members of the Royal Society, who have many of them seats in parliament, and most of them interest in those that have, to get an Act passed for perfecting registers. The trouble is trifling; the expence nothing. It would be of great service likewise to number the people: and this might be done with great ease. I was not three hours in finishing mine on foot; tho' it is, perhaps, as extensive, for the number of people, as most in England, being near five miles in length. I am,

Reverend Sir,

Your affectionate Brother,

and very humble Servant,

Richard Forster, *Rector.*

XLIV. *A remarkable Case of an Aneurism, or Disease of the principal Artery of the Thigh, occasioned by a Fall. To which is prefixed a short Account of the Uncertainty of the distinguishing Symptoms of this Disease. By Jos. Warner, F. R. S. and Surgeon to Guy's Hospital.*

Read Nov. 17,
1757. **W**HEN the coats of an artery become by any means præternaturally distended, when they become wounded, or when they become ruptured in such a manner as to

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discharge,

discharge and deposit their former contents under the neighbouring integuments, under the aponeurosis, or tendinous expansion of a neighbouring muscle, or still more deeply under the muscles themselves; the natural consequence attending this accident will sooner or later be a degree of elevation, or tumor: which species of tumor is known by the term *aneurism*.

If a true aneurism happens, that is, a swelling arising from a general weakness of the coats of an arterial vessel, or from a wound or rupture of some of its coats, it may be often distinguished from a tumor proceeding from any other cause by a degree of pulsation, supposing the situation of the injured vessel be superficial; as may be evinced in recent aneurisms of the humeral artery, which sometimes happen from bleeding near the bending of the elbow-joint; as well as in aneurisms of the inferior part of the radial artery, of the ulnary artery, or of the anterior artery of the leg called *tibialis antica*; and as may be observed to be sometimes the case too in those arteries, whose situations are not superficial; to wit, in aneurisms of the *aorta ascendens*, the curvature of the *aorta*, and of the *carotides*.

The symptom of pulsation in tumors, which take their rise from a partial wound, or from a general weakness, and subsequent dilatation of the coats of an artery, is not confined to this species of aneurism, but is frequently attendant upon false aneurisms (that is, such tumors, as are occasioned by extravasated arterial blood), supposing the disease to be a recent one of either of the preceding vessels, or of any other arterial vessel not deeply situated: and this

this symptom of pulsation in false aneurisms will sometimes be accompanied with a discoloration, or variegated appearance, of the integuments dependent upon the insinuation of the blood underneath them.

But if the extravasation be confined under an aponeurosis, or if the disease has been of so long standing, as to admit of the thinner parts of the extravasated blood being absorbed, or by any other means dispersed, and the fibrous parts, which are left behind, should be accumulated in considerable quantities, and acquire so compact and solid an appearance, as to resemble brown macerated leather in their colour and texture, which I have always observed to be the case in old diseases of this kind; under these circumstances, the original symptoms of pulsation on the swelling, and a discoloration of the integuments, for the most part become imperceptible: for which reasons the true nature of the disease must be attended with a degree of uncertainty.

It must be acknowledged by all those, whose experience has given them opportunities of examining into these diseases, that the symptoms of a pulsation, and a discoloration of the teguments from extravasated blood, are not only very often wanting in old aneurisms, but in the most recent ones: which proves the non-existence of these symptoms to be no certain characteristics of tumors not being aneurismal: and the reason why this often happens may be readily explained, and conceived of, from demonstrating the very deep or low situation of many arteries, that are known to be liable to these injuries; such as the femoral arteries, the *arteriæ tibiales posticæ*, the *arteriæ peroneæ*, and some others.

Notwith-

Notwithstanding I have treated of pulsation on tumors, and a discoloration of the integuments or coverings of the part, when they do exist, as being the truest marks of aneurisms; yet it must not be inferred from what has hitherto been advanced, that the appearances of these symptoms are unexceptionable rules of tumors being aneurismal; seeing it does happen, that mere imposthumations, or collections of matter, arising from external as well as from internal causes, are sometimes so immediately situated upon the heart itself, and at other times upon some of its principal arteries, as to partake in the most regular manner of their contraction and dilatation (systole and diastole).

Some years ago I saw an instance of a boy, about 13 years of age, who had his breast-bone much broken by a fall. On this account he was admitted into Guy's Hospital; but not till a fortnight after the accident happened.

Upon examination, there appeared an evident separation of the broken parts of the bone, which were removed at a considerable distance from each other: the intermediate space was occupied by a tumor of a considerable size: the integuments were of their natural complexion: the tumor had as regular a contraction and dilatation as the heart itself, or the aorta could be supposed to have.

Upon pressure, the tumor receded; upon a removal of the pressure, the tumor immediately resumed its former size and shape. All these are the distinguishing signs of a true recent aneurism. The situation and symptoms of this swelling were judged sufficient reasons for considering the nature of the disease

disafe as uncertain; on which account it was left to take its own courfe. The event was, the tumor burft in three weeks after his admittance, difcharged a confiderable quantity of matter, and the patient did well.

From what has been above advanced it is plain, if thefe arguments can be fupported by facts, that the laying down fuch rules for infallibly diftinguifhing aneurifmal tumors from tumors proceeding from very different caufes, muft be a matter of the greateft difficulty: and, as a further proof of their uncertainty, I take the liberty of offering the following fhort hiftory of a remarkable cafe, which has lately occurred in my own experience.

In the month of December 1756. John Yates, aged 35 years, received an hurt upon and about his knee, by falling upon the ground from a man's back. The accident was immediately followed with a confiderable degree of lameness and pain; which upon ftanding or walking were greatly increafed.

He continued in much the fame ftate for about fix weeks after the accident. At the end of this time, the calf or the leg was attacked with an œdematous or doughy fwelling; which, in a fortnight, became fo painful, as to difable him from walking. The tumor continued to increafe for about eight weeks; and at length extended itfelf fo far upwards, as to affect the greateft part of the thigh, the whole of which was attended with exceffive pain, but more particularly fo about the knee.

N. B. So far I relate from the patient's own account.

On the 28th of April 1757. he was admitted into Guy's Hospital under my care.

Upon examination, the thigh appeared enlarged to a very great size. The tumor was uniform, and extended from the inside of the knee to within a very small space of the groin. The integuments were in every part of their natural colour.

Upon pressing the tumor on the inside, it appeared soft, and there was a very evident fluctuation to be felt on its internal and lateral part; but there was not the least appearance of pulsation.

The tumor, on its superior and posterior parts, was of a stony hardness.

The leg, which, according to the patient's account, had some time ago been much swelled, did not now appear to be at all so.

He was continually in great pain, and had been for some time incapable of getting any sleep. His appetite was bad. He was a good deal emaciated. He had a constant low fever, which arose about five weeks before his admission into the hospital. He appeared pale and fallow in his complexion.

From the time of his being placed under my care to the end of ten days, there was no alteration in the swelling, or in the symptoms attending it.

In expectation therefore of affording him that relief, which could by no other means be procured, I judged it adviseable to make an opening into the tumor; which I did by incision into the most prominent and fluctuating part; upon which there immediately gushed out a large stream of thin florid blood, and at this instant discovered to me the true state of that disease; which, till now, could not be ascertained

tained by any peculiar symptom distinguishable by the touch, or perceptible to the eye.

Seeing this, I immediately filled up the wound with lint and tow; and then proceeded, in as expeditious a manner as possible, to apply a tight bandage upon the thigh, near to the groin; and, lest this might accidentally break, I applied a second ligature below the first, and proceeded to amputate the limb upon the spot.

During the operation the man fainted, but soon recovered from this deliquium; and, without any bad symptoms, gradually recovered his rest, appetite, and strength, and is now in perfect health.

Upon a dissection of the thigh and leg, I discovered the following appearances:

A great part of the fleshy portions of two of the extensor muscles of the leg, to wit, the *vastus internus*, and *crureus*, were destroyed, with the subjacent *periosteum*.

Four of the muscles, whose uses are to bend the leg, and which compose the internal and external hamstrings; to wit, *gracilis*, *semitendinosus*, *semimembranosus*, and *biceps tibiæ*, together with that adductor and flexor muscle of the leg called *sartorius*, were removed at a considerable distance from the thigh-bone on its inferior part, and from the *tibia* and *fibula* on their superior parts; by which means a large bed or cavity was formed for containing the extravasation, which consisted partly of a fluid, and partly of a coagulated blood; but by far the greatest part of the coagulum had acquired so firm and fibrous a consistence and appearance, as nearly to resemble brown macerated leather in its colour and

texture. The neighbouring muscles appeared livid and lacerated.

The *os femoris* was become carious on its inferior and posterior parts; and, at about an inch distance above the condyle of that bone internally, there arose a considerable *exostosis*.

The capsular ligament of the knee-joint was become much thickened, and contained about two ounces of a viscid yellow *synovia*.

The femoral artery, on its inferior part, just above its division into *tibialis antica* and *postica*, was diseased; which disease extended four inches upwards.

The coats of the artery were considerably thickened, and lacerated longitudinally.

The smallest diameter of the diseased part of the artery was two inches and one quarter: the largest diameter of the diseased part of the artery was two inches and one half.

Hatton-Garden,
Nov. 17. 1757.

XLV. Farther Experiments for increasing the Quantity of Steam in a Fire-Engine. By Keane Fitz-Gerald, Esq; F. R. S.

Read Nov. 24, 1757. **I** Gave a former account to the Royal Society of some experiments made for increasing the quantity of steam in a fire-engine, by blowing air thro' boiling water*. The effects

* See above, No. X. p. 53.