

A lecture on the situation of the large blood-vessels of the extremities ; the description of the instrument called tourniquet ; and the methods of making effectual pressure on the arteries, in cases of effusions of blood from wounds, &c; / [Sir William Blizard].

Contributors

Blizard, William, Sir, 1743-1835.

Publication/Creation

[London] : [publisher not identified], [1783]

Persistent URL

<https://wellcomecollection.org/works/exud4vdv>

License and attribution

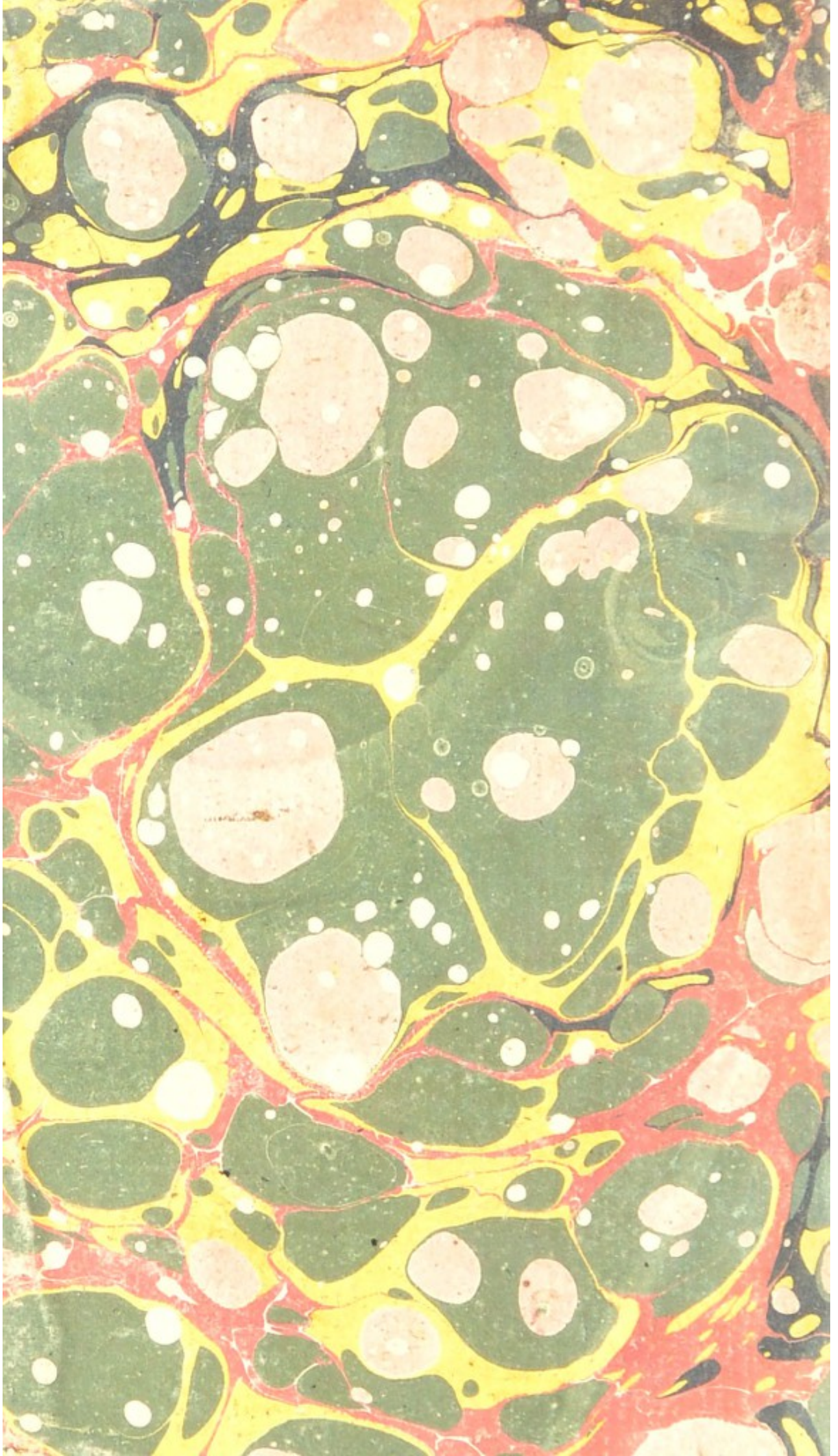
This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

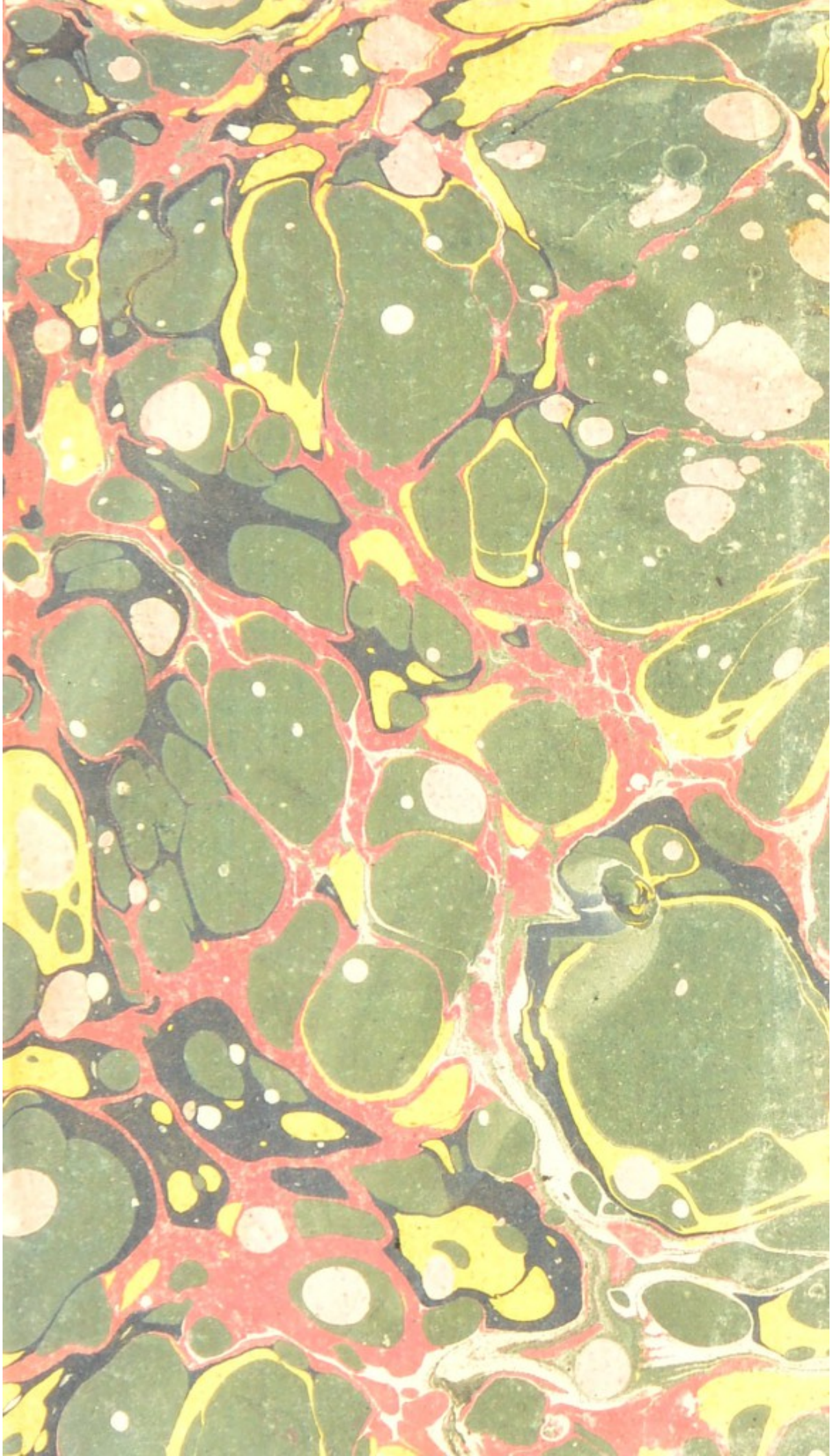
You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

**wellcome
collection**

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>








14086/A

H. xxv

18/6

1



Digitized by the Internet Archive
in 2017 with funding from
Wellcome Library

<https://archive.org/details/b2876691x>

A

LECTURE &c.

04007

A
L E C T U R E

O N T H E

SITUATION of the large BLOOD-VESSELS
of the Extremities ;

The DESCRIPTION of the Instrument
called TOURNIQUET ; and

The Methods of making effectual PRESSURE
on the ARTERIES, in Cases of Effusions
of Blood from Wounds, &c.

DELIVERED TO THE SCHOLARS OF THE
MARITIME SCHOOL, AT CHELSEA,

BY WILLIAM BLIZARD, F. A. S.

Surgeon to the London Hospital, and the Honourable
Artillery Company,

And Lecturer on Anatomy and Surgery.

Prodesse quàm conspici.



L O N D O N :

Printed in the Year 1783.



The 26th of February, 1782.

At an Extraordinary General Court
of the Governors of the MARI-
TIME SCHOOL;

Resolved,

That the Thanks of this General
Court be presented to MR. BLIZARD, for
his genteel offer of instructing the Scho-
lars in the method of applying the Tour-
niquet; which the Governors accept with
pleasure.

By Order of the General Court.

JOHN PUGH,

Secretary.

INTRODUCTION.

FROM reflections on my duty, as
SURGEON of the MARITIME
SCHOOL, and an affectionate regard for
the objects of my care, I was induced to
propose to teach them, the situation of
the large blood-vessels of the extremities,
and the method of applying the Tourni-
quet. This I attempted, in the plainest
manner in my power, in the way of Lec-
ture; as the most familiar and effectual
method of impressing truths on juvenile
minds: and it was pleasing to observe

the steadiness, mixed with humane feelings, so strongly expressed in the countenances of my attentive young auditors.

From an anxious wish to do good to mankind ; and particularly, to promote the great cause of the naval interest of my country, in that most essential concern, *the preservation of the lives of seamen* ; I have now endeavoured to render my Lecture a useful OFFERING to these young warriors.

There cannot be a doubt, that, in the navy and army, cases continually occur, in which the information it contains is absolutely necessary to the preservation of existence : but there can hardly be any situation of life in which, at some period, the knowledge may not prove of equal importance ; and it cannot fail of adding

to confidence and courage in the moment of danger.

No professional fame can be acquired from the explanation of facts known to every student in surgery : it is, therefore, to be considered as an humble work of humanity, which may possibly prove the happy means of saving the limb or life of many a brave man.

Lime Street,
15th July 1783.



A

LECTURE, &c.



Young Gentlemen,

I Think it my duty, as one of the guardians of your health and lives, to point out, whatever I judge may conduce to the preservation of these blessings when you are launched into the world, as well as during your residence in this seminary of naval science.

You

You are here educated to a profession the most honourable in the nation, because the most useful to your fellow-citizens. It is the security of our country, our religion and laws, our commerce and riches. The SEAMAN then, according to his rank and merit, has a peculiar claim to the respect and care of his countrymen.

You are ambitious to become SEAMEN, are ready to join the veteran band, to go forth to fight the enemies of your country; and therefore merit the esteem and services of all your countrymen.

But we are excited to attend to the welfare of the BRITISH SAILOR by another consideration — Trained up in the principles of true honour and bravery; hardy in the practice of them; and
properly

properly considering his life as devoted to the service of his country; he is less mindful of bodily evils, and the means of averting them, than the more wary and delicate landsman. He has a title, then, in generosity, to that attention from others, which a martial spirit prevents him from shewing to himself.

I am assured, Gentlemen, that, when you shall command in his majesty's ships, you will have many occasions for the exercise of your judgement and spirit in regard to the health and lives of your men. You must, in almost every case, *reflect for them*; and, when they find that you are truly zealous in all things for their good, they will obey with the more alacrity, will bear you with spirit through all danger, and prove themselves worthy
of

of your generous regard. — These considerations will, I trust, engage your attention to whatever shall promise benefit to your hardy companions in war.

Every good and brave man would lay down his life in the execution of his duty to his king and country. But, when sick or hurt, we are not to neglect the means of relief which Providence has afforded. On the contrary, we are commanded, by divine authority, to preserve our lives, and those of our fellow-creatures.

For the preservation of the health and lives of the officers and seamen of his majesty's navy, there are appointed by government to each ship of war, a SURGEON, and a certain number of mates according to the rate of the ship. Du-
ring

ring the time of action the station of these gentlemen is in the COCK-PIT. From their necessary confinement to this situation, evils of great consequence may sometimes happen; for they cannot possibly render instantaneous assistance to those in a remote part of the vessel, whose bleeding wounds may urgently require the aid of surgery.

Some of the methods of relief of surgery are very simple, though of the greatest importance. Of this kind is the making an effectual temporary pressure upon a part, to prevent a fatal effusion of blood, in cases of wounds, till means of permanent benefit can be employed.

Men of true courage are not dismayed at the sight of blood. In firm possession of themselves on all occasions, they are capable of exercising their judgement,

and employing the means with which they are happily acquainted, either to their own benefit or that of others. It is surely proper, then, that they should have information of whatever may be useful, and in their power to execute.

I cannot omit this opportunity, my young Friends, of exhorting you to be examples of sobriety through life. What advantages can flow from reason or true courage in a state of intoxication? It is to be feared that many a brave seaman has lost his life from having his mind clouded, by the effects of strong liquor, at the time of receiving a wound.—All that is good is the gift of heaven! Religion enjoins us temperance. It is good to be temperate; for by this virtue not only are our bodies preserved

free from many disorders, but our minds maintained calm and firm, to direct under circumstances of accidents, and on every trying occasion.

Induced by the reflections that I have advanced, I proposed to the wise and good men who direct your education, to teach you the application of the instrument called *TOURNIQUET*, employed for stopping the flow of blood from wounded vessels. With their sanction I have now the pleasure of addressing you; and most heartily wish that my instruction may prove useful, not only to yourselves, but also to those gallant men you may lead to glory!

A circumstance has occurred, since I proposed to meet you on this occasion, which has confirmed me in my notions,

B respecting

respecting the utility of what I am proceeding to explain; and will, I have no doubt, be highly satisfactory to your Governors.

I requested the sentiments of a very intelligent naval surgeon on this subject. This was his answer.

“ I can best express my opinion by
 “ relating to you the sentiments and
 “ practice of an ingenious surgeon in the
 “ service, and assuring you that mine
 “ perfectly coincide with his.—MR.
 “ BIRD, surgeon of the BARFLEUR,
 “ had observed, with great concern, the
 “ dreadful effects of wounds that happen-
 “ ed in time of action, from the seamen
 “ being entirely ignorant of the manner
 “ of applying the tourniquet, many in-
 “ stances having occurred of men bleed-
 “ ing to death, particularly in the
 “ tops,

“ tops, before any assistance could pos-
 “ sibly be rendered them. To prevent
 “ these evils as much as was in his
 “ power, he provided every seaman sta-
 “ tioned in the tops with a tourniquet;
 “ and, on every opportunity, taught them
 “ the method of applying it, so that in
 “ a short time they became perfectly
 “ expert in its use.”

The pious Psalmist beautifully ex-
 claims, “ We are fearfully and wonder-
 “ fully made !” It would, indeed, re-
 quire the study of a long life to learn the
 little that has been discovered of infinite
 wisdom in the structure of the several
 parts of the human body ; and of infinite
 goodness in the laws by which they
 perform their functions to the mainte-
 nance of health and life.

It is proper, however, that you should have a general idea of Nature's œconomy, in the circulation of the blood; to understand the practice that will be laid down, and to enable you to adapt it to particular cases.

“ In the BLOOD is the life of man.” That is to say, this fluid contains the principles of nourishment, and distributes them to every part of the body for its supply and refreshment. Like the water of the great ocean, which conveys the riches and good things of the world to every corner of the globe.

The HEART is the source of this fluid. It is seated in the breast, as it were in the center of the body, a little to the left side. This organ is hollow for containing the blood; and it has the power of

con-

contracting, and very strongly propelling its contents. By this contraction of the heart the blood is pushed forwards, with an exceedingly rapid current, to the remotest parts of the body; like the tide of the sea, which influences and presses on the waters of rivers, as we observe here in the delightful Thames.

The vessels, or tubes, which proceed from the heart to convey the blood to all the parts of the body, are called **ARTERIES**. From the power with which the heart propels the blood through this system of vessels, whenever they are wounded, the blood flows from them with great rapidity. They divide, to be distributed to parts, from single trunks, like the branches of trees from their bodies; so that by pressing

strongly against the sides of any trunk, the flow of blood into its correspondent branches will be prevented.

The vessels which return the blood to the heart are termed VEINS. In them the blood receives but little of the impelling force of the heart, and therefore, instead of moving with a strong tide or current, glides evenly and gently on; and, of consequence, wounds of these vessels are not of much importance.

This transmission of the blood from the heart through the arteries, and back to it again by the veins, is termed the CIRCULATION; and, to the honour of this nation, was the discovery of our illustrious countryman DR. WILLIAM HARVEY.

It is very plain, then, that if a bandage or ligature be made sufficiently tight
around

around any limb, the flow of blood into all the parts below it must be prevented. But, to render this effectual, the pressure must be very great in the whole circumference of the limb; and, in some cases, from the situation of arteries between bones, the effect cannot well be obtained. To render this process, therefore, successful with certainty, in cases of wounds and operations; and at the same time to prevent the evils arising from an exceedingly strong *general* pressure, surgeons have fixed on certain proper parts of the *trunks* of arteries, before their division into branches, for the application of a pad or compress. These parts are expressed in the annexed plate.

The PULSE, so called, is the beating

of an artery, from its distention with blood propelled into it by the heart. The spaces of time between the pulsations, are the periods when the heart itself is filling with blood returned to it by the veins.

Now it is evident that there can be no pulsation when a flow of blood and distention of an artery are prevented. Where, then, a pulse can conveniently be found, as in the wrist, the ceasing of it, on a pressure being made on the trunk above, will prove that the pressure is made effectually. To illustrate this by an experiment.

Let a friend feel the pulse in your wrist; then apply two or three fingers in *the little pit, immediately below the collar-bone, close to the shoulder,* marked *a*

in the plate; press strongly, and the pulse will cease, because the artery that supplies the upper extremity passes under the collar-bone, over the first and second ribs, along this part, and will be now pressed against one of these ribs. Remove the fingers, and again apply them, and the pulse will be found to alternate with the pressure.

Now, suppose a wound to be received, an artery of a considerable size cut or torn, and a copious bleeding in consequence to happen, in any part of the arm *below* the place *a*; it appears manifest, that by making a pressure with the fingers, in the manner described, or assisted by a pad between the fingers and the part, the bleeding would instantly cease. Is not this a useful remark? Let this little process

cess be your first exercise; and, when you are expert in the practice of it, proceed to consider the other places in the limbs where effectual compression may be made; and the instruments proper for the purpose.

The arteries of the upper extremity, or arm, proceed from the trunk at *a*, after this manner. This trunk passes behind the fore margin of the axilla or arm-pit. It is then situated deeply in the arm-pit; *passes along the side of the arm*, next the body, *obliquely towards the fore part of the joint or bend*, and here it divides into three branches. In this course to its division it lies near the bone, and may therefore be very successfully compressed. — The situation of this trunk to its division is described in the Plate by the lines *b*.

All compressive means for preventing the flow of blood from wounded arteries of the upper extremity, must therefore be made either at *a*; or in some part of the course of the trunk of the artery, expressed by the lines *b*, between the axilla, and the bend of the arm.

The distribution of the vessels of the lower extremity is in this manner. The artery passes from the cavity of the belly to the GROIN, where in thin persons the pulsation of it may be felt.

At this place, in cases of wounds and effusion of blood very high up in the thigh, effectual compression may be made by some fingers pressed very strongly, in the manner described for compression below the collar-bone; though it were
better

better to have some kind of strong pad, or firm body, such as will be presently described, interposed between the fingers and the part.

From the groin the artery proceeds in an oblique direction downwards and inwards, as expressed by the lines *c*; and, *at about the middle of the inside of the thigh*, expressed by the pad *d*, *it lies close to the bone*. This is the most favourable part for making a pressure upon it, because of the resistance of the thigh-bone behind. And, where there is an opportunity of a choice, as in cases of wounds or operations *below* this part, this is the place which surgeons fix on for the application of the compressing body; it, therefore, deserves your particular attention.

The course of the vessel is then down-
wards

wards and backwards to the HAM, in the hollow of which, *against the lower flat end of the thigh-bone*, compression may again be very successfully made, in all cases of wounds or operations below the knee joint. But *beyond* this part compression must not be depended on; for immediately below the joint the artery divides, like that of the upper extremity, into three vessels, one of which is situated between the bones of the leg.

Science and humanity admit of no distinction of country; but, with equal justice, express the gratitude of mankind to the memory of the authors of useful inventions, and discoveries. — The instrument called **TOURNIQUET**, we are informed, was the invention of a *French* surgeon, named **MORELL**, at the siege of
BESANÇON.

BESANÇON. It consists of four parts, viz. 1. *e*, a yard and half of strong worsted, or other kind of band, an inch broad. 2. *f*, a pad of leather, tightly stuffed with wool or horse-hair, two or three inches long, and of an inch breadth and thickness, having a loop on one side for the band to slide through *. 3. *g*, a piece of strong leather, three inches long and two broad, having two apertures, an inch asunder, for the passage of the band or ligature. 4. *h*, a piece of smooth round and strong wood, about four inches in length.

Things of great simplicity lose advan-

* It has been suggested to me, that, for the use of persons who may not retain an accurate remembrance of the situation of the large vessels, it were better for this pad to be made as large again as here described.

tages from description, in seeming complicated. The price of this instrument, one or two shillings, is so trifling, that whoever should wish for full information on the subject, would certainly do well to provide himself with one *. The slightest view will inform him of the manner of employing it; which is this.—Place the pad upon the part of the trunk of the artery it is intended to compress; bring the band, passed through the loop of the pad, round the limb, and carry the ends through the apertures in

* It is much to be regretted that this instrument is not generally known, and kept in every family.—The life of a valuable gentleman in Hertfordshire would have lately been lost for want of it, if a surgeon had not *accidentally* called at his seat in the moment of a dreadful effusion of blood, from a wounded artery in his hand, occasioned by the breaking of a bottle in a fall,

the leather ; make a double knot with the ends, leaving a space between the knot and leather that would admit three or four fingers ; through this space pass the stick, and with it twist the ligature sufficiently tight to stop the flow of blood through the artery into the limb. The leather, knot, and twisting are to be placed and made upon the upper part of the limb, nearly opposite to the pad.

It is manifest that this process, simple as it is, requires both hands for tying the knot ; and, therefore, that you could not apply the Tourniquet to your own arm without assistance. It is as clear also, that it demands a constant application of a hand to the stick, as the ligature would otherwise instantly become slack.

To obviate the necessity of two hands, in regard to the arm, let the ligature be about twelve inches long, and have each end tied in a loop: proceed in its use exactly as already described; but, instead of making a knot over the leather, pass the stick through the loops at the ends of the ligature, and then perform the twisting.

To fix the ends of the stick, so as to prevent the ligature from untwisting, or the necessity of a constant application of a hand; make a hole through each end of the stick, pass a piece of tape or pack-thread through each of these holes, carry them round the limb, and tie or pin them. Many other little expedients may be contrived to answer this purpose.

Besides the Tourniquet that I have

C described,

described, there is another, an excellent piece of machinery. The original was invented by M. PETIT, a Frenchman; but it was much improved by the late MR. FREKE of St. Bartholomew's Hospital. It need only be seen to be understood. The pad *i* is placed upon the artery; the ligature buckled at *k*; and then, by turning the screw, the upper moveable portion *l* is raised from the lower, and, in consequence, the ligature drawn tight. This instrument is sold by surgical instrument makers for half a guinea; it is made of brass, and is called SCREW TOURNIQUET.

The advantages of this Tourniquet are very great. It may be applied with one hand only; and, on being fixed, will re-

main in that state without any attention, or the least danger.

Thus the defects of the former instrument are supplied; and for every occasion of the use of a Tourniquet, *where there is a want of assistants*, nothing more useful was ever contrived. The surgeons on board ships of war, in engagements, are oftentimes unable to perform the necessary operations on the wounded men as quickly as they are brought to them: by this machine the bleeding from wounds can instantly be restrained, and then the wounded may safely wait till the surgeons can calmly and properly execute their duty.—Government has wisely directed every ship to be supplied with many screw Tourniquets.

And now, young Gentlemen, after

all that has been said about vessels and Tourniquets, suppose either of you were to be wounded by a penknife, or other thing, in the leg, thigh, or arm; a large artery punctured; and, in consequence, a violent bleeding to ensue. You have no Tourniquet; but you clearly understand what has been taught on this subject. How, then, would you act? Undoubtedly you would instantly pull off your garter, or take the first piece of string or strong cord you could find; roll your handkerchief up hard, and lay it on the trunk of the artery above the wounded part; pass the garter or cord over the handkerchief and round the limb; tie a knot, leaving a proper space; and then twist the ligature
by

by any firm body that you could procure.

It may be truly said, that in any branch of medicine “ a little learning is a dangerous thing.” It was my only intention, to explain to you the means of stopping a flow of blood from wounded limbs, and preventing its fatal consequence *till more effectual aid from surgery can be obtained.* It is happy for mankind that professors in this science are fixed in almost every town and village, as well as appointed to his majesty’s ships of war.





I F this little Tract should perchance be read by any good man, unacquainted with the MARITIME SCHOOL, at CHELSEA; who may be able and disposed to assist in rewarding the brave defenders of his country, in the persons of their rising offspring; of adding strength, and dignity to the navy; and truly serving the widow, and orphan; let me, with my hand to my heart, direct him to this hospitable, this patriotic seminary.







