Eli Reed

A SYSTEM OF SURGERY.

BY

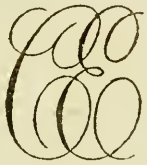
BENJAMIN BELL,

MEMBER OF THE ROYAL COLLEGES OF SURGEONS OF IRELAND AND EDINBURGH, ONE OF THE SURGEONS TO THE ROYAL INFIRMARY, AND FELLOW OF THE ROYAL SOCIETY OF EDINBURGH.

ILLUSTRATED WITH COPPERPLATES.

VOLUME IV.

THE THIRD EDITION.



EDINBURGH:

Printed for CHARLES ELLIOT, EDINBURGH; C. ELLIOT & T. KAY, N° 332. Strand; and G. G. J. & J. ROBINSON, LONDON.

M,DCC,LXXXIX.

CONTENTS.

Sect.

CHAP. XXXI.

CHAP.

A

TREATISE

ON THE

THEORY AND PRACTICE

OF

SURGERY.

CHAPTER XXVII.

SECTION XIX.

Additional Remarks on Diſeaſes of the Eyes.

IN the laſt volume of this work, I treated ſo fully of the diſeaſes of the eyes, that it was not my intention to ſay any thing farther upon them: But ſince the publication of that volume, a foreign oculiſt, Mr Jean François Pellier, having appeared in this country, where he has already ac-

quired much reputation, I conſider it as a neceſſary addition to the chapter on theſe diſeaſes, to communicate ſuch parts of Mr Pellier's practice as appear to be of importance. Poſſeſſing the advantages of a liberal education, a ſound judgment, and much experience, Mr Pellier has been enabled to ſuggeſt improvements in the treatment of almoſt every diſeaſe to which the eyes are liable; and an uncommon degree of ſteadineſs, conjoined to a quick eye-ſight, give him a command of himſelf and a facility of operating which is not often attained. I think it proper likewiſe to remark, that Mr Pellier communicated his knowledge of the diſeaſes of the eyes in the moſt candid manner; which puts it in my power to lay his obſervations before the Public, he having given me permiſſion to do ſo.

While, by giving an early account of material improvements, I thus acquit myſelf of an obligation to the Public, I at the ſame time embrace, with much ſatisfaction, the opportunity which it affords of announcing

nouncing the merit of an operator, who, although a ſtranger and as yet not much known in this country, is perhaps one of the beſt oculiſts now in Europe.

In the firſt place, I ſhall mention what I have learned of Mr Pellier's practice; and ſhall then offer ſuch remarks as occur to me upon it.

On the ſubject of the cataract his obſervations are particularly valuable. By attentive examination he can almoſt in every inſtance ſay whether a cataract is hard, ſomewhat ſoft, or altogether fluid; and as his method of operating varies according to theſe circumſtances, it is of importance to be able to determine à priori with regard to them. He can alſo aſcertain whether a cataract is of a large or ſmall ſize; by which he is often directed in the different ſteps of the operation.

I know that theſe are circumſtances which practitioners in general conſider it as impoſſible to judge of with any degree of preciſion, particularly with reſpect to the conſiſtence of cataracts; and I muſt

acknowledge, that I was clearly of this opinion, till of late that I was convinced of the contrary, not by Mr Pellier's aſſertions alone, but by different proofs of the fact. I aſſiſted Mr Pellier in different caſes where the cataract was extracted: in all of them he previouſly foretold the conſiſtence and ſize of the cataract with perfect confidence; and in every inſtance his prognoſis was preciſe and accurate. I am credibly informed, too, that this happened with other practitioners in whoſe preſence he operated in different parts of this country.

Mr Pellier's definition of a cataract is, That it is a morbid affection attended with different degrees of opacity either in the lens itſelf; in the ſmall quantity of fluid with which the lens is ſurrounded; or in the capſule which contains it.

He diſtinguiſhes ſeveral varieties of cataract, which in practice ought to be kept in view.

The three principal varieties which he mentions

mentions are, the true or curable cataract; the mixed or doubtful kind; and the falſe or incurable.

1. The curable, or what he terms the true cataract, is known by the pupil retaining its natural power of contracting and dilating in full perfection, while the patient is at the ſame time able to diſtinguiſh the light of a candle, or of any other luminous body, and even certain bright colours, ſuch as red, green, &c.

2. The mixed or doubtful cataract is attended with a weak feeble contraction and dilatation of the pupil, and the patient can ſcarcely diſtinguiſh light from darkneſs. Along with an opacity of the cryſtalline, this is ſuppoſed to be attended with an affection of the retina, or of ſome other part of the eye.

3. In the falſe or incurable cataract, along with an opake ſtate of the lens, there is evidently a diſeaſed ſtate of the pupil, which remains always immoveable to whatever degree of light it may be expoſed, at the ſame time that the patient does not

diſtinguiſh between the moſt brilliant light and perfect darkneſs.

Cataracts may be either ſimple or compound, or they may be complicated with other affections.

1. A ſimple cataract is a mere opacity of the cryſtalline lens, all the other parts of the eye remaining perfectly ſound.

2. A cataract is ſaid to be of a compound nature, when blindneſs is produced by an opake ſtate of the body of the lens, of the liquor which ſurrounds it, and of the capſule.

3. The diſeaſe is conſidered as complex, when it is conjoined with other affections of the internal parts of the eye; the moſt frequent of which is an amauroſis.

It is not unfrequently, too, attended with a diſſolution of the vitreous humour, and ſometimes with an opacity of it. This variety of the diſeaſe is for the moſt part produced by violent inflammation. It is eaſily diſtinguiſhed by thoſe accuſtomed to an attentive examination of the eye; and it is particularly neceſſary for operators

tors to be well acquainted with it; for no operation, neither extraction nor depreſſion, ſhould be ever adviſed for it. The operation has never in any inſtance of this ſpecies of cataract been known to ſucceed; and for the moſt part, Mr Pellier obſerves, it is productive of very dreadful pain, and the moſt violent degree of inflammation that he ever met with. In general, too, the pain and inflammation thus induced remain fixed and permanent, without yielding in any degree to the remedies employed for it.

Cataracts are ſometimes attended, too, with an imperforated iris; in which caſe, as no light can paſs to the bottom of the eye, there is no degree of viſion whatever; and at other times they are complicated with adheſions, either to the iris, or to the capſule of the vitreous humour. Preternatural adheſions of the lens to the capſule of the vitreous humour can ſcarcely be diſtinguiſhed by the eye; but they are very commonly met with where the diſeaſe has been originally produced by, or

attended with, much inflammation; and they always render the operations of extraction and couching difficult. It is this kind of adheſion, Mr Pellier imagines, which prevents the operation of couching from ſucceeding ſo frequently as it otherwiſe might do; for when it takes place in any degree, the cataract, he ſuppoſes, will always riſe again on the needle being removed from it.

In forming an opinion of cataracts from the ſeat of the diſeaſe, there are different circumſtances which require attention.

1. It often happens, as we have already remarked, that the lens only is affected.—This variety of the diſeaſe is moſt frequent, Mr Pellier obſerves, in adults, and eſpecially in old age.

2. When the opacity is ſeated in the capſule of the lens, if the anterior part of it only is diſeaſed, it appears to be remarkably white, and to be placed very contiguous to the iris; while, on the contrary, if the poſterior part of it only is affected, it is commonly of a grey colour, and the opacity appears to be deeply ſeated.

It

It ſometimes happens, both after the operation of extraction and couching, that in the courſe of ten or twelve days, the capſule of the lens, which at firſt was perfectly ſound, becomes quite opake.—This variety of the diſeaſe Mr Pellier terms the Cataracte Secondaire.

3. When the body of the lens and its capſule are both opake, it commonly happens that the cataract is ſoft or even altogether fluid. In this caſe, much attention is neceſſary in the operation of extraction, to prevent the capſule from burſting: a degree of nicety, Mr Pellier obſerves, which thoſe not much accuſtomed to this branch of practice can ſeldom arrive at, but which is very practicable with thoſe who have had much experience in it.

4. In ſome inſtances cataracts appear to proceed from a partial affection of the lens, ſmall opake ſpots being obſerved in it, while the reſt of it remains ſound. In this caſe, viſion is always moſt perfect in an obſcure light when the pupil is moſt dilated.

In

In judging of cataracts from their conſiſtence, there are three circumſtances which more particularly require attention.

1. When a cataract is of a firm conſiſtence, it is in almoſt every inſtance of a brown colour; it appears in general directly behind the iris, and not ſo deep as the lens is uſually placed, and the pupil dilates and contracts very ſlowly.

2. When it is fluid, it is not commonly white, but rather of a cream colour, ſomewhat reſembling purulent matter; and for the moſt part in this variety of the diſeaſe the globe of the eye appears full, and ſomewhat larger than uſual.

3. It ſometimes happens, Mr Pellier obſerves, that along with this fluid ſtate of a cataract, the capſule is conſiderably thickened. To this he gives the appellation of the Cyſtic Cataract.

The colour of a cataract is another point of importance.

1. We have juſt obſerved, that a thin fluid cataract is for the moſt part of a cream

cream colour; but in that variety of the diſeaſe which is obſerved in children at birth, although it is always fluid, the colour is almoſt always a milk-white. In general, however, at other periods of life, a white cataract is of a cheeſy conſiſtence.

2. When a cataract is of a yellow colour, a ſmall portion of the lens commonly remains hard, the reſt of it being diſſolved into a thin tranſparent fluid, forming that variety of the diſeaſe uſually termed the Hydatid Cataract.

3. Although a black cataract is not a common occurrence, Mr Pellier ſays he has met with different inſtances of it. The only diſeaſe for which it may be miſtaken is the gutta ſerena; but it may be diſtinguiſhed from it by attention and obſervation. In the gutta ſerena the diſeaſe for the moſt part comes on ſuddenly, the pupil is of a deep black, it remains immoveable in every degree of light, and the patient cannot diſtinguiſh colours or the cleareſt light from perfect darkneſs; whereas, in the black cataract, the acceſſion of blind-

blindneſs is commonly ſlow and gradual; the pupil contracts and dilates according to the degree of light to which it is expoſed; the bottom of the eye is of a dark colour, but not of ſuch a deep black as in the gutta ſerena; and the patient can diſtinguiſh light and vivid colours. In ſhort, the ſymptoms of this variety of the diſeaſe are exactly the ſame with thoſe of the common cataract; only, inſtead of being white, the opacity is black.

With reſpect to the maturity or ripeneſs of a cataract, Mr Pellier pays no regard either to the colour or conſiſtence of the lens: He always conſiders the operation as proper, when the opacity has proceeded ſo far as to deprive the patient of ſight, when it is not complicated with ſome other incurable diſeaſe, and when the habit of body is good. He prefers the method of cure by extraction, excepting in a few caſes where the pupil is extremely ſmall, when he operates by depreſſion. He always prepares his patients for the operation, by confining them to a low

PLATE XXXIX.

FIG. 1.

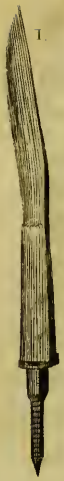


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

low diet for five or ſix days; by giving two or three doſes of ſalts and ſenna; and when they are plethoric, he takes away ten or twelve ounces of blood.

In extracting the cataract, he makes the inciſion of the cornea in the ordinary place and of the uſual ſize; but he has ſome peculiarities in his method of doing it.

Inſtead of placing his patient with his face oppoſite to a clear light, he ſeats him with his ſide towards it. If he is to operate upon the left eye, he uſes his right hand, and the right ſide of the patient is placed towards the window. He always uſes his left hand in operating upon the right eye; and in this caſe the patient is made to ſit with his left ſide towards the light.

The patient being ſeated with the eye which is not to be operated upon tied down with a bandage, an aſſiſtant ſupports his head behind, while at the ſame time he fixes the eye with the ſpeculum, fig. 5. Plate XXXIX. The figure repreſents the inſtrument of the full ſize. It is made of wire;

wire; and it may either be of gold, ſilver, or any other metal. The head being fixed by preſſing it againſt the breaſt with one hand under the chin, the aſſiſtant takes this inſtrument in the other; and placing the round curvature A upon the upper eye-lid immediately behind the tarſus or cartilage, he muſt by gentle gradual preſſure fix the eye above, while the operator with the fore and middle fingers of his left hand, when the operation is to be done upon the left eye, muſt fix it below, at the ſame time that he draws down the under eye-lid. In uſing this ſpeculum the upper eye-lid is forced almoſt entirely into the orbit, but it immediately returns to its natural ſituation on the inſtrument being withdrawn.

The eye being thus fixed, the knife fig. 1. Plate XXXIX. fixed in its handle, muſt be put into the operator's right hand, who now divides the cornea in the uſual manner: but when the point of it comes oppoſite to the pupil, if the capſule of the lens is to be divided, Mr Pellier has arrived

rived at ſuch dexterity in this operation, that he plunges the point of the knife through the pupil into the lens; and withdrawing it gently, he carries the point of it forward to the oppoſite ſide of the eye, and finiſhes the operation in the uſual way. But in making the latter part of the inciſion, he is very attentive to the preſſure made by the ſpeculum, which he deſires the aſſiſtant to remove entirely before the inciſion is completed, in order to prevent the vitreous humour from eſcaping.

This being done, the eye-lids are immediately ſhut; and while they are in this ſtate, a ſlow, gradual preſſure is made upon the eye-ball, with the flat end of the inſtrument which he terms a Curette, fig. 1. Plate XLII. which is placed immediately above the tarſus of the upper eye-lid. As the acceſs of light to the eye is thus prevented, the pupil remains in a ſtate of dilatation, by which the lens is more eaſily preſſed out than it otherwiſe could be; and if the preſſure be applied in a cautious man-

manner, no part of the vitreous humour is ever forced out.

When the cataract does not come out entire, which is ſometimes the caſe, or when it is found to adhere to the contiguous parts, the end of the curette is introduced through the pupil, and with it any adheſions that occur are gradually ſeparated; at the ſame time that any detached pieces of the lens are turned out through the opening in the cornea: Or, inſtead of the curette, the ciſtatome fig. 3. Plate XL. is ſometimes employed for ſeparating ſuch adheſions.

In the courſe of this operation, it ſometimes happens that the iris is forced too much forward into the anterior chamber of the eye, or even altogether through the inciſion in the cornea. With a view to prevent the bad *effects* which might reſult from this, Mr Pellier inſinuates the flat ſide of the curette into the wound in the cornea, ſo as to preſs the iris into its natural ſituation.

This is the uſual method in which Mr Pellier performs this operation; but circumſtances

cumſtances ſometimes occur which require ſome peculiarity of management. The moſt material of which are theſe: When he has reaſon to conclude that the cataract is in a fluid ſtate without any opacity of the capſule, inſtead of making any opening into the cornea of the uſual ſize, he introduces a ſharp-pointed knife, ſomewhat convex on the back, into the inferior part of the tranſparent cornea at a proper diſtance from the iris; and having made an inciſion of about the tenth part of an inch in length, he puſhes the point of the inſtrument upwards till it comes oppoſite to the pupil, when he carries it cautiouſly on till it reaches the lens; and having now made an opening in the capſule ſufficiently large for diſcharging the fluid contained in it, he withdraws the inſtrument with the ſame caution with which it was introduced, and in this manner the operation is finiſhed: as the cataract being in a ſtate of fluidity, it paſſes eaſily off without any preſſure.

When, again, along with a ſoft or fluid

cataract, there is reaſon to ſuppoſe that any part of the capſule is opake, or even where the capſule alone is ſuppoſed to be diſeaſed, he carefully avoids opening it or burſting it in the courſe of the operation: in either of theſe events, he ſays, it would be with difficulty extracted. He therefore by ſlow gradual preſſure with the curette, in the manner we have mentioned, forces out the lens, contained, as he imagines, in its capſule or cyſt; and he does it, he ſays, in every inſtance without forcing out any part of the vitreous humour. In ſome caſes, however, he finds it neceſſary to introduce the end of the curette through the pupil, and to ſeparate the capſule of the lens from the contiguous parts; but even this, he ſays, does no harm to any part of the eye. The importance of our being able to judge from the appearances of a cataract of the real ſtate of the diſeaſe is therefore ſufficiently obvious, from the difference which this variety of it requires in the method of operating.

In extracting the cataract, it is a matter of

of the higheſt moment to avoid the iris with the knife; but as this is extremely difficult in eyes that are not very prominent, in ſuch caſes Mr Pellier employs a knife with that ſide of it convex which paſſes next to the iris. One of theſe inſtruments is repreſented in Plate XXXIX. fig. 2. In every other reſpect it is the ſame with the knife which he uſes in ordinary caſes, repreſented in fig. 1. of the ſame plate.

In the courſe of this operation, it ſometimes happens that the aqueous humour eſcapes in too great quantity before the point of the knife is carried acroſs the eye ſo as to penetrate the oppoſite ſide of the cornea: When this takes place, which it often does when the hand of the operator is not perfectly ſteady, as the iris is apt to paſs in before the point of the inſtrument, Mr Pellier adviſes the knife to be withdrawn, and the other knife, fig. 3. with a blunt or probe-point, to be introduced at the opening in the cornea; and the point being ſlowly carried over to the op-

poſite ſide of the eye, an inciſion is there to be made, either with the other ſharp-pointed knife or with a common lancet, ſufficiently large for letting out the blunt point of the other; when the operation is to be finiſhed in the uſual way, by puſhing it forward, and making a kind of ſemi-circular inciſion in the under part of the cornea.

As ſoon as the cataract is extracted, it is the common practice to preſent a watch or ſome other object to the patient, with a view to diſcover the ſucceſs of the operation. In ſome inſtances Mr Pellier has been forced to conſent to this, but he does not approve of it. Inſtead of this, he immediately cloſes the eye-lids, and covers each eye with a ſmall bag of ſoft old linen or cotton about half filled with ſoft fine wool. Theſe bags are applied dry, and are fixed with pins to a circular bandage of old linen paſſed round the forehead, which again is kept firm in its ſituation by a ſlip of the ſame linen made to paſs beneath the chin and over the upper

part

part of the head; care being taken to fix them both with pins to the night-cap below.

The patient is now to be undreſſed, and with as little exertion as poſſible ſhould be laid in bed, upon his back with his head very little elevated: and in this ſituation he ſhould remain with as little variation as poſſible during the firſt ſix or eight days, as it tends more than any other he can be placed in to a ſpeedy cure of the wound in the cornea. In the courſe of a few hours after the operation, Mr Pellier always adviſes blood-letting to the extent of eight or ten ounces, excepting in low emaciated conſtitutions. The patient is kept upon a low diet. He gives an opiate; but prefers ſmall doſes frequently repeated to the giving a large doſe at once, which often produces ſickneſs and vomiting, which ſhould by all means be guarded againſt; for nothing ſo readily hurts the eye as the exertion of vomiting, coughing, and ſneezing. For which reaſon he does not admit

of tobacco being uſed in any form, for the firſt eight or ten days.

The belly ſhould be kept moderately open by gentle purgatives, and on the fourth or fifth day the dreſſings may be removed; and after clearing the eye of any matter that may have collected, and the eye-lid being cautiouſly lifted to examine the ſtate of the wound, the ſame kind of bandage muſt be applied again. From this time forward the dreſſing ſhould be renewed every ſecond day, and in ten or twelve days from the operation the eye ſhould be bathed before the new bandage is applied with a weak ſaturnine ſolution; but till this period warm milk and water is conſidered as preferable. About the end of the third week the bags of wool, after having been gradually leſſened, may be taken away entirely, and a piece of green ſilk put over the eyes inſtead of them. If no interruption occurs to the cure, the diet may be made gradually better; and when one eye only has been operated upon, Mr Pellier commonly allows the patient to go abroad

abroad at the end of the fourth week, but never ſooner; and even then the eyes are directed to be well covered: But when both eyes have been cut, he adviſes a confinement of at leaſt ſix weeks.

This is the plan of treatment which Mr Pellier purſues in ordinary caſes; and he attributes much of the ſucceſs with which his operations are attended to a rigid obſervation of theſe regulations. But where there is a particular tendency in the ſyſtem to inflammation, remedies of a different kind are required.

The eye becomes in ſome caſes ſo much inflamed even in the courſe of a few hours from the operation, that one blood-letting does not prove ſufficient. In this caſe he adviſes leeches to be applied to the neighbourhood of the eye; and if a ſecond or third general evacuation is neceſſary, he directs the blood to be taken from the foot, as by experience he finds this to prove more ſucceſsful than taking it from the arm or neck. The patient is deſired to drink plentifully of Arabic emulſion, with a large pro-

portion of nitre. The pediluvium frequently repeated is ſuppoſed to prove very ſerviceable. And, for the removal of that violent pain which inflammation ſupervening to this operation commonly excites, nothing that has yet been tried, he thinks, anſwers ſo well as a liniment compoſed of the white of an egg and powdered alum beat for a conſiderable time together: a little of which ſhould be applied to the eye every two hours between two plies of a bit of ſoft old linen. Beſides affording relief from pain, it tends more effectually than any other remedy to ſtop the progreſs of inflammation; inſomuch, that Mr Pellier employs it in every caſe as ſoon as the eye begins to inflame.

Inſtead of alum, he ſometimes adds to the white of an egg three grains of white vitriol, and as much of ſaccharum Saturni diſſolved in a ſpoonful of roſe water; and the whole being well beat together till it puts on the appearance of white froth, a little of this is inſerted between the eyelids with a ſmall pencil three or four times a-day,

a-day, at the ſame time that the eye-lids are covered with a ſmall bag of thin linen in which ſome of it is contained. When the heat and pain attending the inflammation begin to abate, he adviſes a poultice compoſed of a ripe apple well boiled, with the water preſſed out of it, and a ſmall quantity of camphor and powdered ſaffron added to it.

By perſevering duly in theſe means the inflammation is commonly at laſt removed. It is otherwiſe, however, in ſome inſtances: inſomuch, that notwithſtanding the utmoſt attention, every ſymptom is aggravated; the veſſels of the tunica conjunctiva become extremely turgid; the eye-lids ſwell to a conſiderable ſize; and the pain, which before was ſevere, is now inſupportable. In this ſituation, nothing has ever any effect in ſtopping the progreſs of the inflammation but local blood-letting carried to a conſiderable extent by inciſions made in the affected parts. For this purpoſe the mere diviſion of the turgid veſſels with a lancet or ſmall ſcalpel ſometimes anſwers;

anſwers; but in general it proves more ſucceſsful to take away ſmall portions from different parts of the internal ſurface of the eye-lids with ſmall convex ſciſſars, ſuch as is repreſented in Plate XXXIX. fig. 4. This, Mr Pellier obſerves, ſeldom fails of giving immediate relief; and he has never afterwards found it produce any inconvenience. The ſtate of the eye too being very critical, no remedy ſhould be omitted that affords any chance of obviating the preſent danger; for if this be not quickly done, ſuppuration will ſoon take place either in the coats of the eye, or in one or both of the chambers.

When matter is evidently formed, a frequent uſe of warm emollient fomentations, applied particularly to the eye by means of a funnel of paſteboard, will ſometimes produce a ſlow diſcharge of it at the inciſion in the cornea: but when this does not ſucceed in the ſpace of eight and forty hours, no more time ſhould be loſt; the matter ſhould be evacuated by an inciſion made in the moſt depending part of the

abſceſs,

abſceſs, when it is ſeated in the ſubſtance of the cornea; or, by opening the lips of the inciſions made for extracting the cataract, when the collection is in either of the chambers of the eye. By this means the patient will be immediately relieved from pain, while at the ſame time he will receive the only chance of preſerving the uſe of his eye.

There is ſtill another diſagreeable occurrence to which patients are liable during the firſt two or three weeks after this operation; a kind of ſtaphyloma, or herniary ſwelling, formed by the iris, or ſome other part, being forced out at the opening in the cornea, either by violent coughing, ſneezing, or ſome other effort; and in ſome inſtances, by expoſing the eye too ſoon and too frequently before the cicatrix is ſufficiently firm for reſiſting the preſſure thus produced upon it. When the ſwelling which thus takes place is ſmall, it may commonly be removed by touching it frequently with a ſmall pencil dipped in Goulard's extract of lead, concentrated by evaporation,

poration, or in any mild antimonial eſcharotic: An attempt, Mr Pellier obſerves, that may be made with perfect ſafety, if care be taken to prevent the cauſtic from hurting the reſt of the eye, by touching the diſeaſed part only with it, and immerſing the whole eye immediately in warm milk, or in ſome warm emollient decoction. But when the diſeaſe is farther advanced, and if it be of a firm ſolid nature, it anſwers better to remove the protruded part entirely either with the knife or the ſciſſars; or if it appears to be any part of the aqueous humour contained in a thin membranous production, as is ſometimes the caſe, all that is in general neceſſary is, to make an inciſion into it with a lancet of a ſize ſufficient for diſcharging it. It is ſcarcely neceſſary to obſerve, that after either of theſe operations, the parts muſt be treated with much attention, otherwiſe, inſtead of proving ſerviceable, they may do harm. A ſtrict antiphlogiſtic regimen muſt be obſerved. The eye ſhould be lightly covered, either with a ſmall bag,

ſuch

such as we have mentioned above, filled with soft wool, or with a compress of old linen soaked in a weak solution of saccharum Saturni.

Mr Pellier's method of extracting the cataract, which I have thus endeavoured to describe, with his treatment of the consequences which sometimes ensue from it, is the result of much experience, and usually proves more effectual than any other with which we are acquainted. Much of Mr Pellier's success undoubtedly proceeds from his superior dexterity in performing the operation; but much of it also depends upon the minute attention he pays to every case for a considerable time after the operation. In ordinary practice, and especially with the most part of itinerants, it is commonly supposed, if the operation be properly performed, and if the cataract comes away easily, that very little more is necessary on the part of the operator; but it is much otherwise with Mr Pellier, who considers the after treatment as so essential, that it is with difficulty he is ever prevailed

ed upon to operate where he cannot have the ſubſequent management of the caſe for two or three weeks: And by conſtant and aſſiduous attention, he is often able to obviate ſymptoms which might otherwiſe prove alarming; and which, in many inſtances, might even render operations abortive which would otherwiſe be attended with the moſt complete ſucceſs. Of this I have ſeen different inſtances.

In a former part of this work, I entered into a full diſcuſſion of the reſpective merits of the two operations of couching and extracting the cataract; and I then endeavoured to eſtabliſh the preference of the former: But if experience ſhows, that Mr Pellier's method of operating is attended with more permanent advantages, I ſhall be very ready to retract my opinion; for which purpoſe, I ſhall carefully attend to the conſequences of thoſe operations which he has performed in this country; and as the public will probably be intereſted in them, I ſhall at ſome future period perhaps communicate the event of them.

There

PLATE. XL.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4

Divines Sculpt

There are two points of importance in this operation, with respect to which I differ in opinion from Mr Pellier. When he considers it as proper to divide the capsule of the lens, he frequently does it, as we have already observed, by insinuating through the pupil the point of the same knife with which he makes the incision of the cornea, even before the incision is completed.

This may possibly be done with safety in every instance by such a very dexterous operator as Mr Pellier: but as most practitioners, by imitating him, would run the risk of hurting the iris, the practice should not be encouraged; for when the capsule of the lens is to be divided, it is surely better to do it after the incision of the cornea is finished, by lifting up the flap, and passing in the end of the blunt probe represented in Plate XXX. fig. 5. Vol. III. or of the cistatome, Plate XL. fig. 3.

The other point to which I allude respects the practicability of extracting the capsule

capſule of the lens, without doing any material injury to the eye.

When the cataract appears to be of a firm conſiſtence, and when the diſeaſe is ſuppoſed to be confined entirely to the lens itſelf, Mr Pellier frequently opens the capſule in the manner I have juſt deſcribed, with a view to allow of a more eaſy extraction of the lens; and in this caſe he admits that the capſule remains in the eye: But when he finds, after an operation, that the capſule of the lens becomes opake, or if he obſerves that any part of it has been previouſly in a ſtate of opacity, he adviſes it to be cautiouſly extracted with ſmall forceps: And again, in every caſe where he ſuſpects the cataract to be fluid, forming what he calls the Cyſtic or Hydatid Cataract, he avoids the diviſion of the capſule, and adviſes the lens to be taken out included in it; which he ſays may be done in the manner we have mentioned, by making an equal and gradual preſſure upon the ball of the eye immediately after the diviſion of the cornea; or by ſeparating

any

any adheſions which take place between the capſule of the lens and the contiguous parts, with the curette paſſed through the pupil.

I have not indeed ſeen Mr Pellier extract the capſule of the lens after removing the lens itſelf; for no caſes requiring it occurred during his reſidence here: I received, however, full information of his method of doing it, by introducing ſmall forceps at the pupil. But as I cannot imagine how this can be done without injuring the eye materially, I muſt ſtill retain the opinion I formerly advanced of it, till I have evident proofs of its being practiſed with advantage*: And whenever theſe are offered, I ſhall receive them with much ſatisfaction, as it would in many inſtances be a material improvement of this operation.

We have now to conſider the poſſibility of extracting the capſule entire along with the lens: Several practitioners in this country had opportunities of ſeeing Mr Pellier ex-

* Vid. Vol. III. page 442.

tract cataracts, as they ſuppoſed, in this ſituation. I ſaw him operate in two inſtances of this kind, where he, as well as ſeveral others, imagined that the real capſule was taken out along with the lens; but as I entertain a different opinion on this ſubject, it is proper to ſtate the reaſons which have led me to adopt it.

1. The capſule of the vitreous humour, and that which contains the lens, are ſo intimately connected together, that it is difficult, or perhaps impoſſible, for the beſt anatomiſt to determine whether they are ſeparate productions or not: At leaſt they are ſo intimately connected, that they appear to be formed of the ſame ſubſtance, the cryſtalline lens being ſurrounded with a coat which ſeems to be a thin lamella of that which forms the capſule of the vitreous humour. The contrary, I know, has been alleged; but whoever will make the experiment, will find that the capſule of the lens has exactly the appearance which I have mentioned. It appears to be a production of the other; and they cannot be ſeparated

separated without tearing or destroying some part of one or both of them: Now, if this is the case, when the contents of the eye are all laid open, and when all the assistance can be got that nice dissection affords, it appears to me impossible that they should be separated in the operation of extracting the cataract without injuring the rest of the eye, and particularly the vitreous humour, very materially.

2. In performing this part of the operation, viz. in attempting to extract the capsule of the lens entire, Mr Pellier does it by means which do not appear adequate to the intended effect. He does it, in most instances, by making a gradual equal pressure over the ball of the eye, and not by the introduction of forceps. Now it is difficult to conceive in what manner pressure applied to the eye can separate that intimate connection which certainly takes place between the capsule of the vitreous humour and that of the crystalline lens: By pressure they are frequently both forced out; but no operator would wish to meet with

this, and no perſon guards more effectually againſt it than Mr Pellier, inſomuch, that the eſcape of the vitreous humour, or even of any part of it, is an occurrence he rarely meets with. In ſome caſes indeed Mr Pellier inſinuates his curette, as we have already remarked, through the pupil, with a view to detach the capſule of the lens from the contiguous parts: He allows however that this is not always neceſſary; and beſides, there is much cauſe to ſuſpect that the eye would often be hurt by it.

3. When it is found, as we have already obſerved, either during the operation of extracting the cataract, or afterwards, that the capſule of the lens is opake, even Mr Pellier himſelf does not attempt to extract it by preſſure. In this caſe he does it with forceps paſſed through the pupil. Now, if preſſure anſwers in one variety of the diſeaſe, it ought probably to do ſo in others, ſo that the uſe of forceps ſhould not be neceſſary; but it is only in the hydatid or ſoft cataract which Mr Pellier allows that this practice by preſſure ſucceeds.

4. But

4. But as ſeveral practitioners, both here and elſewhere, have ſeen Mr Pellier extract the cataract, ſurrounded, as they imagined, with its proper capſule; and as he aſſerts with confidence, that it may be done merely by preſſure; it will be aſked, In what manner is this apparent contradiction to be explained? I can account for it only on the ſuppoſition of there being in all ſuch caſes, where this practice of extracting the capſule entire is conſidered as admiſſible, a preternatural formation of a new membrane within the capſule of the lens; which being of a firmer nature than the capſule itſelf, and probably very little, if at all, attached to the contiguous parts, we can eaſily ſee how it may be forced out entire, even by moderate preſſure, and how eaſily byſtanders may be deceived with it. When I firſt ſaw it done by Mr Pellier, as I had previouſly been informed that the whole capſule would be extracted along with the lens; as I had heard from very reſpectable authority that he had done it in different inſtances at Glaſgow; and as I certainly

ſaw the cryſtalline puſhed out, ſurrounded with a membranous bag, I muſt own that I was nearly converted to Mr Pellier's opinion: But on further conſideration, the reaſons I have mentioned againſt it appeared too concluſive, even for this weight of evidence to remove; and ſince that period, a circumſtance has occurred, which with me puts the matter beyond a doubt. A cataract of a ſoft nature was extracted by Mr Pellier, ſurrounded with this membrane or bag quite entire. From the firſt I doubted much of its being the proper capſule of the lens, as it was ſaid to be: for this tunic is well known to be exceedingly fine and delicate; whereas this was a membrane of a tolerable degree of firmneſs, which required ſome force to tear it. The patient, however, diſtinguiſhed objects immediately after the operation; and what was then advanced concerning it could not be well refuted: But by ſome cauſe or other, poſſibly from the eye becoming inflamed, an opacity ſoon began to form in the old ſite of the cryſtalline, directly

directly behind the pupil, forming to all appearance, a real cataract; and it now continues even after the inflammation is removed. Whatever explanation may be given of this by thoſe who are inclined to ſupport the contrary opinion, it proves to me a convincing proof, that ſome deception takes place in thoſe caſes where it is ſuppoſed the capſule is extracted entire along with the lens; for in this caſe, where the capſule was imagined to be taken entirely out, the opacity which ſucceeded, and which ſtill exiſts, appears evidently to be ſeated in the capſule, and no where elſe. I therefore conclude, where practitioners have imagined the capſule has been extracted entire, that they have been deceived by the lens being enveloped with a preternatural bag or cyſt, formed perhaps by an inflammatory exſudation from the internal ſurface of the capſule: That this production however is always formed in this manner, I will not poſitively aſſert; but in my opinion it is the moſt probable way by which we can account for it.

In this variety of cataract, however, it is certainly right to attempt the extraction of this membrane, for viſion will not be perfect while it continues in the eye. But if I may venture to diſſent from the opinion of one ſo verſant in matters of this kind as Mr Pellier is, I would obſerve, that we ſhould not, even in the moſt fluid cataract, endeavour to extract it without opening the capſule ſo as to diſcharge the contents of it: for as the cyſt of which we have been ſpeaking does not appear to be firmly attached to the neighbouring parts, it is probable it would be ſeparated from them with as much eaſe when quite empty as when perfectly full, and it would in this ſtate paſs through the pupil with much leſs riſk of hurting the iris; an object which we have elſewhere endeavoured to ſhow is perhaps the moſt important of any in this operation.

Theſe are the remarks I have to offer on Mr Pellier's theory and practice in the cataract. If farther obſervation ſhall convince me that I am wrong, I will readily acknow-

acknowledge my mistake; but in the mean time, the reasons I have adduced appear to evince the impropriety of extracting the capsule piecemeal by means of forceps passed through the pupil, as well as the impossibility of making it pass entire along with the lens.

Mr Pellier's practice, as we have already observed, is not confined to the treatment of the cataract. He is equally accustomed to the management of every other disease to which the eyes are liable. In all of them he has acquired much useful experience; but we shall confine our account of his practice to those points in which his improvements appear to be of most importance.

In the treatment of ophthalmia or inflammation of the eyes, whatever may be the cause of the disease, he condemns the use of emollients, and trusts entirely to remedies of an opposite nature. When the inflammation is violent, is of long duration, and does not yield to the usual means employed for it, he recommends a free division of the turgid vessels on the adnata; and

and in order to do the operation effectually, he carries an inciſion round the whole globe of the eye, on that part of it where it appears to be moſt inflamed. The curved ſharp-pointed knife, Plate XLI. fig. 5. he recommends as the beſt inſtrument for this operation. But with thoſe not much accuſtomed to it, I believe it will be eaſier done with the knife delineated in Plate XXXI. fig. 3. Vol. III. *

The ſcarifications being completed, the eye ſhould be immediately bathed in warm milk and water, in order to promote as much as poſſible a free diſcharge of blood: and this being done, he adviſes a little of the following ointment to be introduced on the end of a blunt probe between the eye-lids, to be repeated once or twice daily as long as the diſeaſe may continue, at the ſame time that a weak ſaturnine ſolution

* I was clearly of this opinion when the firſt edition of this volume went to the preſs in the month of February laſt; but having of late made trial of Mr Pellier's inſtrument in ſeveral caſes, I muſt do him the juſtice of acknowledging that it anſwers better than any other I have ever uſed.

PLATE XLI.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

lution is employed morning and evening as a wash.

℞. Mercur. precip. rubr.
Lapid. calamin. pp^{t}. āā ℥iſs.
Lythargyrii pp^{t}. - ℥i.
Tutiæ pp^{t}. - ℥ſs.
Cinnab. nativ. - ℈i.

F. pulv. tenuiſſim. et miſce cum axungiæ porcinæ ℥ii. et adde balſam. Peruviani gutt. xv.

This ointment Mr Pellier makes uſe of with much freedom and advantage in all diſeaſes of the eyes that have either been induced by inflammation, or that happen to be attended with it; and he finds it particularly uſeful in thoſe caſes of Albugo or Leucoma where corroſive applications are admiſſible.

It ſometimes happens in the ſmall-pox, as well as in ſevere inflammatory affections of the eye, from whatever cauſe they may originate, that the centre of the cornea is left in a ſtate of opacity, by matter forming between the coats of it. When this is not carried off by the remedies uſually employed, if the iris, retina, and other

other parts of the eye appear to be ſound, Mr Pellier adviſes an operation, from which he has in different inſtances derived much advantage. The centre of the cornea being opake, the rays of light are thus prevented from paſſing to the bottom of the eye through the pupil; but when the ſides or external border of the tranſparent cornea ſtill remain clear and ſound, light may be allowed to paſs to the retina by enlarging the pupil; which, Mr Pellier ſays, may be done with ſafety by making an inciſion from one ſide of the iris to the other. And his method of doing it is this: He firſt makes an inciſion in the prominent part of the cornea, in the ſame manner as for extracting the cataract: He then inſerts a ſmall grooved director beneath the flap of the cornea through the pupil; and having paſſed it in a horizontal direction immediately behind the iris towards the outer angle of the eye, he now takes a pair of ſmall curvid ſciſſars, and paſſing one of their blades along the groove of the director, he at once divides this part of the iris, when he withdraws the inſtruments

and

and makes a ſimilar inciſion on the oppoſite ſide of the eye. By this means, when the opacity is confined to the centre of the cornea, which is frequently the caſe, the rays of light which paſs through the ſides of it will now get acceſs to the bottom of the eye, by the pupil being extended from one ſide of the iris to the other: and thus a degree of viſion will be produced which could not otherwiſe be obtained. It will readily be imagined that perfect viſion is not to be expected in this ſtate of the eye; for a variety of reaſons concur againſt it: but it is a matter of much importance for a perſon already totally blind to be rendered capable of finding his way, and of conducting himſelf from one place to another, which by this operation Mr Pellier has done in different inſtances: and, ſo far as I know, the public are indebted to him alone for propoſing it.

After the operation, the eye muſt be tied up, and treated in the ſame manner and with the ſame attention as is done after the extraction of the cataract; for where

where ſo much violence is done to the eye, if inflammation be not guarded againſt, much miſchief may occur from it.

In deſcribing the method of dividing the iris, we have ſaid that it ſhould be done with the ſciſſars; for this membrane being looſe and unſupported, it would yield before the edge of the ſharpeſt knife. In the introduction of the director and ſciſſars, care ſhould be taken, in paſſing them between the iris and lens, not to injure either the lens or its capſule; that is when the diſeaſe is not complicated with a cataract; for when the cryſtalline is opake it ſhould be extracted.

In the treatment of the fiſtula lachrymalis, Mr Pellier has much merit; for, with moſt operators, it ſeldom happens that any permanent advantage is obtained from any of the remedies employed in it, and even they who are much accuſtomed to the management of it often fail entirely. Mr Pellier does not ſay that he always ſucceeds; but he does ſo in moſt inſtances; and I know that his method has often proved ſucceſsful where others have failed.

In

In a confirmed fistula lachrymalis, the curative intention is, to form an opening between the lachrymal sac and the corresponding nostril. There are different methods of effecting this:—By searching with a blunt probe, to discover the natural passage: if this fails, by making an artificial opening through the os unguis: and when neither of these succeed, by leaving a tube or canula, either in the natural or artificial opening, for the purpose of conducting the tears to the nose.

As we know from experience, that the operation fails in various instances, from the passage becoming again impervious, and this whether it may have been done by opening the natural passage or by forming another, it would be the idea perhaps of most practitioners to leave a tube in the opening, were it not liable to one very material objection, namely, the uncertainty of its continuing fixed in its situation: for hitherto we have not been possessed of any certain method of preventing the canula either from rising and forcing its way out

at

at the corner of the eye, or from paſſing down and coming out at the noſe. In Plate XXXVII. Vol. III. I have already delineated various forms of tubes which have been uſed for this purpoſe; and of theſe, figures 3. and 10. will in moſt caſes, I believe, be found to anſwer: for when they are preſſed ſufficiently into the opening through the os unguis, the bulge or prominence with which they are furniſhed above, will for the moſt part prevent them from riſing, while their conical ſhape will prevent them from paſſing into the noſe. I muſt, however, acknowledge, that they ſometimes fail; and that an invention of Mr Pellier's appears to be much ſuperior to them. I know one inſtance in which it has hitherto anſwered completely, and eight months have elapſed ſince the operation *. From the form of the tube, there is much reaſon to imagine it will anſwer; and Mr Pellier aſſerts, that when

* It is now, when this ſecond edition is going to the preſs, eighteen months ſince this operation was performed: The tube ſtill continues fixed in its ſituation; it is not productive of any kind of uneaſineſs; and the cure is complete.

PLATE XLII.

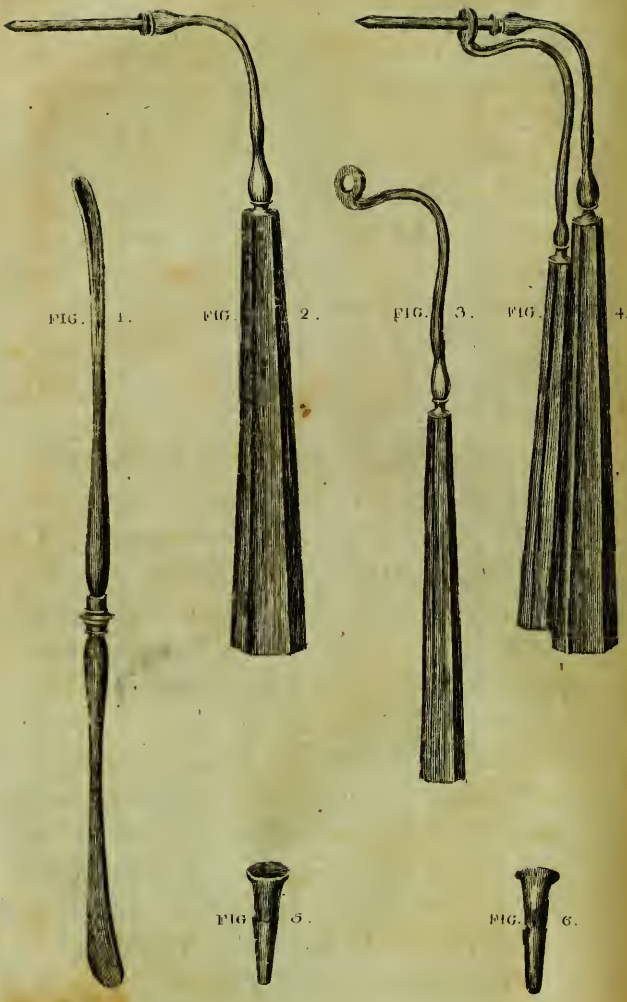


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

when it is properly introduced it never fails. Two representations of it are given in Plate XLII. figures 5 and 6. It may be made either of gold or lead. Mr Pellier commonly employs lead: but when made of gold, the tube will not be so bulky if of the same strength; and as this metal receives a finer polish, by which the opening through it will not so readily fill up with the tears, it ought, I think, to be preferred.

The peculiarity of form of Mr Pellier's tubes consists in their having two projecting edges; one at the top forming a kind of brim, corresponding as nearly as possible to the size of the lachrymal sac; and the other near to the middle between this and the other end of the instrument; by which means, when it is properly fixed in the passage where it is to remain, it is kept firm in its situation by the granulations which shoot out from the contiguous parts; and which, by grasping as it were that part of the tube which lies between the two edges, effectually prevent it from passing

either upwards or downwards; and hence that material inconvenience is avoided which practitioners who employ cylindrical tubes always complain of.

It is neceſſary, however, to obſerve, that the utmoſt nicety is required in the uſe either of theſe or indeed of any other tubes; in the firſt place, in adapting them with exactneſs to the ſize of the openings thro' which they are to paſs; and afterwards in the introducing them a proper length into the noſe: For if a tube be either too ſmall or too large for the opening through the os unguis, we may readily imagine that it will not anſwer; and if it be preſſed even a very little too far into the noſtril, it will neceſſarily irritate the lining membrane of that cavity ſo as to create much pain and inconvenience. The tubes repreſented in Plate XLII. are of a ſize both in length and thickneſs which anſwer for the moſt part of adults, but practitioners ſhould be provided with them of various ſizes.

The method of uſing them is this. After laying the lachrymal ſac freely open in the uſual

uſual way, the natural conduit of the tears is ſearched for, either with a firm probe, or with the conductor, Plate XLII. fig. 2.; and Mr Pellier aſſerts that he never fails in finding it. As ſoon as this is diſcovered, the tube muſt be put upon the conductor, previouſly furniſhed with the compreſſor, fig. 3. as in fig. 4.; and it ſhould be of ſuch a ſize that the conductor may fit it exactly in point of thickneſs, while the end of this inſtrument is ſo much longer as to paſs through it about the tenth part of an inch. The point of the conductor is now to be inſinuated into the lachrymal duct; and being puſhed in till it reaches the noſtril, which may be known either by inſerting a probe into it, or by a few drops of blood being obſerved to fall from the noſe, the conductor being no longer neceſſary, muſt be withdrawn, taking care to leave the compreſſor upon the upper brim or edge of the canula; which muſt be firmly preſſed down with it in the left hand, while the conductor is removed with the other. If this precaution be not attended to, the canula would be brought

out along with the conductor; but this inconvenience is in this manner very effectually prevented, while the ſame inſtrument ſerves more eaſily than any other to preſs the canula to a ſufficient depth in the lachrymal duct: a point of the firſt importance in the performing of this operation; for if the canula be not fixed with ſome degree of firmneſs even at the firſt attempt, there will afterwards be more pain and difficulty in doing it.

This being done, the compreſſor muſt next be taken out; and, with a view to diſcover whether the canula is at a proper depth or not, a little milk and water ſhould be injected through it with the ſyringe, Plate XXXVII. fig. 1. If the injection paſſes freely and eaſily into the noſtril, while the upper part of the canula is preſſed down to the middle of the lachrymal ſac, there will be no reaſon to doubt of its being properly placed: If, on the contrary, any obſtruction occurs, there will be reaſon to ſuſpect that it is already puſhed too far, and that it preſſes againſt the os ſpongioſum inferius; in which caſe the

the canula ſhould be withdrawn, with a view to ſhorten it, when it muſt be again introduced in the manner we have mentioned.

As the wound recently made in the ſac will yield a conſiderable quantity of matter, it is neceſſary to preſerve it open for eight or ten days with a bit of ſoft lint ſpread with any emollient ointment, taking care to cover the whole with a compreſs of ſoft old linen, ſecured with a proper bandage. An injection of milk and water ſhould be daily paſſed through the canula; and at the end of this time, or whenever the ſuppuration is much diminiſhed, and the ſore looking clean and healthy, the doſſil of lint muſt be entirely removed; and a piece of court-plaſter being laid over the ſore, it may in this ſtate be left to heal, care being taken to renew the plaſter if any matter appears to form beneath it.

By this mode of treatment, caſes of fiſtula lachrymalis, that do not depend upon diſeaſed contiguous bones, or any latent diſeaſe of the conſtitution, will for the

moſt part, as Mr Pellier obſerves, be completely cured in three weeks, nay ſometimes in a fortnight, which by the uſual practice might require three, four, or five months.

As I have been witneſs of the moſt complete ſucceſs of Mr Pellier's practice in this diſeaſe, I have conſidered it as a point of juſtice, not only to Mr Pellier but to the Public, to give this full detail of it. Indeed, if I had not been convinced of the ſuperior utility of Mr Pellier's practice, and of the unreſerved manner in which he communicated his knowledge of the diſeaſes of the eyes, I ſhould have deemed it impertinent to have given the preceding account of either to the Public.

Since the firſt edition of this volume was publiſhed, the opinion which I then ſuggeſted, of the impoſſibility of extracting the capſule of the lens entire, has been the ſubject of much inveſtigation: And as it now appears that it cannot be done, I ſtill conclude, that Mr Pellier, and others who adopted a different opinion, have been deceived.

CHAP.

CHAPTER XXVIII.

Of the DISEASES *of the* NOSE *and* FAUCES.

SECTION I.

Anatomical Deſcription of the NOSE *and* FAUCES.

A MINUTE deſcription of theſe parts is not neceſſary for our purpoſe; but a few remarks upon their general form and ſtructure may ſerve in ſome meaſure to elucidate the nature of thoſe diſeaſes to which they are liable.

The external prominent part of the noſe is chiefly compoſed of bones and cartila-

ges, which ſerve to protect the more deep-ſeated parts of the organ of ſmell, and to form a kind of vaulted paſſage for the air to the throat.

This paſſage, divided by the ſeptum naſi, forms the noſtrils, which extend almoſt in a horizontal direction from the ſuperior part of the upper lip backwards to the pharynx, where they terminate above the velum pendulum palati.

The ſuperior and lateral parts of the arch of the noſe are formed by the naſal proceſs of the os frontis,—by the two oſſa naſi,—by the oſſa unguis,—and by an extenſive proceſs from each of the oſſa maxillaria, to which the cartilaginous alæ of the noſe, covered by the common teguments, are immediately attached.

The ſeptum narium is formed by the naſal proceſs of the ethmoid bone,—by the vomer,—by the middle cartilage of the noſe,—and by the ſpinous proceſſes of the palate and maxillary bones.

The under part of the cavity of the noſe is anteriorly bounded by a horizontal

tal process of the ossa maxillaria, and backwards by a process of a similar form, from each of the ossa palati. The sphenoid and ethmoid bones form the boundaries of the posterior part of the nares.

Towards the upper part of the nose, we meet with a very beautiful contrivance of nature for enlarging the organ of smell. In the superior part of each nostril, opposite to the septum, we find a spongy, cellular production of bone, proceeding from the os ethmoides, which, from their form, texture, and situation, are termed Conchæ, Ossa Spongiosa, or Ossa Turbinata Superiora: And beneath these, on the same side of the nostrils, are two bodies of a similar texture, which have likewise been supposed to be productions of the ethmoid bone, but of which there is no evidence. These, from their situation, are termed Ossa Spongiosa Inferiora. In some instances, two, and even three, small bones of this kind have been met with in each nostril; but this is not a frequent occurrence.

These bodies being prominent, and even some-

ſomewhat irregular on their ſurfaces, give the noſtrils a winding, or even a crooked appearance: but every practitioner will know that they are ſo in appearance only; inſomuch that a common probe may be paſſed almoſt in a ſtraight line from the external nares to the throat.

We meet with ſeveral openings which terminate in the noſtrils, ſome of which it is material for ſurgeons to be acquainted with; viz. The ductus inciſorii, which commence at the under and back part of the noſtrils, and terminate behind the dentes inciſivi of the upper jaw;—the ſinuſes of the ſphenoid and frontal bones, which both open into the upper part of the nares;—the ſinus of each maxillary bone, commonly termed the Antrum Maxillare, or Highmorianum, which opens into the noſe between the upper and under oſſa ſpongioſa of the ſame ſide;—and laſtly, the ducts of the lachrymal ſacs, which we have formerly had occaſion to deſcribe, and which terminate on each ſide immediately

diately beneath the os spongiosum inferius.

All the cavity of the nostrils; the different sinuses we have mentioned, as well as the passages leading to them; the whole surfaces of the ossa spongiosa, and even the fauces, are covered or lined with a thick, soft membrane, which, from its affording a plentiful secretion of mucus, is commonly termed Membrana Pituitaria, or Membrana Schneideri, from Schneider, the first anatomist who gave an accurate description of it.

This membrane appears to be a continuation of the cuticle. Towards the external nares, near to its connection with the epidermis, it is exceedingly thin; but as it proceeds backward upon the septum nasi and on the ossa spongiosa, it acquires a considerable degree of thickness; and again becomes thin as it proceeds to line the different sinuses.

The cavity of the nose, as we have already remarked, is separated from the mouth by a plate of bone, formed by a process

proceſs from each of the oſſa maxillaria, and by the oſſa palati. To the poſterior edge of the laſt-mentioned bone there is a firm membrane connected, termed the Velum or Valvula Palati, formed by a junction of the common membrane of the mouth, with a continuation of the Membrana Schneideri, together with ſeveral muſcular faſciculi, intended for the motion of this and the contiguous parts. This membrane, as it ſtretches back from the palate, falls down and terminates in the uvula immediately above the root of the tongue; by which it is not only well fitted for preventing the food, during maſtication and deglutition, from paſſing up to the noſe, but for conveying backwards to the pharynx all ſuch parts of the mucus furniſhed by the membrane of the noſe and contiguous ſinuſes as are not diſcharged by the external nares.

On each ſide of the throat, at the termination of the velum pendulum palati, there is ſituated a prominent glandular ſubſtance commonly termed the Amygdalæ

or

or Almonds of the Ear. They are naturally of a soft, yielding texture; and in general they have excavations of different degrees of deepness on various parts of them, which, by those not acquainted with the usual appearance of these parts, are often mistaken for ulcerations. On looking farther into the throat, along the course of the tongue, a thin, elastic, cartilaginous body is observed, termed Epiglottis, which is so placed as to prevent the food from falling into the trachea in its passage from the mouth to the pharynx, a wide capacious bag, which terminates in the œsophagus, and occupies all that part of the throat which is seen on looking into the mouth.

From this description it is evident, that the pharynx is furnished with several openings or outlets. Below, it terminates in the œsophagus;—anteriorly, it communicates directly with the mouth;—and from the superior part of the bag it has a free direct communication with the posterior openings of the nostrils.

We

We ſhall now proceed to conſider the diſeaſes of the parts which we have deſcribed, and the operations which are practiſed in the treatment of them. The ſubjects to be treated of are,—Hemorrhagies from the Noſtrils—Ozæna—Imperforated Noſtrils—Polypous Excreſcences in the Noſe and Throat—Extirpation of the Amygdalæ and Uvula— and Scarifying and Fomenting the Throat.

SECTION II.

Of Hemorrhagies *from the* Nostrils.

THE internal parts of the noſe are ſupplied almoſt entirely with blood from the internal maxillary artery: And, in general, the branches of this artery which go to the noſe are ſo extremely ſmall, as to render a diviſion or rupture of any of them an object of little importance. In ſome inſtances, however, the reverſe of this takes

takes place, and hemorrhagies occur from these parts which prove highly embarrassing to practitioners, and very hazardous to patients. They have sometimes even baffled every attempt that could be made to restrain them. However trifling, therefore, this evacuation may for the most part appear, it ought always to be treated with attention.

In a great proportion of cases, a proper application of cold puts a temporary stoppage to the discharge; and in general, any future returns of it may be prevented by blood-letting, by a moderate use of cooling laxatives, and a low regimen.

In order to obtain all the advantages that may be derived from the application of cold, it must be employed in various ways, and to a considerable extent. The patient should be placed in a large apartment, with a current of cold air passing through it: His food and drink ought all to be cold: His face should be frequently bathed, and even immersed, in cold water, or in cold water with a proportion of vinegar:

gar: A ſtrong ſolution of alum, or of any other aſtringent, ſhould be uſed from time to time as a gargle: Compreſſes wet in any liquid of this kind ſhould be applied over the noſe: When in bed, he ſhould be very lightly covered; and he ſhould ſleep with his head as high as poſſible.

By theſe means duly perſiſted in, naſal hemorrhagies may in general be removed; but in ſome inſtances no advantage whatever is derived from them, and the flow of blood is not in any degree diminiſhed by the moſt exact application of them.

In ſuch caſes, compreſſion of the ruptured blood-veſſel is alone to be depended on; but when the part affected is deeply ſeated in the noſtril, the application of preſſure is both difficult and uncertain. It will ſometimes happen that a doſſil of lint introduced into the bleeding noſtril will put an immediate ſtop to the diſcharge. This, however, is a rare occurrence; for the extent and diameter of the paſſage through which the doſſil muſt be

puſhed

pushed being very unequal, the effect produced by it must likewise be so: From this circumstance, we cannot place much dependence on this method of applying pressure.

In a former part of this work, when treating of evacuations of blood from the anus in cases of piles, we advised the application of pressure, by the introduction of a piece of gut, tied at one end, into the rectum, and by filling it at the opposite extremity with any cold liquid, to increase the degree of pressure by forcing up the liquid and securing it with a ligature. The same remedy may be employed in hemorrhagies from the nose. It has already been successfully made use of in a few instances; and may frequently, we think, be employed with advantage. A piece of hog's gut, that has been previously dried and moistened again, answers best. One end of it firmly tied with a bit of small packthread, should, by means of a probe or director, be pushed along the whole course of the nostril from which the blood is dis-

charged, to the upper end of the pharynx. The gut ſhould now be filled with cold vinegar, water, or any other cold liquid, by means of a ſyringe inſerted at the end hanging out at the noſtril; and as much being injected as the gut will admit, the whole ſhould be preſſed as far up as poſſible, and ſhould be ſecured in this ſituation by a firm ligature.

In this manner a very conſiderable degree of preſſure may be applied; and ſome advantage may be derived from the application of cold directly to the veſſel from whence the blood is diſcharged. In ſome inſtances, however, even this may be found to fail, owing to the ruptured veſſel being ſo ſituated that preſſure cannot in this manner be applied to it. In ſuch circumſtances, we muſt attempt by other means to put a ſtop to the hemorrhagy; and it may commonly be done in the following manner.

Let the curved inſtrument, fig. 4. Plate XLIII. be inſerted at one of the noſtrils with a piece of catgut or firm waxed thread con-

PLATE XLIII.

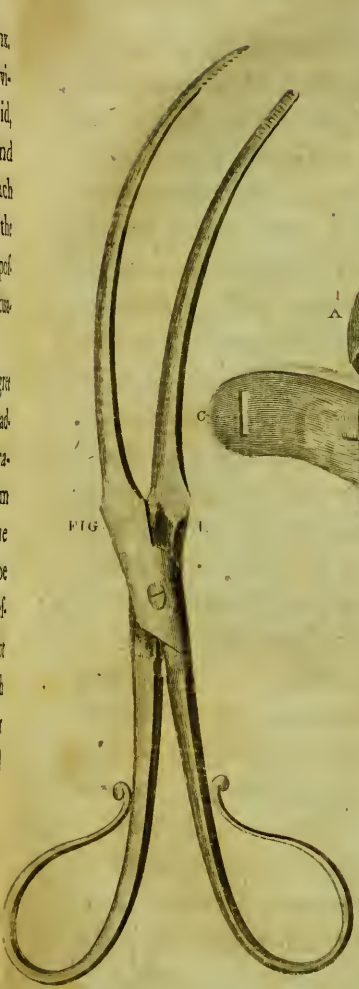


FIG. 1.

FIG. 2.

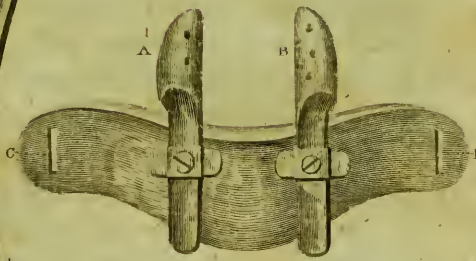


FIG. 3.

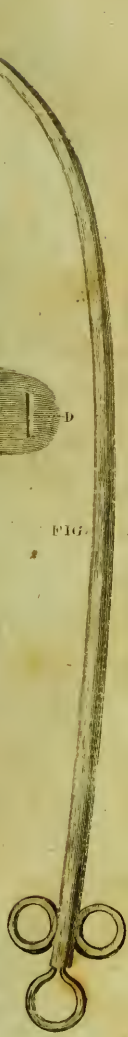


FIG.

contained in it; and being conveyed into the throat, the ligature must be laid hold of with a pair of forceps, and taken out at the mouth, when the instrument is to be withdrawn and again introduced at the other nostril with a ligature of the same kind. A bolster of soft lint, of a sufficient size for stuffing or filling up the posterior nares is now to be firmly tied to the two ends of the ligatures hanging out at the mouth when the opposite ends of them must be pulled forward at the nostrils till the cushion of lint is firmly applied to and fixed in the upper part of the pharynx; when a compress of lint must be applied to each nostril, and fixed in this situation by tying the two ligatures over it. The patient should now be laid to rest. If the bolsters of lint have been properly applied, no blood will escape either from the posterior or anterior nares; any blood that is effused into the nostrils will soon coagulate, and thus a stop will be put to the hemorrhagy. It is evident, however, that in order to insure success to this operation,

the bolſters of lint ſhould not only be applied with much exactneſs, but ought to be continued for a length of time ſufficient for admitting of the healing or reunion of the ruptured blood-veſſels.

In fixing the bolſter of lint in the back part of the mouth, we have adviſed two ligatures to be employed; one to be paſſed through each noſtril. In this manner it may be applied not only more firmly, but more equally, than by the uſual method of only one ligature paſſed through that noſtril from whence the blood is diſcharged.

SECTION III.

Of an Ozæna.

THE term Ozæna has in general been applied to ſuch ulcers of the noſe as are foul, that diſcharge a fetid matter, and that are attended with a carious ſtate of one or more of the bones; whilſt by ſome the ſame general denomination of ozæna is applied to every ulcer in the noſtrils, whether

whether attended with a caries or not.—At preſent we ſhall adhere to this laſt acceptation of the term.

Every catarrh affecting the lining membrane of the noſe, is attended in a greater or leſſer degree with an inflamed ſtate of the parts immediately diſeaſed. But we know, that in general this terminates eaſily, and that the inflammation is removed by a plentiful diſcharge either of mucus or of a thick yellow matter. In ſome inſtances, however, even after every other catarrhal ſymptom is removed, this diſcharge of matter continues obſtinate, either from ulceration alone, or perhaps from ulceration conjoined with fulneſs and ſwelling of the lining membrane of the noſe.

Expoſure to cold is to be conſidered as the moſt frequent cauſe of this ſtate of the diſeaſe; but external violence of every kind that terminates in an inflamed ſtate of the membrane of the noſe, ſuch as the application of acrid irritating ſubſtances, blows and bruiſes, &c. may likewiſe be productive of it.

When the ſyſtem is not affected with any other diſeaſe, this is the moſt ſimple variety of an ozæna; and as in this ſtate we ſuppoſe the affection to be perfectly local, local remedies ought alone to be recommended.

In this ſtate of the diſeaſe, applications of a moderately drying and aſtringent nature are chiefly to be depended on. Of theſe, decoctions of walnut-tree leaves, of Peruvian or oak bark, mixed with a ſolution of alum, and all the ſaturnine ſolutions, are perhaps equal if not preferable to any. Brandy or any other ardent ſpirits diluted with water, and lime-water, may likewiſe be employed with advantage.

Doſſils of ſoft lint ſoaked in any of theſe ſhould be introduced into the affected noſtril three or four times daily, and ſhould be puſhed up as far as may be neceſſary for coming into contact with the affected parts: and every night at bed-time an ointment ſhould be applied, prepared with a conſiderable proportion of calcined zinc or of lapis calaminaris.

By

By a due continuation of these means, every local affection depending on ulceration of the membrane of the nose will be at last removed. But instances have occurred of other diseases being mistaken for sores in the nose, and of the running produced by them continuing to resist every effort that could be made for its removal. This is particularly the case with collections of matter in the antrum maxillare.

In the anatomical description we have given of these parts, we have seen, that there is naturally a passage or opening from the antrum maxillare into the nose immediately below and covered by the os spongiosum inferius of the same side. In collections of matter in this cavity, when in considerable quantity, it is occasionally discharged by this outlet into the nose in every posture of the body, and almost always when the patient lies on the sound or opposite side, if the passage be not obstructed. The method of treatment best suited for the removal of collections in the antrum maxillare will be the subject of a

ſection in the enſuing chapter: At preſent we have only to ſay, that in the treatment of diſeaſes attended with a diſcharge of matter from the noſe, practitioners ought to be on their guard, leſt, by miſtaking one diſeaſe for another, miſchief may be done; not only by a miſapplication of remedies, but by thoſe means being omitted from whence alone any real advantage could be derived.

When, again, the matter diſcharged from an ulcer in the noſe is thin, fetid, and of a brown or ſomewhat black colour, as there will be much cauſe to ſuſpect from this that the contiguous bones are carious, it will be in vain to expect a cure till theſe are removed. We may in general be certain of the exiſtence of caries merely by the peculiar fetor of the matter which ſuch ſores afford; but when any doubt remains of this, we have it commonly in our power to be determined with certainty by the introduction of a probe.

As a carious ſtate of the bones of the noſe occurs more frequently as a ſymptom of

of lues venerea, than from any other cause, this ought to be kept in view in every affection of this nature: And whether we may be able to trace it with certainty as a symptom of this disease or not, whenever there is the least cause for suspicion, the patient ought, without hesitation, to be put upon a long continued course of mercury. Indeed, from whatever cause the disorder may arise, mercury will not probably do harm; and as I have seen it prove serviceable even where there was no cause to suspect a venereal taint, I now in general make it a rule, in all such cases, to advise it immediately.

In the mean time the local treatment of the sores should be particularly attended to. The parts should be bathed from time to time with one or other of the decoctions already mentioned; and as the soft spongy bones of the nose are apt, when carious, to produce troublesome fungous excrescences, ointments, impregnated with corrosive applications, should be employed occasionally; and of these there

are

are none I have ever tried that anſwer ſo well as prepared verdegris or red precipitate. There is a general prejudice indeed againſt the uſe of remedies of this kind in diſeaſes of the internal parts of the noſe, from a fear of their doing miſchief, by irritating the very ſenſible membrane to which they are applied. There is no good cauſe, however, for this timidity; and I can ſay from experience, that ointments, ſuch as I have mentioned, of a ſtrength ſufficient for keeping down the moſt part of fungous excreſcences, may be employed with much ſafety, and without any riſk of injuring the contiguous parts. It is ſcarcely neceſſary to remark, that in the uſe of remedies of this kind, ſome prudence and attention is required to adapt the ſtrength of them to the parts to which they are to be applied. The internal ſurface of the noſe will not bear the ſame degree of irritation that may with ſafety be applied to ſome other parts of the body; but it will bear the application of corroſive ointments more ſtrongly impregnated than

is commonly imagined. A liniment compoſed of wax and oil, with an eighth or ninth part of red precipitate, or a ſmaller proportion of verdegris, may in general be employed with perfect ſafety, and the corroſive powers of it can be occaſionally increaſed or diminiſhed. The growth of fungous excreſcences being thus prevented, and the ſores being kept clean by the frequent uſe of an aſtringent antiſeptic waſh, the paſſage of the noſtril will be preſerved pervious, the diſorder will not ſpread ſo readily, and at the ſame time the diſeaſed bones will probably be more quickly ſeparated and thrown off than when theſe circumſtances are not duly attended to.

Till the caries is removed, no permanent cure can be expected. The treatment therefore which we have juſt recommended ſhould be perſiſted in till this is fully accompliſhed. Indeed, after a ſufficient quantity of mercury is exhibited for the removal of any latent venereal taint that might exiſt in the ſyſtem, all that we can expect farther from art, is to aſſiſt in the manner we

we have adviſed, in effecting a ſeparation of ſuch bones as are diſeaſed. This being done, the ſores will now be of a milder nature, and will in general heal by a continuance of the aſtringent applications we have already pointed out.

This is the practice which by experience I have found to prove the moſt ſucceſsful in caſes of ozæna. It muſt however be acknowledged, that no remedies with which we are acquainted can with certainty be depended on; and ulcers of this kind prove conſtantly extremely tedious, not only from the difficulty of reaching them with proper dreſſings, but from the oſſa ſpongioſa, when they become carious, being always ſlow in exfoliating. When however the ſyſtem is not otherwiſe diſeaſed, the means we have mentioned, being perſevered in, will very commonly accompliſh our purpoſe.

SECT.

SECTION IV.

Of Imperforated Nostrils.

CHILDREN are not unfrequently born with the vagina or anus in an imperforated ſtate; and although we know of no reaſon why the noſtrils ſhould not alſo be frequently imperforated, we are certain that it is a rare occurrence. Every practitioner, however, muſt have met with ſome inſtances of preternatural adheſions of the noſtrils, the conſequence of confluent ſmall-pox, of burns, or venereal ſores.

Obſtructions of this kind are in various degrees. In ſome caſes the noſtrils are only ſlightly contracted, without producing any material impediment of the breathing. In others, they are ſo much drawn together, as hardly to admit a common probe or a ſmall quill: And in a few, the paſſage is entirely obliterated.

In all ſuch caſes it is the object of ſurgery

gery to remove every preternatural obſtruction; but as any operation for this purpoſe is productive both of pain and inconvenience, the aſſiſtance of art is not frequently deſired. It ought undoubtedly, however, to be employed whenever the breathing is much obſtructed, or when the deformity produced by the diſeaſe is conſiderable.

When an opening is left in the obſtructed noſtril, however ſmall it may be, much aſſiſtance may be derived from it in effecting our intention. A ſmall grooved director being inſerted into it, the paſſage may be eaſily enlarged to its natural ſize, by running a ſmall biſtoury or ſcalpel into the groove in the courſe of the adheſion: But when there is no paſſage whatever, whether the affection may be owing to a natural conformation, or to any other cauſe, we ſhould, in the firſt place, by ſlow diſſection with a ſmall ſcalpel, endeavour to diſcover one of the noſtrils, taking care, with as much caution as poſſible, to keep the opening in a proper direc-

tion

tion between the septum and the contiguous external cartilage: And the passage being once discovered, it must be enlarged to the natural size in the manner we have mentioned, by the introduction of a director and bistoury. This being accomplished in one nostril, we must endeavour, by the same kind of cautious dissection, to discover the other.

A clear opening being thus formed into each nostril, our next object is to endeavour to preserve them of a full size, and to prevent adhesions from forming in any part of them; which by experience we know are extremely apt to occur, and which can be prevented only by much attention.

The introduction of dossils of lint of an adequate size, or of any other soft substance, and retaining them till there is no risk of future adhesions, taking care however to withdraw them daily for the purpose of cleansing or renewing them, might no doubt answer our intention: but metallic tubes, adapted to the size of the openings,

ings, at the ſame time that they allow the patient to breathe with freedom through the noſtrils, ſerve to diſtend the parts with more equality, and are more eaſily retained in their ſituation. Before being introduced, they ſhould be covered with ſoft leather ſpread with any emollient ointment; by which they ſit with more eaſe, and will be more readily withdrawn at the different dreſſings.

Various forms of tubes have been recommended for this purpoſe. Thoſe repreſented in fig. 2. Plate XLIII. are of a form which will be found to anſwer perhaps equally well with any that have been propoſed; and they may be retained either with a bandage round the head, or with adheſive plaſters connected with them. They ſhould be employed as long as any degree of ſoreneſs or excoriation is perceptible in the courſe of the inciſions; for if they are withdrawn before the ſores are completely healed, new adheſions or contractions will very certainly enſue.

It ſometimes happens from burns, as well

well as from the confluent small-pox, that along with a contraction, or perhaps a total obliteration, of one or both nostrils, an adhesion is produced between the nose and the skin of the upper lip. In this case the adhesion of the lip to the nose should, in the first place, be separated by slow dissection with a scalpel; and the sore thus produced should be perfectly heal and firmly cicatrised before any attempt is made to open the nostrils. It is scarcely necessary to remark, that, during the cure, the sore should not only be kept properly covered, but, with a view to remove any improper contraction which the lip may have acquired, it ought at each dressing to be tied down by several turns of a double-headed roller passed round and over the head.

SECTION V.

Of Polypi *in the* Nose *and* Throat.

THE internal ſurface of the noſe is liable to excreſcences, which, from their form being ſuppoſed to reſemble that of inſects of this name, have commonly been termed Polypi. Every part of the naſal cavity, and of the back part of the throat, is liable to theſe excreſcences; but moſt frequently they originate from that part of the membrane of the noſe which lines or covers the oſſa ſpongioſa. In general they are confined to one ſide of the noſe, and they do not commonly appear ſo far back as the throat; but in ſome inſtances they occupy both noſtrils, and in others they are ſo large as to be diſtinctly perceived on looking through the mouth into the pharynx. In ſome caſes, indeed, they are found to originate from the pharynx.

The

The firſt warning which a patient commonly receives of this diſeaſe, is a partial loſs of ſmell, attended with a ſenſation of fulneſs or obſtruction in ſome particular part of the noſe, very ſimilar to what is experienced from the ſtuffing of the noſtrils in a common cold or catarrh. This continues to increaſe, till a ſmall tumor or excreſcence is perceived in one, and ſometimes in both, noſtrils; which in ſome inſtances never deſcends farther than to be merely perceptible when the head is ſomewhat elevated; while in others it falls a conſiderable way down upon the upper lip, and at the ſame time perhaps puſhes back into the throat.

In ſome this elongation of the tumor continues ſteady and permanent, but in moſt inſtances the ſwelling retracts altogether within the noſtrils in dry weather, and protrudes only in rain; and more eſpecially in thick hazy weather. Indeed, the influence of weather on the ſize of theſe excreſcences is often aſtoniſhing. I have known ſome patients who in clear

dry weather were not known to labour under the diſeaſe, in whom the ſwellings always protruded to a conſiderable length on the leaſt tendency to a damp atmoſphere.

Excreſcences of this nature are of various degrees of firmneſs. A great proportion of them are ſoft and compreſſible, but in ſome inſtances they are extremely firm; and at laſt have been known to acquire even a cartilaginous kind of hardneſs. Both kinds of them are apt to bleed on being fretted or roughly handled: But it is thoſe of a ſoft ſpongy nature only which are ſo remarkably affected by the weather, the firmer or fleſhy kind of polypi being ſeldom or never influenced by it.

The colour of theſe excreſcences is likewiſe variable: For the moſt part they are ſomewhat pale and tranſparent, but in ſome inſtances they are of a deep red colour; and, ſo far as I have yet had opportunities of obſerving, I would ſay, that there is ſome connection between the colour and conſiſtence of them. The experience

rience of others may lead to a different concluſion; but in the courſe of my obſervation it has uniformly happened, that the ſoft compreſſible polypus has been of a pale complexion, while thoſe of a firmer texture have always been of a deep red.

In the commencement of this diſorder, the pain attending it is always inconſiderable; and in the ſofter kinds of it there is ſeldom much pain, even in its moſt advanced ſtages. But thoſe of a harder nature in general become painful as they increaſe in ſize, particularly on any cauſe of irritation being applied to them. In ſome inſtances, they become unequal and ulcerated over their whole extent. In this ſtate, conſiderable quantities of a thin fetid matter are diſcharged; and if a cure be not obtained by extirpation, they are now very apt to degenerate into cancer. It is proper to obſerve, however, that it is the firm fleſhy kind of polypi only which are apt to become cancerous, and that this change rarely or never happens with thoſe of a ſofter texture.

But although the ſofter kinds of theſe ſwellings very ſeldom terminate in cancer, and are rarely productive of much inconvenience in the early ſtages of the diſeaſe, or as long as the excreſcences are confined to either of the naſal cavities; in the latter ſtages of the diſorder, they are often attended with a great deal of diſtreſs. Beſides the trouble and perplexity which occurs from their falling down upon the lip, they ſometimes paſs ſo far back into the fauces, as not only to impede deglutition, but to obſtruct reſpiration; and in ſome inſtances the tumors become ſo large, as not only to diſtend the ſofter parts of the noſtrils, but to elevate and even to ſeparate and diſſolve the firm bones of the noſe. This, indeed, is not a common occurrence; but every practitioner muſt have met with it: I have ſeen different inſtances of it.

Various opinions are met with in authors of the cauſe of polypous excreſcences. By ſome they are ſaid to depend moſt frequently

quently upon a scrophulous taint; while others imagine, that a venereal infection often gives rise to them.

We will not say that swellings of this kind do not, in some instances, occur along with the venereal disease and scrophula. They may even be met with as symptoms of these diseases. But in such instances we would consider the general taint of the system in no other light than as an occasional or exciting cause of the local affection, for in almost every case of polypus a local injury may be traced as the cause of it; and from every circumstance relating to the disease, we conclude, that it is always of a local and circumscribed nature. For even where a polypus originates from a venereal infection, this particular symptom is so far of a local nature, that it remains fixed and permanent after the general taint of the system is completely removed.

All the harder kinds of polypi we suppose may originate from the same causes

which produce tumors of a ſimilar texture in other parts of the body; but in moſt inſtances they appear to be connected with, and even to proceed from, a caries of the bone underneath; and it is this chiefly which renders them more hazardous and much more difficult of cure than thoſe of a ſofter nature, which, in general, we imagine are produced by a mere diſtention or relaxation of the membrana Schneideriana. When any portion of this membrane becomes inflamed, either by the effects of cold or from external violence, if in this ſtate any part of its ſurface is ruptured or eroded, as frequently happens from picking or blowing the noſe too forcibly, a degree of weakneſs or relaxation is thus produced, which is apt to terminate in a fulneſs or prominency of the parts immediately affected; and this being increaſed by every ſucceeding cold, the diſeaſe we are now conſidering comes in this manner to take place.

The farther progreſs of the diſeaſe may depend on various cauſes; but in general

it

it will advance quickly or slowly, according as the parts affected are more or less liable to inflammation. Thus I have known various instances of polypi of this kind remaining small and perfectly stationary for a great number of years, when the patients have not been obliged to be much exposed to the open air; while it commonly happens, among the poorer class of people, who are exposed to every inclemency of weather, and who are therefore more liable to frequent returns of catarrh, that the disease advances with much more rapidity.

In the treatment of every disease, it is a matter of much importance to be able to form a just prognosis, not only of the manner in which the symptoms may probably terminate, but of the effects to be expected from the different remedies that may be employed for them; and in no instance is this a more desirable object than in the management of polypous excrescences of the nose.

By some writers upon this subject, we are led to conclude, that polypi are always

of

of a doubtful nature with reſpect to the event or termination of them: That for the moſt part they are even of a dangerous nature; and therefore that we ought to conſider every perſon in whom they occur as in a hazardous ſtate: Whilſt others aſſert, that although they may occaſionally be productive of ſome inconvenience, yet that they are ſeldom attended with any kind of riſk.

Some, again, are ſo extremely timid with reſpect to polypi, as to ſuppoſe that they ought never to be meddled with; and alledge, that there is more chance of doing harm than good by any operation we can employ for removing them; whilſt by others we are told that they may be taken away with ſafety.

This difference of opinion reſpecting the nature of polypi, and of the effects to be expected from the remedies employed for them, has ariſen in a great meaſure from authors not having diſtinguiſhed the different kinds of theſe excreſcences with ſuch preciſion as they ought to have done:

For

For while in one variety of the disease there is little risk to be dreaded, and no great cause to doubt of our being able to remove it; in others there is undoubtedly a good deal of hazard, and much reason to fear that no remedies whatever will prove effectual in preventing a return of it.

We have already observed, that these tumors are of various degrees of consistence; and from all the experience which I have had in the treatment of them, I am led to conclude, that in general the risk with which they are attended is nearly in proportion to their firmness. The soft compressible kind of polypi are not only less painful than the others, but the removal of them may at any time be attempted with more safety. Indeed they are not commonly attended with pain; and it seldom happens that any material inconvenience occurs from the extirpation of them: But the firm fleshy kind of polypi are in general not only painful, but are much more apt to return after being

being extirpated. In forming an opinion, therefore, of the probable event of them, this circumſtance of texture deſerves particular conſideration. In a ſoft, yielding polypus, if the conſtitution is healthy, we may perhaps in every inſtance give a favourable prognoſis: for as long as the diſeaſe remains of a moderate ſize, there is ſeldom any inconvenience experienced from it, and therefore there is no neceſſity for meddling with it; and again, when, by acquiring a great additional bulk, the removal of the tumor is rendered neceſſary, it may always be undertaken with much probability of ſucceſs. But, on the contrary, in polypi of a fleſhy conſiſtence, and eſpecially in tumors of even a firmer texture than this, the patient or his friends ought always to be informed of the riſk being conſiderable: for it frequently happens that excreſcences of this kind cannot be entirely removed; and even when this is eaſily and completely practicable, they are apt to regenerate, and in ſome inſtances, as we already obſerved, to become

come cancerous. In all such cases, therefore, a guarded prognosis ought to be given; otherwise, if the disease should afterwards return, the operator would be justly blameable, at the same time that the operation itself would fall into discredit.

Indeed some practitioners are so averse to this operation in all cases of firm or hard polypi, that they always decline to meddle with them. As long as they remain stationary, and are not attended with pain, if they do not obstruct the breathing or deglutition, they ought not to be touched: But whenever they become painful, and especially when they have acquired such a bulk as to obstruct either the passage to the stomach or lungs, we ought certainly to endeavour to extract them, if this be not already rendered impracticable by their adhering through the whole of their extent to the bones of the nose, and by these being rendered carious; which they are apt to be in the late stages of this disorder.

All the softer kinds of polypi which are liable,

liable, as we have already deſcribed, to be affected by the ſtate of the weather, may frequently be prevented from acquiring any additional bulk by the uſe of aſtringent applications, particularly by a ſtrong ſolution of alum, a decoction of oak-bark, or the application of vinegar or ardent ſpirits. By one or other of theſe being applied from time to time over the ſurface of the tumors, I have known different inſtances of their continuing for a great length of time to give no kind of diſturbance; and, in ſome caſes where the remedy has been freely employed, they have been ſhrivelled and become conſiderably ſmaller. It muſt be acknowledged, however, that they have never accompliſhed a cure; but it is a matter of no ſmall importance our being able by gentle means to render any painful operation unneceſſary.

On the firſt appearance, therefore, of a polypus, we ought by a free uſe of ſome aſtringent application to endeavour to prevent its farther increaſe; but when theſe

do

do not succeed, we are to consider by what mode the tumor may be most effectually removed.

Various methods have been proposed for the removal of polypi:—namely, the use of caustic or corroding applications;—the actual cautery;—the passing of a seton or cord through the diseased nostril;—excision with a scalpel or scissars;—the application of a ligature round the neck of the tumor;—and evulsion or extraction by a proper application of the forceps.

An ignorance of the circulation of the blood, and of the easy method with which we are now acquainted of putting a stop to hemorrhagies, led in earlier times to the practice of removing tumors, wherever they were situated, by corrosive applications, and even by the use of the actual cautery. If this practice was considered as necessary in other parts of the body, it is not surprising to find it proposed for the removal of polypi in the nose, where the effects of hemorrhagies were more dreaded. Cauterising irons were therefore invented

vented for this purpoſe, together with metallic tubes for conducting them. But even with the utmoſt attention there is no poſſibility of deſtroying the diſeaſed parts without injuring thoſe that are ſound. Remedies of this kind are therefore more apt to do harm than to produce any advantage; ſo that they are now very generally laid aſide; as are likewiſe all kinds of corroding applications, which are equally liable to uncertainty, by their being apt to ſpread to the contiguous ſound parts in the cavity of the noſe and throat.

As it has been imagined by ſome practitioners, that excreſcences of this kind may be removed, by inducing a ſuppuration upon them, it has been propoſed to inſert a cord of ſilk or cotton into the diſeaſed noſtril, and one end of it being taken out at the mouth, by daily drawing it back and forward, and by covering that part of it which comes into contact with the tumor, with a ſlightly irritating ointment, thus to create ſome degree of inflammation and conſequent ſuppuration over it.

We

We will readily allow, that in this manner a plentiful flow of matter may be excited; but it is not probable that this can have much influence in diminishing the size of the tumor. Till of late indeed, it was commonly imagined that the formation of pus is necessarily attended with a dissolution of the solid parts in which it occurs. Upon this principle Mr Daran and others have endeavoured to explain the operation of bougies in obstructions of the urethra; and a similar idea suggested the remedy of which we are now speaking, in polypous excrescences of the nose. But it is now known, as we have elsewhere fully shown, that the dissolution of solid parts is by no means necessary for forming pus. It is also known, that in diseases of the urethra, bougies prove effectual only by their form, and by the pressure which they produce; and we have no difficulty in saying, that it is in this manner only by which a cord, if it ever proves useful, can have any effect in removing polypi of the nose. As the passage of the nostrils is very une-

qual, being wider in one part than another, and as the roots of polypi are frequently ſo ſituated that no preſſure can be applied to them, we are not of opinion that they can ever be removed by a cord paſſed through the noſe, as many have imagined. But after the extirpation of polypi in the manner we ſhall afterwards point out, when their roots are not entirely removed, there can be no impropriety in our endeavouring in this manner to clear the paſſage more effectually. It was for this purpoſe ſolely, we may remark, that the practice we are now conſidering was originally propoſed by that judicious obſerver Monſieur Le Dran. But although it might, in this manner, ſometimes prove uſeful, yet from being a troubleſome and diſagreeable application, it has ſeldom been employed. We ſhall have occaſion however, in a ſubſequent part of this ſection, to ſpeak of it again.

In other parts of the body, the removal of tumors by exciſion is univerſally preferred

red to every other method; and it would likewise be employed in polypi of the nose, were it not for their inaccessible situation. But it seldom happens that they are so situated as to render this mode of treatment practicable; for although scalpels and scissars of various forms have been invented for this purpose, the roots of polypi are in general seated so high in the nostrils, and the passage is for the most part so completely filled by the tumor itself, as to render it always difficult, and often impossible, to remove them by excision.

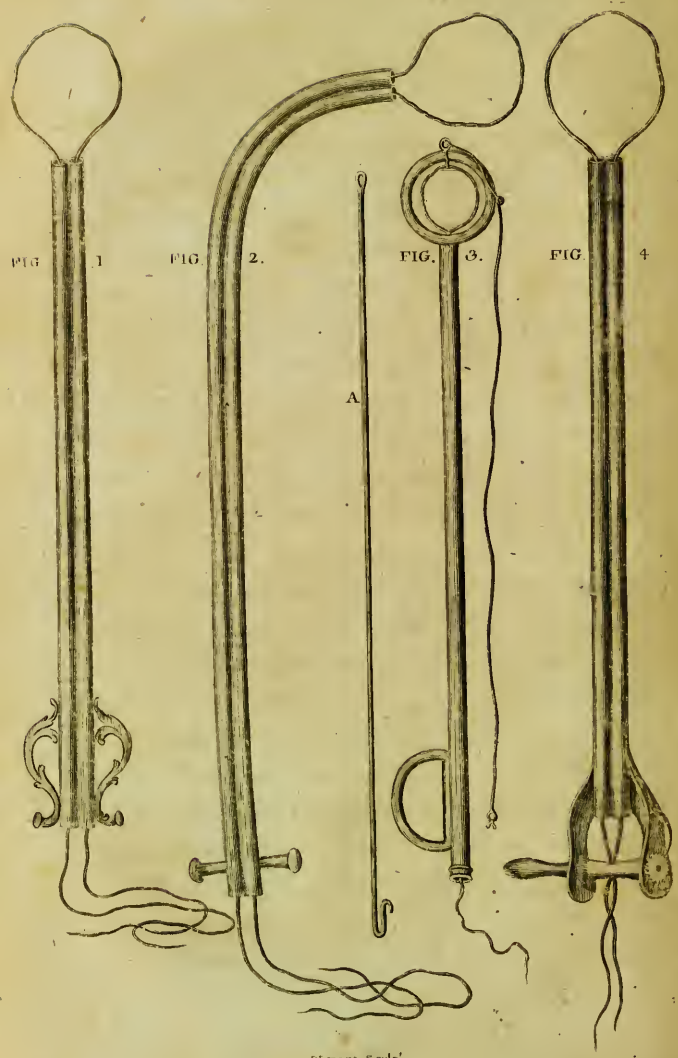
But when it is found that the tumor originates from the under part of the nostril, and when the point of a scalpel can be made to reach the root of it, we ought, without hesitation, to employ this method of taking it away, even in preference to that by ligature: for in this manner the whole of the tumor may be more effectually removed; and in this situation there is no reason to be afraid of hemorrhagies, as compression can be readily

applied to any blood-veſſel that may be cut in the under part of the noſtrils. We rarely find however, as has been already obſerved, that a polypus is ſeated ſo far down in the noſtrils as to render this method of treatment practicable.

It therefore appears that all the means we have yet conſidered for the removal of theſe excreſcences, are either inadequate for the effect, or altogether inadmiſſible; and hence we are under the neceſſity of employing either the method by ligature, or that by extraction with the forceps.

As the removal of a polypus, by tearing or twiſting it off, is attended with much more pain than the application of a ligature round the neck of it, the latter would always have been preferred, if it had been conſidered as equally practicable. And as we now know that it can be done in a very ſafe and eaſy manner, it will probably in future be very generally employed. The method we allude to, is that which Monſieur Levrette of Paris firſt recommended,

PLATE XLIV.



mended, a considerable time ago, for the removal of polypi in the vagina, and which we now find may be used with equal propriety in similar affections of the nose and throat. The following is the method of applying it in polypi of the throat.

Fig. 1. Plate XLIV. represents a piece of pliable silver wire passed through a double canula, and the wire should be long enough when doubled as to pass through the nose into the pharynx. Let the wire be taken from the canula, and the doubling at the end of it be slowly and gently insinuated through one of the nostrils: As soon as it appears in the throat, the operator, with his fingers inserted into the mouth, must open the double sufficiently for passing it over the pendulous extremity of the tumor; and having pressed it down to the neck or root of it, the two ends of the ligature hanging out at the nostril must be again passed through the canula; which is now to be inserted into the same nostril, and pushed back along the course of the

wire till it comes into contact with the root of the polypus. The fingers ſhould ſtill be continued in the throat to preſerve the ligature in a proper ſituation; and the canula being placed in the manner we have directed, the wire muſt be drawn tolerably tight; and the ends of it being fixed on the wings or handle of the canula, as in Plate XLV. fig. 1. it muſt be left in this ſituation till the following day, when being again drawn ſomewhat tighter, and this being daily repeated, the tumor will fall off ſooner or later according to its ſize. When the excreſcence is ſmall, it will probably drop in the courſe of the ſecond day; and tumors of even a large ſize will come away on the third day. It is better however to make the compreſſion in a more gradual manner: for when the wire is drawn with much force, inſtead of acting as a ligature, and removing the tumor by compreſſion, it removes it too quickly, by cutting it acroſs, and may thus be equally productive of hemorrhagies as if the operation had been done with a ſcalpel.

In

In this manner all those polypi may be removed which either originate in the throat, or which proceed back from the nostrils into the fauces; and the practice may be extended even to those which are deeply seated in the pharynx, if the ligature can be properly applied over them either with the fingers; with the assistance of forceps; or with an instrument such as is delineated in Plate XLVI. fig. 3. Some instances indeed have occurred of excrescences seated too far down in the œsophagus for admitting of ligatures being applied upon them in this manner; nor is it admissible, even where the upper part of the tumor is accessible, if the base or neck of it be so low down as to prevent the ligature from being applied to it. In the third Volume of the Physical and Literary Essays of Edinburgh, there is a case related in which a very ingenious method was put in practice by the late Mr Dallas for surrounding a deep seated polypus with a ligature; and although instances of such excrescences are extremely rare, yet as they

are ſometimes met with, I think it right to give a delineation of the inſtrument which in this inſtance was ſucceſsfully employed.

In this caſe both the breathing and deglutition were much impeded by a large fleſhy excreſcence originating in the œſophagus, a conſiderable portion of which was thrown into the mouth by every exertion to vomit; but it ſoon retracted and remained perfectly concealed within the pharynx till vomiting or retching was again excited. This portion of the tumor which occaſionally protruded, was entirely removed by the method we have mentioned, and which we have more particularly deſcribed in the explanation to Plate XLVII. By this means the patient was relieved from much inconvenience and diſtreſs; but another branch of the tumor which extended towards the ſtomach becoming afterwards very large, he died by the effects of it in about two years from the operation.

We think it right to remark, that this patient might probably have been ſaved by

by the use of the ligature and double canula such as we have described, and that in similar cases it is to be considered as perhaps the best means of relief. When a polypus is suspected to have formed in the œsophagus, if no part of it is observed to protrude up towards the pharynx, there will be much cause to imagine that it proceeds down towards the stomach; so that if the double of a piece of flexible wire be pushed down the œsophagus, the pendulous part of the tumor may very probably be laid hold of in withdrawing it; or, if one attempt should fail, other trials may safely be made with it: And as soon as the double of the ligature is found to be firmly fixed, all that portion of the tumor which it surrounds may be easily removed by the application of the double canula in the manner we have mentioned. It is proper, however, to observe, that the ligature and canula should both be carried through one of the nostrils into the œsophagus; for in this manner they will not prove

nearly

nearly ſo inconvenient as when paſſed through the mouth, and they may be applied with equal eaſe and advantage. For this purpoſe the canula muſt have ſome degree of curvature, as is repreſented in Plate XLIV. fig. 2.

Ligatures may in general be applied round polypi of the back part of the noſe and throat in the manner we have directed, without much interruption to the breathing; but when they are deeply ſeated in the œſophagus, and on all occaſions when the application of the ligature is difficult and tedious, it is proper to ſecure an eaſy and free reſpiration during the operation by previouſly adviſing bronchotomy. By this no additional riſk is incurred, for it may with eaſe and ſafety be accompliſhed; and it puts it in our power to finiſh the operation more perfectly than we otherwiſe could do. It is likewiſe proper to remark, that although the operation may often be done without any aſſiſtance from a ſpeculum oris, yet whenever it proves te-

tedious, and when the ligature cannot be applied with much ease over the tumor, this instrument ought to be employed.

We have now to mention the method of applying a ligature to a polypus seated in the anterior part of the nose, and which, instead of passing back into the pharynx, proceeds down one of the nostrils towards the upper-lip. Let the double of the ligature be passed over the most depending part of the polypus, and be slowly pushed up to the root of it with the slit probe Plate XLVI. fig. 2. The probe being given to an assistant to preserve the ligature in this situation, the two ends of it must be passed through a double canula; which being inserted into the nostril on the opposite side of the polypus, and being pushed easily along till it reaches the root of it, the ligature must now be drawn so tight as to make some impression on the root of the tumor, when the ends of it must be tied to the wings of the instrument, and must be

be daily pulled ſomewhat tighter till the tumor drops off.

In this manner every polypus in any part of the noſe may be extirpated. Thoſe who have not ſeen it put in practice may be apt to doubt of this aſſertion; but a few trials will ſhow that it is not only the moſt effectual method, but the ſafeſt and eaſieſt that has yet been propoſed of removing every excreſcence of this kind: And it has the advantage over every other method of applying ligatures upon polypi in the noſe, of anſwering equally well in the large as in the ſmaller kinds of them —and it may even be applied where the tumor is ſo large as to diſtend the noſtril to a conſiderable ſize. In Plate XLVI. fig. 1. there is delineated a remarkable form of a polypus extirpated in this manner under the direction of Dr Monro, who was the firſt, I muſt obſerve, who put in practice this method of removing polypi from the noſe and fauces. This polypus filled the noſtril completely; to ſuch a degree indeed, that it could not have been removed

in

PLATE XLV.

FIG. 1.

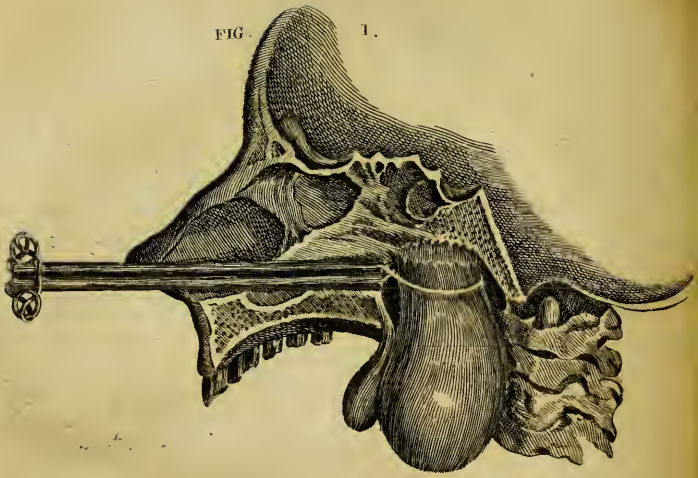


FIG. 2.

in any other manner; not even with forceps, for the blades of the instrument could not have been inserted.

Besides this, another method has been proposed of applying ligatures round polypi in the nostrils: By introducing a ligature through the affected nostril into the throat, and passing it in such a manner that the doubling may include the root of the polypus, if the opposite ends of it be taken out at the mouth they may be sufficiently twisted, it is alleged, for removing the tumor.

In a few cases this might possibly answer, but it would often fail: I think it right however to mention it, as it is recommended by a very judicious practitioner Mr Cheselden. Fig. 2. Plate XLV. exhibits a representation of a polypus surrounded with a ligature in this manner.

Various forms of forceps have been invented for the purpose of removing polypi. Those that answer the intention best, and that are most generally used, are represented in Plate XLVIII. Those of a straight

ſtraight form are intended for extracting polypi by the anterior nares, and the crooked forceps are employed by ſome practitioners for the removal of thoſe excreſcences which paſs into the throat behind the uvula. We have ſhown indeed that polypi of this kind may be more eaſily removed by ligature, but we think it right to delineate ſuch forceps as are uſed by thoſe who prefer a different method.

In proceeding to extract a polypus with forceps, the patient ought to be firmly ſeated, with his head leaning back and ſupported by an aſſiſtant behind; and as it is of much importance our being able to diſcover as nearly as poſſible the origin of the excreſcence, ſome advantage may be obtained from the face being placed in ſuch a manner that the light of a clear ſun may fall into the noſtril.

In the ordinary method of performing this operation, the ſurgeon now takes the forceps, fig. 2. Plate XLVIII. and inſerting one of the blades on each ſide of the polypus, he carries them eaſily along till he brings

brings their points as near as possible to the neck of it, when he lays hold of it firmly, and endeavours to extract it entire, either by pulling directly downwards, or by moving the forceps from one side of the nostril to another; or, as some more properly advise, by turning or twisting the polypus round till it is completely separated. By this last method I think it probable that the root or attachment of the excrescence will be more readily loosened than in any other way, at the same time that that part of the lining membrane of the nose will not be so much injured as when the tumor is tore away by being pulled either in a lateral direction or perpendicularly downwards.

When a polypus is of a tolerably firm texture, if the operation be properly conducted, we may frequently be able to bring it all away at once: but when it is very soft and yielding, it commonly requires repeated applications of the forceps; and we should never desist as long as any portion

tion of the excreſcence remains which can with propriety be removed.

It is proper, however, in this place to obſerve, that the firſt application of the forceps is commonly attended with ſuch a conſiderable diſcharge of blood, that beginners are apt to deſiſt before the operation is nearly finiſhed, from their being afraid of fatal conſequences from the hemorrhagy; but this ought not in general to be regarded, as long as by a farther uſe of the forceps we can extract any more of the polypus. And even when the operation is finiſhed, if the patient is in any degree robuſt and plethoric, ſome advantage may be derived from our admitting of a farther diſcharge, by which inflammation may be prevented, which otherwiſe might be productive of troubleſome conſequences. The hemorrhagy, however, ought not to be allowed to proceed ſo far as to run any riſk of hurting the patient. This, indeed, is not a frequent occurrence; for it does not ſo readily happen as is commonly imagined by thoſe who have

PLATE XLVI

FIG. 1.

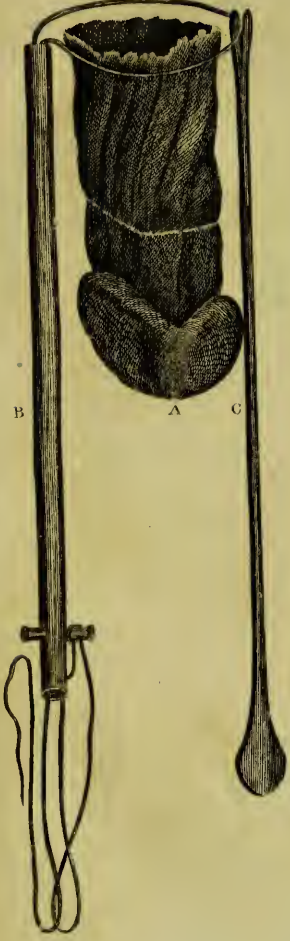
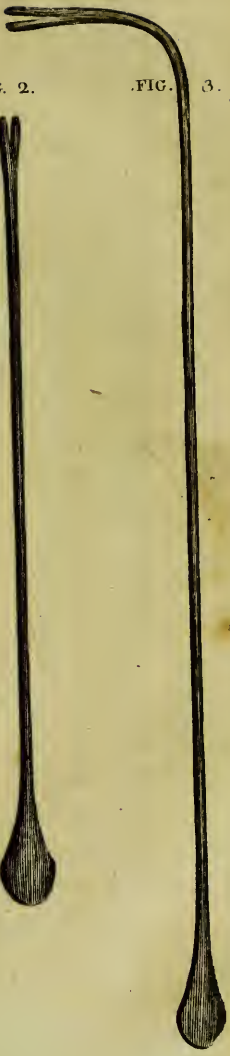


FIG. 2.

FIG. 3.



have not had frequent opportunities of seeing this operation put in practice. I will not pretend to say, that instances may not occur of more blood being lost by this operation than is proper; but I can safely assert, that it is not a common occurrence. When it is found, however, that the hemorrhagy is proceeding too far, we ought immediately to employ those means which we know from experience are most effectual in putting a stop to it; but as we have already treated fully of them in Section III. of this Chapter, it is not necessary to enter upon them at present.

As it sometimes happens that some parts of the roots of polypus are not extracted by the forceps, we are desired by some practitioners to destroy them by inserting caustic or corrosive applications into the nostrils immediately after the operation. Unless, however, we can evidently see the part on which the caustic should be applied, I am clearly of opinion that this practice should not be adopted; for otherwise we must work entirely at random, and

cence is not entirely removed by the forceps, although, for the reasons mentioned above, we are averse in this situation to the application of caustic, it may be extremely proper to endeavour to destroy it by means of a more harmless nature. In this case, the practice we have described, of passing a seton through the nostril into the throat might probably prove useful; but the same intention may be accomplished with more certainty by the use of a large bougie. We have already had occasion to remark that in the removal of obstructions in the urethra, bougies seem to operate chiefly by mechanical pressure; and there is cause to imagine, that upon the same principle they may be employed with advantage for the removal of those parts of polypous excrescences in the nostrils that cannot be taken away with the forceps. Nay more, were we consulted early in the disease, before the excrescence has acquired any considerable bulk, they might, I think, be successfully employed in preventing their farther increase; and if

duly perſiſted in, they might, in ſome inſtances, in this incipient ſtate of the affection, remove them entirely. Practitioners, however, are ſeldom adviſed with, as has been already remarked, till the diſeaſe has gone too far to admit of this. I have only had one opportunity of trying it; but in this caſe, the effects of it were ſuch as to juſtify our putting it to the teſt of future experience.

The perſon in whom it was employed, had for ſeveral weeks complained of a kind of ſtuffing, and interruption to breathing in one of his noſtrils. On looking into it, I clearly ſaw and touched with the probe, a ſmall, pale coloured, ſoft polypus, at a conſiderable depth. As it did not yet produce much inconvenience, I did not think of adviſing it to be extracted; but conſidering it as a fit caſe for trying the effects of compreſſion, a roll of bougie plaſter of a proper ſize was introduced along the courſe of the noſtril; and being gradually increaſed in ſize, the paſſage through the noſtril became clear and pervious; and in the

the course of seven or eight weeks the excrescence disappeared almost entirely: but the patient was at this time obliged to go abroad, and I have not since heard of him.

In the latter part of the treatment of this case a silver tube covered with plaster was employed; by which the breathing went freely on; and being of such a length as to pass entirely into the nostril, it was kept in with little inconveniency. The tube may be prevented from falling out or from passing back to the throat, by a piece of adhesive plaster connected with it being applied to the upper lip, or by fixing it to a piece of narrow tape passed round the head.

In describing the operation, I proceeded upon the idea of the forceps in common use being to be employed; and when the excrescence is small, they answer the purpose as well as any other: But when the polypus is so large as nearly to fill the nostril, they cannot be either easily or properly applied: for the two blades of the forceps being both introduced at once,

they cannot but with much difficulty be puſhed deep into the noſtril already much obſtructed; and the more they are preſſed forward upon the excreſcence, and the nearer it is brought to the axis of the inſtrument, the more widely the blades of it are neceſſarily opened at their extremities; by which the tumor cannot be ſo equally compreſſed, nor is there ſuch a chance of extirpating the root of it by means of them, as if they were ſo conſtructed as to apply preſſure equally thro' their whole length.

To remedy theſe inconveniences, ſeveral improvements have been propoſed; but the beſt I have met with is one by the very ingenious Dr Richter of Gottingen. A repreſentation of it is given in Plate XLVIII. fig. 3. This inſtrument may be uſed in the ordinary way by introducing both blades at once when the polypus is ſmall; but when the tumor is large, it will be found to anſwer better to introduce the blades in the ſame manner as we do midwifery forceps by inſerting them ſeparately.

One

FIG. 1.

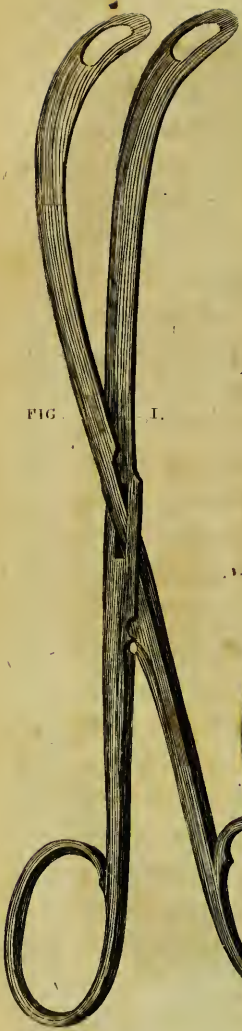


FIG. 2.

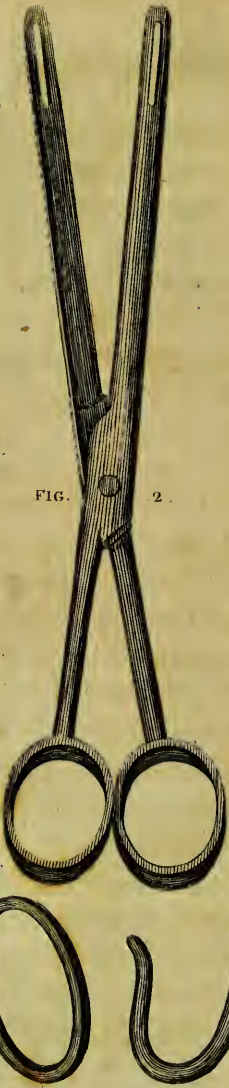
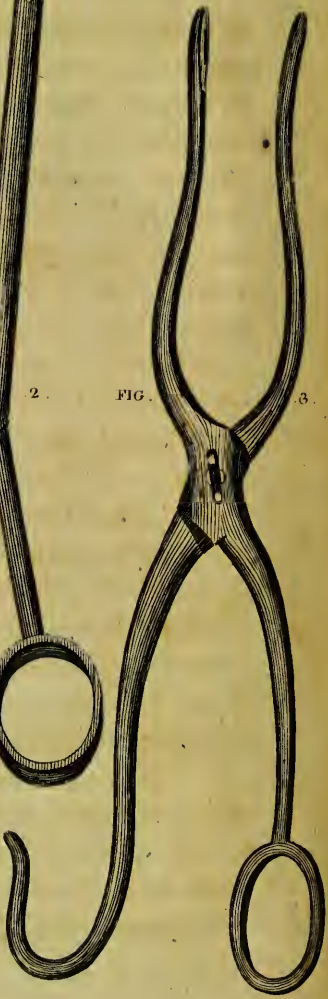


FIG. 3.



One of the blades being carried slowly and cautiously forward along the course of the polypus, the other must in like manner be introduced at the opposite side of it, so that they may now be firmly locked together at the joint. The blades are accordingly made to separate easily, and to fix in such a manner as to admit of their being employed in the way we have directed.

These and every other variety of forceps employed for this operation, ought to be as thin and slender in that part of them which is inserted into the nose as the nature of the disease will admit; for I must again observe, that the straitness of the part in which we have to operate, is one of the principal difficulties we have to encounter. But when the forceps are made of well-tempered steel, they need never be so thick and bulky as they are commonly made.

When, however, polypi have acquired a large size, the obstruction they produce in the nostril is in some instances to such a degree, that even with this and every other kind of attention there is no

poſſibility of inſerting the forceps. In ſuch circumſtances, as a conſiderable ſpace may be gained by laying the noſtril open, it may in ſome inſtances be proper to divide the cartilaginous part of it by a longitudinal inciſion; and, after extracting the tumor, to reunite the divided parts either by adheſive plaſters or with one or more ſutures.

At the ſame time, however, that I mention this, I think it right to obſerve, that it is a meaſure which ought in no inſtance to be haſtily adopted; but I alſo think, that it ſhould not be univerſally condemned, as we find it to be by ſome practitioners. I do not imagine that it would in every caſe prove ſucceſsful: but when a polypus has already become ſo large as entirely to fill the noſtril; when therefore no forceps can be inſerted for removing it; when the tumor is ſtill continuing to increaſe; and when of courſe there is much reaſon to ſuſpect that it may terminate fatally if it be not extracted; it will ſurely be better to give the patient

tient any small chance that may be derived from the practice we have mentioned, than to leave him to die in misery; which in all probability he would do were no attempt made for his relief. If on laying the nostril open, it is found that the tumor can be with safety removed with the forceps, a complete recovery may possibly be obtained; and thus the pain which the patient has suffered, and the trouble of the operator, will be amply rewarded, whilst at the same time no material injury will be done nor no kind of risk incurred, if on laying the parts open it is discovered that no part of the tumor can with propriety be taken away.

In the firm fleshy kind of polypi, which in some instances degenerate into cancer, when it is found that the tumor is already ulcerated, and that the contiguous cartilages and bones of the nose are affected by it, it would no doubt be imprudent to advise the treatment we have mentioned, for no advantage would probably accrue from it; the patient would be made to suffer a great

great deal of unneceſſary pain; and the operation itſelf would be brought into diſrepute: but in the ſofter kinds of the diſeaſe, which rarely or never become cancerous, and when the more external bones and cartilages of the noſe are not affected, we ought without heſitation to adopt it, when the tumor, as is here ſuppoſed to be the caſe, is meant to be removed with the forceps, and when this cannot be done in any other manner.

In the caſe of a firm fleſhy excreſcence, which filled the noſtril ſo completely that the forceps could not be introduced for removing it, a method was put in practice by Dr Richter for diminiſhing the ſize of the tumor; which to a certain degree anſwered the purpoſe, and afforded conſiderable relief. A hole or opening was made through the centre of the excreſcence by a common trocar, made red hot and covered with a canula, being puſhed along the whole courſe of it. By this means a paſſage was formed through which the patient breathed eaſily, and the tumor was much

much leſſened; but the Doctor was unfortunately prevented from attempting to complete the cure either by extraction or otherwiſe, by the patient leaving the place.—This caſe, however, affords an uſeful practical hint, and points out a mode of treatment which in tumors of this particular kind may in ſome inſtances be ſucceſsfully employed *.

I have thus deſcribed the method of extracting polypi of the noſe with forceps; but I muſt again remark, that they may be removed both with more eaſe and ſafety with the ligature: and as this mode of operating is admiſſible in perhaps every caſe that can occur, it ſeems only to require to be more generally known to be very univerſally preferred.

* For a more particular account of this caſe, and of the forceps mentioned above, V. Auguſti Gottlieb Richteri Obſervationum Chirurgicarum faſciculus ſecundus. Gottingæ, 1776.

SECT.

SECTION VI.

Of Extirpation of the Tonſils.

THE Amygdalæ or Tonſils are frequently, even in a natural ſtate, ſo large as almoſt to fill up the paſſage from the mouth to the throat. As long, however, as they remain ſound, and are not attacked with inflammation, any inconvenience produced by this is not commonly of much importance: but tonſils of this enlarged ſize are very apt to inflame on the patient being much expoſed to cold; and frequent returns of inflammation are often attended with ſuch an addition of bulk as to produce nearly a total obſtruction to the paſſage of food, drink, and air.

It is this enlarged ſtate of the amygdalæ which in general is termed a Scirrhoſity of the Tonſils; but we think it right to obſerve, that the term Scirrhus appears here

to

to be very improperly applied; for, excepting the circumstance of a firm tumor, every other characteristic of scirrhus is in these affections of the tonsils very commonly wanting. A real scirrhus is attended with frequent shooting pains, and it is a swelling of such a nature as generally terminates in cancer: Now we know, that pain very seldom occurs in cases of enlarged tonsils, except from inflammation: while in an inflamed state, they are frequently indeed very painful; but as soon as the inflammation subsides, no more pain is experienced, and they remain perfectly easy and indolent till the patient is again exposed to cold. This, however, is never the case with swellings of the real scirrhous kind; for whenever they become painful, they uniformly proceed to turn worse: and, again, enlarged tonsils are seldom if ever known to terminate in cancer. I never knew an instance of their doing so; and few practitioners, I imagine, have met with it.

Mr Sharpe, when treating of this subject, recommends a more frequent extirpation

pation of enlarged, or what he terms Scirrhous Tonſils, than what has hitherto commonly prevailed; and he is induced to do ſo, from having obſerved that the diſorder never returns, as it too frequently does after the extirpation of ſcirrhous tumors in other parts. His words being much in point, I ſhall tranſcribe them. "All other tumors of the ſcirrhous kind, whether of a ſcrophulous or cancerous nature, are ſubject to a relapſe; the poiſon either remaining in the neighbourhood of the extirpated gland, or at leaſt falling on ſome other gland of the body. In this caſe, I have never met with one ſuch inſtance; and the patient has always been reſtored to perfect and laſting health *."

Mr Sharpe has here communicated a very intereſting fact; which is rendered the more valuable, by coming from a man of character, and whoſe practice was very extenſive. By many, however, the truth of it has been doubted, from its being univerſally

* V. Critical Inquiry, &c. by Samuel Sharpe.—Fourth Edition, ſection VII.

verſally known that ſcirrhous tumors frequently return in other parts of the body after being extirpated. It would indeed be ſurpriſing to find the extirpation of ſcirrhous tonſils prove always ſucceſsful when the ſame operation often fails when practiſed for ſimilar affections in other parts. But the explanation we have given ſets it in a more diſtinct point of view. Theſe tumors of the amygdalæ, commonly termed Scirrhous Tonſils, are not of the true ſcirrhous nature; and hence it is that they never degenerate into cancer, or return after extirpation; and this is accordingly a very weighty argument for removing them as ſoon as they become ſo large as to impede either deglutition or reſpiration. Till this, however, takes place to a conſiderable degree, no practitioner ought to adviſe this operation; for, as it is attended with a good deal of pain, it ought to be avoided as long as the ſafety of the patient does not render it abſolutely neceſſary; but whenever the tumor becomes ſo large as to produce much interruption to the paſſage of food and air,

air, there ſhould be no heſitation in recommending it.

Different methods have been recommended for removing enlarged tonſils.—Some adviſe the repeated application of the actual or potential cautery: Others recommend exciſion with the ſcalpel or with crooked ſciſſars: And, laſtly, it has been propoſed to do the operation by ligature.

Cauſtic applications, however, ſhould here be conſidered as inapplicable, from the impoſſibility of uſing them without injury to the neighbouring parts; and we are debarred from the uſe of the knife and ſciſſars by the profuſe hemorrhagies which have ſometimes occurred from exciſion. Neceſſity therefore obliges us to have recourſe to the ligature; and with due attention we are able to remove every tumor by this method to which the amygdalæ are liable.

In the preceding ſection we have given a particular detail of the beſt method of applying ligatures to polypous excreſcences of the throat, and it likewiſe appears to be the eaſieſt and beſt method of forming

ligatures

ligatures upon tumors of the amygdalæ. It ought to be done with pliable silver wire, but catgut of a proper strength will likewise answer; and although the double canula to be passed through the nose might be of a straight form, it will answer better if it be somewhat crooked, as in fig. 2. Plate XLIV.

The double of a ligature, formed of pliable silver wire or catgut, being inserted into one of the nostrils, must be pushed back till it reaches the throat, when the operator, introducing his fingers at the mouth, must open the ligature; and having passed it over the tumor, it must now be pressed as much as possible down to the root of it. He must continue to preserve it in this situation with his fingers; while an assistant having inserted the two ends of the ligature into the canula, must push it easily along the nostril, till the farther end of it be either seen or felt in the throat; and the wire being now pulled so tight as to fix it in the substance of the tumor, the ends of it hanging out at the other extre-

mity of the canula muſt be tied in the manner we have formerly directed, to the wings or handle of the inſtrument; and the ligature being made tighter from time to time, the ſwelling will ſoon fall off.

The more pendulous the tumor, the more eaſily will the ligature be fixed. But however broad the baſe of it may be, there will ſeldom much difficulty occur with it; for the ſwelling is always very prominent: ſo that when the double of the wire is fairly paſſed over, it may eaſily be puſhed down to the baſe with the fingers; and being preſerved in this ſituation till it is once made ſufficiently tight, it will not afterwards be in any danger of moving.

We have adviſed the ligature to be firſt carried through the noſe before being put over the tumor. It might indeed be inſerted by the mouth; but in this manner much inconvenience would be experienced, from the ligature and canula hanging out at the mouth during the cure. This method, however, may be adopted when any difficulty occurs in the application of the

the ligature by the mode we have mentioned.

In affections of this nature, both tonsils are in general nearly equally enlarged: In some cases, the removal of one of them will form a sufficient opening for the passage of the food; but when it is found necessary to extirpate them both, it will be proper to allow any inflammation or tension that may have been induced by the first, to subside entirely before any attempt is made to remove the other.

This mode of applying ligatures upon these tumors, is in my opinion the best; but it may often be done in a different manner. Let a ligature of a sufficient strength be formed of waxed thread; and let this be carried round the tumor either with the fingers or with a split probe, such as is represented in Plate XLVI. fig. 3. A noose is now to be made upon it, and a knot of any degree of tightness may be formed on it by fixing one end of the thread at the side of the tumor in the throat with the instrument, fig. 2. Plate LI. while the

other is firmly drawn with the other hand of the ſurgeon out at the mouth.

This method was firſt put in practice by Mr Cheſelden; and it has ſince that period been recommended by Mr Sharpe and others. In order to fix the ligature where the tumor is of a pyramidal form with a broad baſe, a needle with an eye near the point, ſuch as is repreſented in Plate LI. fig. 3. was likewiſe propoſed by Mr Cheſelden. A double ligature being put into the eye of the needle, the inſtrument is now to be puſhed through the centre of the tumor near to its baſe, and the threads being diſengaged with a pair of forceps, the needle muſt be withdrawn. In this manner two ligatures are to be formed, each of them being made to comprehend one half of the tumor by one of the threads being tied above, and the other below.—The inſtrument, fig 2. of the ſame Plate, is likewiſe neceſſary here.

Although it is proper to mention this method of fixing a ligature upon tumors of the tonſils with broad baſes, it is not probable

probable it will be often neceſſary. By employing the double canula it can never be needed, as by means of it ſuch a degree of force can be applied as will at once fix the ligature in the ſubſtance of the ſwelling: And I am the more confident of this from finding Mr Sharpe of the ſame opinion, even when the operation was done in a manner by which the ligature could not be ſo firmly fixed as may be done with the double canula; but even when performed in this manner, Mr Sharpe obſerves, "that he has never in one inſtance found it neceſſary to employ the double ligature recommended by Mr Cheſelden*."

By whatever method, however, the operation is performed, it may in ſome inſtances happen that the tumor does not fall off by the firſt ligature; in which caſe another muſt be applied, and continued till the cure be completed.

* Vide Mr Sharpe's Treatiſe on the Operations of Surgery, chap. xxxii.

SECTION VII.

Of the Extirpation of the Uvula.

THE Uvula, by frequent attacks of inflammation, as likewiſe perhaps by other cauſes, becomes in many inſtances ſo relaxed and elongated as to be productive of much diſtreſs, not only by impeding deglutition, but by irritating the throat ſo as to induce cough, retching, and even vomiting.

Any ſlight degree of enlargement of this part may in general be removed by the frequent uſe of aſtringent gargles, compoſed of ſtrong infuſions of red roſe leaves —of Peruvian bark—or of oak-bark, with a due proportion of alum or of the vitriolic acid: And as long as remedies of this kind are found to prove effectual, no other ſhould be adviſed. But when theſe fail, and when the tumefaction of the uvula is ſo conſiderable as to create much uneaſi-

neſs

neſs in the throat, along with any of the forementioned ſymptoms, we muſt depend on extirpation alone for the removal of them.

The uvula may be extirpated either by exciſion or by ligature. By the firſt, the parts affected are quickly removed, and the patient obtains immediate relief; whereas the other is more ſlow in effecting the ſame purpoſe, and is applied with difficulty. But by exciſion troubleſome hemorrhagies ſometimes occur, while no riſk whatever enſues from the uſe of a ligature. Some practitioners indeed alledge that no danger can enſue from any hemorrhagy that may take place in conſequence of the exciſion of the uvula; but although this may in general be the caſe, yet I know from experience that inſtances of the contrary ſometimes occur, and that very conſiderable quantities of blood have been loſt by this operation. This will moſt readily happen where the uvula is much enlarged, and where of conſequence the veſſels with which it is ſupplied are in an

enlarged ſtate. Where the uvula is merely elongated, there will ſeldom, I imagine, be any riſk of removing it by inciſion. In this ſtate, therefore, of the diſeaſe, exciſion ſhould be preferred; but when the parts to be removed are much increaſed in bulk, it will be better to make uſe of the ligature.

Different inſtruments have been invented for cutting off the uvula. One of theſe, which has been moſt frequently uſed, is repreſented in Plate LII. fig. 1. But neither this nor any other we have met with anſwers the purpoſe ſo well as a curved probe-pointed biſtoury, ſuch as is delineated in fig. 3. of the ſame Plate. Or the operation may be very eaſily done with a pair of ſciſſars of the common form, or with a curve, ſuch as is repreſented in Plate XLIX. fig. 1. 2. or 3.

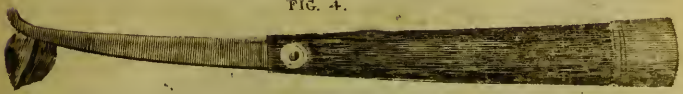
When any of theſe inſtruments are to be employed, the mouth ſhould be ſecured with a ſpeculum oris, ſuch as is repreſented in Plate LIV. fig. 1.; and the uvula ſhould be laid hold of with a pair of ſmall forceps,

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.



D.Lizars Sculp.

forceps, or with a sharp hook, by which it will be more easily cut off than if it were left hanging loose in its natural situation. After the operation, if much blood be discharged, it may be restrained by the use of an astringent gargle; by the application of ardent spirits; or even by touching the bleeding vessel with lunar caustic. It will seldom happen, however, that any precaution of this kind is necessary; for a moderate flow of blood will never do harm, and more than this will rarely occur where the parts are not much enlarged. When, again, the ligature is to be employed, the mode of fixing it described in the last section may be adopted: It may be done by the double canula passed through one of the nostrils;—or the canula may be introduced at the mouth;—or it may be done by the method employed by Mr Cheselden for applying ligatures upon the tonsils, which is likewise described in the last section. After passing the ligature round the tumor, which in general will be easiest done with

with the fingers, a knot may be tied upon it in the manner we have there directed, with the inſtrument, fig. 2. Plate LI.

I have likewiſe thought it right to repreſent another inſtrument, which hitherto has been almoſt the only one employed for fixing a ligature upon the uvula, Plate XLIV. fig. 3. From the name of the inventor, it has commonly been termed the Ring of Hildanus. The invention is very ingenious; and by means of it a ligature may be firmly applied upon the uvula: but the ſame intention may be accompliſhed in a more ſimple manner by either of the other methods deſcribed above; ſo that this will probably be laid aſide.

SECTION VIII.

Of Scarifying and Fomenting the Throat.

IT frequently happens in inflammatory affections of the amygdalæ and contiguous parts, that ſcarifications are found ne-

neceſſary; in the firſt place, for leſſening the degree of inflammation by inducing a topical diſcharge of blood; and afterwards for the diſcharge of matter contained in abſceſſes, when ſuppuration has not been prevented by the means uſually employed for this purpoſe.

In Volume II. Plate XXIV. I have delineated an inſtrument for this purpoſe; and other two of different forms are repreſented in Plate LIII. figures 1. and 3. The wings with which fig. 1. is furniſhed are particularly well adapted for compreſſing the tongue, while the ſcarificator is employed in the back part of the mouth. By either of theſe, as well as with the other, in Plate XXIV. ſcarifications may be made, or abſceſſes may be opened, in any part of the mouth or throat with perfect ſafety.

In the treatment of inflammatory affections of theſe parts, we often find it neceſſary to recommend fomentations; a remedy, too, which proves frequently highly ſerviceable in catarrhal affections of the

trachea

trachea and lungs. Various methods are propoſed for conveying warm ſteams to theſe parts; but the beſt we have ever ſeen, and it is likewiſe the neateſt and moſt ſimple in its conſtruction, is the inſtrument delineated in Plate LIII. fig. 2. the invention of Mr Mudge of Plymouth. By means of it, the throat, trachea, and lungs, may be very effectually fomented by drawing warm ſteams into them, and without any difficulty or inconvenience to the patient, who may lie in bed during the whole operation.—This inſtrument I conſider as ſo highly uſeful in the treatment of every caſe of catarrh, that I think every family ſhould be poſſeſſed of it.

CHAP.

CHAPTER XXIX.

Of DISEASES *of the* LIPS.

SECTION I.

Of the HARE-LIP.

NATURAL deficiences are not ſo frequently met with in any part of the body as in the lips. Children are often born with fiſſures in one of the lips, particularly in the upper lip. In ſome inſtances this is attended with a conſiderable want or real deficiency of parts; in others we

we only meet with a ſimple fiſſure or diviſion of them; whilſt in ſome again, there is a double fiſſure with an intermediate ſpace left entire between them. Every degree of this affection is termed a Hare-lip, from a reſemblance it is ſuppoſed to bear to the lip of a hare.

For the moſt part this fiſſure or opening is confined to the lip itſelf: but in many inſtances it extends backward along the whole courſe of the palate, through the velum pendulum and uvula into the throat; and in ſome of theſe the bones of the palate are either altogether or in part wanting, while in others they are only divided or ſeparated from one another.

Every degree of the hare-lip is attended with much deformity. It ſometimes prevents a child from ſucking. When in the under lip, which is not, however, often met with, it is commonly attended with inability to retain the ſaliva, and it is always productive of ſome degree of impediment of the ſpeech; and when the diviſion

sion extends along the bones of the palate, the patient is much incommoded both in chewing and swallowing, by the food passing readily up to the nose.

These are all very urgent reasons for our attempting a cure of this affection as early as possible. Indeed, when sucking is interrupted by it, the child must either be fed by the spoon, or the operation must be done immediately. By practitioners in general we are desired at all events to delay it to the third, fourth, or fifth year; on the supposition, that the crying of the child will either render it altogether impracticable, or that the means employed for obtaining a cure will be thereby rendered abortive.

This reason, however, does not appear to be of much importance; for till the child arrives at his twelfth or fourteenth year, when we may suppose him to be possessed of sufficient fortitude for submitting easily to the operation, the same objection will be found to hold equally strong: Nay, a child of six or eight years of age is

in

in every reſpect more difficult to manage than one of ſix, eight, or twelve months. I am therefore clearly of opinion, that in a healthy child the operation ſhould never be long delayed; for the more early it is performed, the ſooner will all the inconveniences produced by the diſeaſe be obviated; and ſo far as I can judge from my own experience, I think that it may be done even in very early periods of infancy, perhaps in the third or fourth month, with the ſame proſpect of ſucceſs as in any period of life. I have done it in the third month with very complete ſucceſs.

Practitioners all agree with reſpect to the intention of this operation, which is accompliſhed by cutting off the ſides of the fiſſure ſo as to reduce it to the ſtate of a recent wound through the whole extent of it; and this being done, the ſides of the newly divided parts are drawn together and retained in contact till a firm adheſion takes place between them. But although the principles on which our practice is founded are univerſally admitted, authors have

have entertained very oppoſite opinions of the beſt method of carrying it into execution. By ſome we are directed to employ the interrupted ſuture for retaining the ſides of the fiſſure: others prefer the twiſted ſuture: whilſt by many, ſutures of every kind are ſaid to be improper; and that a cure may be always obtained by the uſe of adheſive plaſters, or by proper bandages; by which means a great deal of pain, they alledge, may be prevented, which ſutures are always ſure to occaſion.

This is a point of much importance, and therefore merits particular diſcuſſion; and more eſpecially as it has been warmly conteſted even by ſurgeons of reputation.

In the treatment of every diſorder, it is our principal object to obtain an effectual cure; but every practitioner will allow, that the eaſieſt mode of effecting this ought always to be preferred. On this principle much pains have been taken to ſhow, that ſutures are ſeldom neceſſary in wounds of any kind, eſpecially in the treatment of the hare-lip; and in ſupport of this opinion

various caſes are recited of cures being effected with bandages alone: Nay, ſome have gone ſo far as to aſſert, that in every inſtance of hare-lip a cure may be accompliſhed with more certainty by means of a proper bandage than when ſutures are employed; for they alledge, that the irritation produced by ſutures ſerves in a great meaſure to counteract the very purpoſe for which they are intended. After the edges of the fiſſure are cut off or rendered raw, the contraction of the adjoining muſcles is the only difficulty which we have to encounter: and this, we are told, inſtead of being removed by ſutures, is univerſally increaſed by them; while the ſame intention, it is ſaid, may be effectually accompliſhed without any inconvenience whatever, by a bandage applied in ſuch a manner as to keep the parts intended to be united in cloſe contact, which it does by ſupporting the contiguous parts ſo as to prevent the reaction of the muſcles connected with them.

That a hare-lip may be as completely cured

PLATE L.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

cured with the uniting bandage, or with adheſive plaſters properly applied, as by ſutures, we have no reaſon to doubt; and as this method of treatment is attended with leſs pain than the other, it ought in every caſe to be preferred if it could be relied on with equal certainty: But although by this means we might with much pains and attention be able in many inſtances to accompliſh a cure, yet from the nature of the remedy there is much reaſon to imagine that it would frequently fail; for in the cure of the hare-lip, if every point of the parts intended to be united be not kept in cloſe contact till a complete adheſion takes place, our intention is always fruſtrated, and nothing will afterwards prove ſucceſsful but a repetition of the operation in all its parts. The edges of the ſore muſt be again rendered raw, and the patient muſt ſubmit either to another application of the bandage, or to the uſe of ſutures; which, if employed at firſt, might have ſaved much trouble both to himſelf and to the operator: For

it is proper to obſerve, that in caſes where the operation is applicable, the method of cure by ſutures, when rightly conducted, never fails, at leaſt I have never known an inſtance of it. It ſometimes happens, indeed, that the deficiency or retraction of parts is ſo great as to render it impoſſible by any means to keep them in contact; and if ſutures are employed in caſes of this kind, they will no doubt prove unſucceſsful: This, however, is not the fault of the remedy, but of the operator, in uſing it in an incurable variety of the diſeaſe.

As I have had often occaſion to put this operation in practice, and being at firſt prepoſſeſſed in favour of the method of cure by bandages and plaſters, I gave them both a fair trial; and the reſult was what I have mentioned. I found, that by this method a complete cure might in ſome inſtances be obtained, but that the greateſt care and attention could not inſure ſucceſs; and finding that diſappointments never occur from the uſe of ſutures when they

they are properly employed, I have now laid every other method aside; and hitherto I have had no cause to regret my having done so. I shall therefore proceed to describe the operation as it is performed when sutures are employed; and as none of the methods of treatment by bandages will ever probably be received into general use, it would be considered as superfluous to give an account of them: And besides, our doing so seems to be altogether unnecessary, as the subject has already been fully treated of by various authors of reputation, particularly by Monsieur Louis of Paris, who has given a paper in the 4th Volume of the Memoires of the Royal Academy of Surgery, which contains every argument that has been suggested in favour of the method of curing the hare-lip by means of bandages.

In proceeding to the operation, the patient, if an adult, should be seated opposite to the light with his head properly supported by an assistant; but if a child, he will be more firmly secured if laid upon a

table, and kept in a proper poſture by an aſſiſtant ſtanding on each ſide.

The operator is now to make an attentive examination, not only of the parts to be removed, but of thoſe to which they are contiguous. The upper lip ought to be completely ſeparated from the gums beneath, by dividing the frenum which conjoins them. This admits of the lip being more equally ſtretched; and when one of the fore-teeth is found oppoſite to the fiſſure, if it projects in any degree, as is ſometimes the caſe, it ought to be taken out, as it will irritate and ſtretch the parts if it be allowed to remain. In ſome inſtances too, eſpecially when the fiſſure runs through the bones of the palate, a ſmall portion or corner of bone is found to project from one or both of the angles. This ſhould likewiſe be removed; and it may be eaſily done by the pliers or forceps, which ought to be both firm and ſharp, as is repreſented in Plate LVI. fig. 2.

Theſe preparatory ſteps being adjuſted, the ſurgeon, ſtanding on one ſide of the patient,

tient, muſt take one ſide of the lip between the thumb and fore finger of his left hand; and deſiring an aſſiſtant to do the ſame with the oppoſite ſide, and to ſtretch it ſomewhat tightly, he muſt, with a common ſcalpel, make an inciſion from the under border of the lip up to the ſuperior part of it; in which he muſt take care to include not only all the parts immediately concerned in the fiſſure, but even a ſmall portion of the contiguous ſound ſkin and parts beneath: And this being done on one ſide, a ſimilar inciſion muſt be made on the oppoſite ſide; which ought to be of the ſame length with the other, terminating in the ſame point in the upper part of the lip. By this means, if the operation is rightly done, a piece, including the fiſſure completely, will be cut out, of the form of the letter V inverted; and the deficiency will in every part of it have the appearance of a recent wound.

With a view to prevent inflammation, the divided arteries ſhould be allowed to diſcharge freely, eſpecially if the patient is

plethoric; and this being done, the ſurgeon is to proceed to unite the ſides of the fiſſure. In this he will be much aſſiſted by deſiring the cheeks to be puſhed forward ſo as to bring the edges of the wound nearly into contact, although not altogether ſo cloſe as to prevent him from ſeeing freely through from one ſide of it to the other; the aſſiſtant behind being directed to ſupport the parts in this ſituation during the remaining ſteps of the operation.

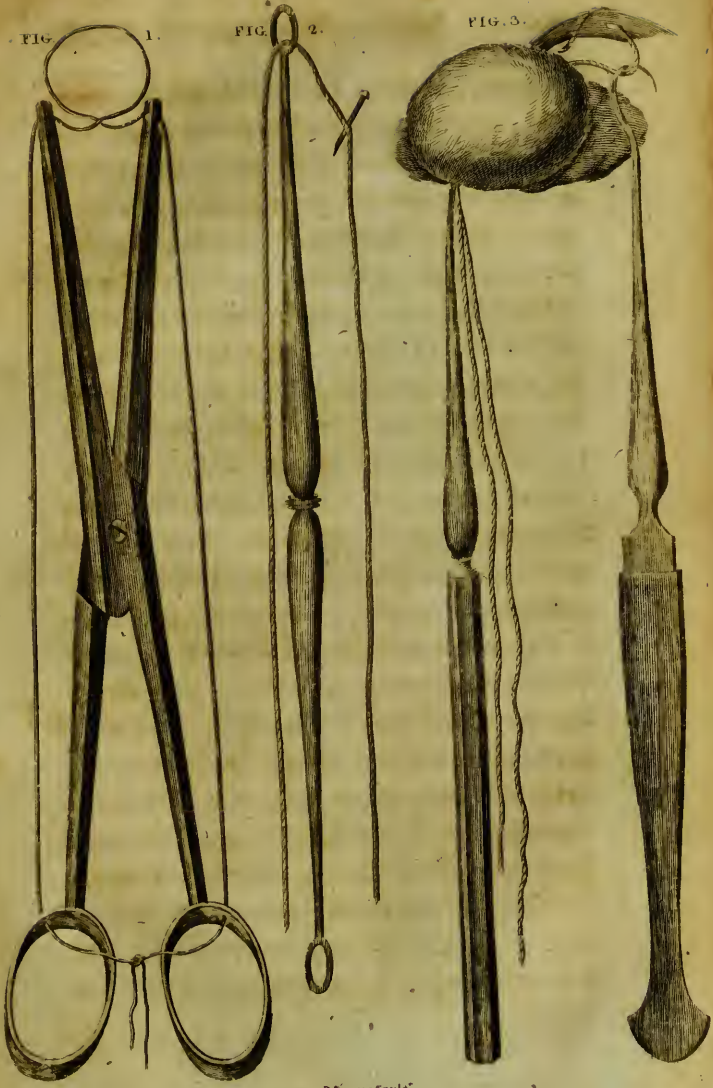
The ſurgeon is now to ſee that the two ſides of the cut correſpond exactly with each other; and this being done, the pins intended to ſupport them muſt be introduced in the manner we have directed in deſcribing the twiſted future, Vol. I. Chap. I. Sect. V. The firſt pin ought to be near to the under edge of the lip: If poſſible, indeed, it ſhould be placed entirely within the red part of the lip, leaving no more ſpace beneath than is merely neceſſary to ſupport it. Another pin muſt be inſerted in the centre of the cut, and a third within a very little of the ſuperior

PLATE LI.

FIG. 1.

FIG. 2.

FIG. 3.



D.Lizars Sculp.

perior angle of it. By some we are advised to use a greater number of pins; but even in adults three are always sufficient, and in infants two will very commonly answer. In passing them, they ought to be made to enter nearly half an inch from the edge of the sore; and being carried nearly to the bottom, which will be seen by retaining the wound open in the manner we have directed, they must be again passed outward, in a similar direction and to an equal distance on the opposite side of the fissure.

The assistant should be now desired to push forward the cheeks, so as to bring the edges of the sore close together, when a firm waxed ligature should be applied over the pins in the manner we have formerly directed for the twisted suture, and as will perhaps be better understood by fig. 3. Plate LVII. The surgeon should first apply the ligature to the under pin; and having made three or four turns with it, so as to describe the figure of 8, it should then be carried to the contiguous pin; and being

being in a ſimilar manner carried round this pin, he is then to finiſh the operation by carrying it to the other; taking care in applying it round all of them, to draw it of ſuch a tightneſs as may retain the parts in cloſe contact; but not ſo ſtrait as to irritate or inflame them, as is ſometimes done.

By ſome authors we are deſired to make uſe of a ſeparate thread for every pin, in order, as they ſay, to admit of one pin being removed, if it ſhould become neceſſary, without diſturbing the others. This however never happens to be the caſe; ſo that the precaution is altogether unneceſſary.

A piece of lint, covered with mucilage to retain it, ſhould now be put over the courſe of the cut, with a view to protect it more effectually from the air; and it ſhould likewiſe be made to cover the ends of the pins to prevent them from being entangled with the bed clothes, or otherwiſe; and this is all the dreſſing or bandage which in general is neceſſary. We are deſired indeed by many, after the pins

are

are all ſecured, to apply the uniting bandage, in order to ſupport the muſcles of the cheek, ſo as to prevent the pins from cutting or irritating the parts through which they are paſſed, which they are apt in ſome degree to do, when the deficiency of parts produced by the diſeaſe is conſiderable.

This however is a practice which I have never obſerved any advantage ariſe from, and it often does miſchief; for a bandage cannot be applied with ſuch tightneſs as to give any ſupport to the muſcles of the cheek without incommoding the patient exceedingly: and it is apt to do harm, as we have elſewhere obſerved, by preſſing upon the ends of the pins over which it muſt paſs; for even allowing a ſlit to be made in that part of the bandage correſponding to the lip, as ſome have adviſed, this inconvenience of its preſſing upon the pins cannot be altogether prevented: And beſides, although a bandage may be applied ſufficiently tight at firſt, the motion of the jaw commonly looſens

it

it ſoon, ſo as to prevent it from having any farther effect. When, however, there is a great deficiency of parts, and when the edges of the ſore are with difficulty brought together, ſome advantage may be derived from a proper application of adheſive plaſters. An oblong piece of leather, ſpread either with common glue, or with ſtrong mucilage, ſuch as is employed in making the court plaſter, being applied over each cheek, and of a ſize ſufficient for reaching from the angle of the jaw to within an inch or thereby of the pins on each ſide, and each piece of leather having three firm ligatures fixed to that end of it next the pins, one at each corner and another in the middle, the cheeks ſhould now be ſupported by an aſſiſtant, when the ligatures ſhould be tied ſo as to retain the parts in this ſituation; and if care be taken to make the ligatures paſs between the pins, and not immediately over them, no harm or inconvenience will occur from them. It rarely happens however that any aſſiſtance of this kind is needed; for I have, in almoſt

PLATE LII.

FIG. 1.

FIG. 2.

FIG. 3.

most every instance, found that the pins answer extremely well without any support whatever.

It is scarcely necessary to observe, that during the time the pins are in the lip, the patient should be fed upon spoon meat, and should be prevented from laughing, crying, or from stretching his mouth in any manner of way.

The pins having remained in the lip for five or six days at farthest, they should now be taken out; for by this time, as I have found by experience, the most perfect union of the parts is produced; and by remaining longer they are apt to leave marks which do not so readily disappear as when they are taken out sooner. I believe, indeed, that three days would frequently prove sufficient; but as I know from experience that the pins may without detriment be allowed to remain in the sore for five or six days, I think it better not to remove them sooner.

This is the practice we wish to advise for a common case of hare-lip; and, as a far-

farther illuſtration of it, ſome figures are delineated in Plate LVII. repreſenting the appearance of the diſeaſe before the operation—the parts which ought to be removed—the application of the pins—and the appearance which the parts ſhould have when the operation is finiſhed. But for a more particular account of theſe, we muſt refer to the explanation of the Plate.

What we have hitherto been ſaying relates to the diſeaſe in its moſt ordinary form. In the caſe of a double hare-lip, there is a neceſſity for performing the operation twice in all its parts; firſt in one fiſſure and then in the other. By ſome we are directed to do them both at once: but this ought by no means to be attempted; for by doing ſo we incur much riſk of loſing all the advantage that may be derived from the intermediate ſound parts, and of which I once met with a very diſagreeable inſtance. The ſound part of the lip lying between the two fiſſures was by no means inconſiderable, but being much ſtretched with a great number of pins

paſſed

paſſed through it, it began to inflame immediately after the operation; and the inflammation and pain increaſing, the whole pins were obliged to be removed, and the patient would not afterwards ſubmit to any farther trial. We ought, therefore, firſt to complete the cure of one fiſſure; and this being done, we may in the ſpace of two or three weeks venture with much ſafety on the other.

In deſcribing this operation, we have deſired, that although the fiſſure may not extend the whole breadth of the lip, yet that the cut ſhould paſs up to the upper part of it: And any perſon accuſtomed to this operation will know, that the parts may be united much more neatly in this manner, than when the lip is only cut through part of its breadth. By the one method of treatment, the parts when drawn together are ſmooth and equal; but by the other, they are apt to be uneven and much puckered.

We have alſo deſired that the ſurgeon ſhould take particular care to make the

two

two ſides of the cut exactly of an equal length: a point of much importance in this operation, and requires more attention than is commonly paid to it: for it is obvious, if one ſide of the wound be longer than the other, that the cicatrix will not be ſmooth and even as it ought to be: by inſerting the firſt pin at the edge of the lip, this part of it will be very properly united, but the reſt of it will have a very diſagreeable appearance. The moſt effectual method of guarding againſt ſuch an occurrence is the marking with ſmall dots of ink, not only the length of the cut on each ſide, but the direction which it ought to take, by which every chance of going wrong is prevented.

It is of much importance to have the lip equally and tightly ſtretched in making the inciſion, otherwiſe the edges of the ſore will be ragged and uneven: This may be always prevented by proper attention; but with a view to guard againſt it as much as poſſible, curved forceps may be em-

employed for laying hold of the lip. They are delineated in Plate LV. fig. 1. They should be made so as to compress the lip equally; and being applied in the direction intended for the incision, the scalpel should be carried along the side of them, by which means the cut may be made very exact and even. Various forms of this instrument have been recommended; but the one we have delineated is of a more simple construction, and answers the purpose equally well, if not better than any of them.

By some we are desired not to employ any instrument of this kind, on the idea of its irritating and bruising the lip. This suspicion, however, can have occurred only to those who have never used it; for when it is smooth and equal in every part, a degree of compression may be employed with it perfectly sufficient for fixing the lip without creating the least uneasiness to the patient. This I can assert from much experience of its utility.

Inſtead of making the inciſion in this manner, ſome have directed it to be done by fitting a piece of paſteboard, lead, or tin, to the gums beneath; and the lip being placed upon it, to cut down with a ſcalpel upon the ſupporting ſubſtance: The operation may be very properly done in this manner, but the cut is more eaſily made in the manner we have directed.

Till of late the inciſion in this operation was commonly made with ſciſſars; and although they are now very generally laid aſide on the ſuppoſition of their bruiſing the lip, yet the operation may be very properly done with them. I would not think it right to employ ſciſſars to cut a part of much thickneſs, but the lip is ſeldom ſo thick as to render it improper to uſe them in cutting for the hare-lip. They have of late been uſed in this place by different practitioners; and as a point of this kind can be determined by experience alone, I have likewiſe employed them. In order to aſcertain which of the two modes of operating, that with

the

PLATE LIII.

D.Lizars.Sculp.

the scalpel or with the sciſſars, ought to be preferred, I in one case made the inciſion in one side with a scalpel, and in the other with sciſſars. The patient averred that the sciſſars gave least pain, probably from their making the cut in somewhat less time than is necessary with the knife; and, during the cure, that side of the lip which was cut with the sciſſars neither swelled nor inflamed more than the other. I do not from this, however, mean to say, that sciſſars are preferable to the scalpel; I mention it only to show that the common idea entertained of them is ill-founded, and that the operation may be equally well done with both instruments. Sciſſars for this purpose should be very strong, and particularly firm at the joint. They ought also to be highly poliſhed. The size and form of them represented in Plate LVI. fig. 1. has been frequently used, and is found to answer.

When describing the Twiſted Suture in Vol. I. I gave the preference to gold pins;

and I am ſtill of opinion that they are the beſt. When of a proper form, ſuch as are repreſented in Plate II. figs. 2. 3. and 4. they pierce the lip with much eaſe without any aſſiſtance from a porte-aguille: but they who think that a ſharper and firmer point than can be given to gold will anſwer better, may have ſteel-points added to them, as is repreſented in Plate LVII.; and the ſteel-points being moveable, they may be removed after the pins are paſſed, by which every riſk is prevented of their wounding the contiguous parts. By ſome practitioners, flexible needles are employed for this operation; but they have not been found to anſwer ſo well as thoſe which are firm and give ſufficient reſiſtance to the ligatures.

In paſſing the needles, I have ſaid that they ſhould go nearly through to the oppoſite ſide of the lip: This ought to be particularly attended to, otherwiſe a fiſſure will remain in the inner part of the lip, which may afterwards prove troubleſome by the food lodging in it. And beſides, although

although the diſcharge of blood which ſucceeds to this operation is always ſtopt immediately on the parts being drawn together by the ligatures where the pins have been properly introduced, yet when they are not paſſed to a ſufficient depth, the blood will continue to get out behind, and may afterwards be productive of much diſtreſs. I have ſeen an inſtance of this where a very troubleſome ooſing of blood continued for ſeveral days after the operation; and an inſtance is recorded even of death enſuing from it. In order to prevent the lip from being ſtretched by the patient ſpitting, it is the uſual practice to deſire him to ſwallow his ſaliva with any blood that may be diſcharged from the ſore. In this caſe the patient complied implicitly with the directions given to him; and he died from the cauſe I have mentioned, namely a great loſs of blood. His ſtomach and bowels were found filled with blood which he had ſwallowed *.

* Vide Memoires de l'Academie Royalle de Chirurgie, Tom. IV. p. 427.

There being the leaſt chance of ſuch an occurrence, ſhould be a ſufficient reaſon for patients being prevented from ſwallowing their ſpittle after this operation, till it is obſerved that there is no blood mixed with it; but beſides, it ſometimes happens, that ſickneſs and vomiting is induced even by a very ſmall quantity of blood paſſing into the ſtomach, by which the lip is much more ſtretched than it would be by all the blood from the wound being ſpit out.

We have thus deſcribed all the ſteps of the operation for the hare-lip: and it is proper to obſerve, that they are equally applicable in the treatment of a fiſſure in the lip by whatever cauſe it may be formed; only, in a recent cut, as the edges of it are already raw, all that the ſurgeon has to do is to inſert the pins and apply the ligatures. In wounds where ſuppuration has already commenced, there is uſually ſome degree of inflammation upon the edges of them: While this continues it would be improper to draw them together by liga-

ligatures; but as soon as the inflammation subsides, we may with much propriety insert the pins and finish the operation in the manner we have directed. We are told indeed by many, that this practice will succeed only in recent wounds, and that it ought not to be recommended where matter is already formed: I have often, however, acted otherwise: and I have uniformly found, where the edges of a sore have not become callous, that they have been united as easily when covered with pus as when perfectly recent and covered with blood.

In cases of hare-lip attended with a fissure in the bones of the palate, after uniting the soft parts in the manner we have pointed out, some advantage may be derived from a thin plate of gold or silver, exactly fitted to the arch of the palate, and fixed in by a piece of sponge stitched to the convex side of it to be inserted into the fissure. If the sponge be inserted dry, and be properly fitted, the moisture which it imbibes from the contiguous

guous parts will in many inſtances make it remain ſufficiently firm, by which both ſpeech and deglutition will be rendered more eaſy. In ſome caſes, however, the form of the fiſſure is ſuch as prevents the ſponge from having any effect. This always happens when the opening is wider outwardly than it is found to be more internally. For ſuch caſes other means have been propoſed, eſpecially thin plates with gold ſprings, made ſo as to fix upon the contiguous parts; but no invention of this kind has been yet found to ſucceed.

SECTION II.

Of the Extirpation of Cancerous Lips.

THE under lip is more frequently attacked with cancer than any other part of the body; and as we know of no internal remedy by which the diſeaſe can be cured, the only means we employ for it is the removal

moval of the part affected. In a former publication, we endeavoured to ſhow, that little dependence can be placed either on arſenic or any of the cauſtic applications, which have been ſo much recommended for this purpoſe; and that we are to truſt to the ſcalpel alone for relief.

When a cancerous ſore has ſpread over any conſiderable part of the lip, and eſpecially when the lip is altogether affected, all that a ſurgeon can do is to remove the diſeaſed parts; to ſecure the divided arteries by ligatures, when this is found neceſſary; and to dreſs the ſore as a recent wound from any other cauſe. In this manner a cancer may be effectually taken away; but it gives a very diſagreeable appearance, the under teeth and gums being left all uncovered; and the patient can neither retain his ſaliva, nor ſwallow liquids, but with much difficulty. There is here, however, no alternative; for where the whole lip is taken away, the inconveniences we have mentioned muſt neceſſarily

rily enſue, as there is no poſſibility of drawing the divided parts together.

But when the diſeaſe has not attacked any conſiderable part of the lip, we may always have it in our power to draw the edges of the cut together ſo as to make them unite with the twiſted ſuture in the manner deſcribed in the laſt ſection: by which we not only prevent a great deformity but the patient is equally capable as he was before the operation, of ſwallowing liquids and retaining his ſaliva: And beſides, this method of treatment, as we have elſewhere remarked, by leaving a very ſmall extent of cicatrix, ſeems to have ſome effect in preventing a return of the diſeaſe; at leaſt this has been evidently the caſe with thoſe that have fallen under my obſervation. Where the operation has been performed in the uſual way, without drawing the divided parts together and uniting them by ligatures, the diſeaſe has in ſeveral inſtances returned: But, excepting in a very few unfavourable caſes, it has never returned where the hare-lip method

thod of treatment has been employed. Nay more, this will sometimes succeed where the other has failed. A man appeared at our Infirmary here with a cancer on the under lip. It had been twice removed by extirpation in the usual way; but the disease returned after each operation soon after the healing of the sore. As there was not so much of the lip removed as to prevent the sore from being treated in the manner we have directed, after taking away all the diseased parts, this method was accordingly put in practice. The cure was completed; and I had an opportunity of knowing, eight years after the operation, that the man remained in good health, without any return of his disease. Nor should we be deterred from doing the operation in this manner by the disease being extensive, if we find that the parts which have been divided can be drawn together and retained by the twisted suture: And this, we may remark, may be always done where the disease does not render it necessary to remove almost the whole lip. These parts

stretch

ſtretch ſo conſiderably, that in general this method of treatment may be adopted, although a third part only of the lip is left after the operation. With reſpect to the method of doing the operation, we muſt refer to the laſt ſection. In addition to what was then ſaid, we have to obſerve, that all the cancerous parts ought in the firſt place to be removed, taking care to form the cut in ſuch a manner as will moſt readily admit of the edges of it being eaſily and neatly drawn together. When the diſeaſe is ſeated in the lip only, the parts will have nearly the ſame appearance after this operation, as they have after that for the hare-lip. But when the diſorder extends to the cheek, as is ſometimes the caſe, a longitudinal diviſion of the lip will not only be neceſſary, but a tranſverſe cut into the cheek; both to be united by pins and ligatures: an operation which in different inſtances I have put in practice with very complete ſucceſs.

CHAP.

CHAPTER XXX.

Of the DISEASES *of the* MOUTH.

SECTION I.

Anatomical Remarks.

BEFORE we proceed to consider the diseases which are the object of the present chapter, it will be proper to premise a short anatomical description of the teeth, gums, and jaws, the parts in which these diseases are chiefly seated.

On examining a tooth, we find it divided into three parts;—that part of it which lies

lies above the gums, termed the Body or Corona of the tooth;—the roots or fangs, which the gums, in a ſtate of health, cover entirely;—and a kind of depreſſion between the body and fangs, juſt where the gums commonly terminate: This is termed the Neck of the Tooth.

The root, as well as the interior part of the corona, is compoſed of an oſſeous kind of matter; but it appears to differ from bone by our not being able to throw injections into it: for although we are told that this may be done, there is much reaſon to imagine that the opinion is ill-founded, from the beſt anatomiſts having failed in it*.

This oſſeous part of the teeth being of a ſoft texture, would ſoon ſuffer and wear away by maſtication: But nature has amply provided againſt this inconvenience; for we find all that part of them which lies expoſed, by being above the gums, covered

* Vide the Natural Hiſtory of the Human Teeth, by John Hunter, 2d edition, p. 36, &c.

ed by a very firm, hard substance, termed the Enamel, which protects them effectually against every injury of an ordinary nature. This part of a tooth, besides being much harder than bone, differs from it likewise in our not being able to pass the most subtle injection into it; nor can it be tinged by feeding an animal upon madder or any other colouring substance, as is the case with every bone in the body. The enamel is thickest on the upper surface of the teeth, especially in the grinders where it is most needed; and it becomes gradually thinner as it approaches the neck, where it terminates. At this part we find the commencement of the periosteum, which covers all the roots of the teeth, and is intimately connected both with them and with the surrounding sockets.

In the interior part of every tooth we discover a hollow, or cavity, corresponding to the size and figure of the tooth itself. It commences by a very small opening in the extremity of the root or fang, at which

the

the blood veſſels and nerves of the tooth enter; and this canal becoming wider as it proceeds forwards, terminates at laſt in the body of the tooth, where we find the cavity filled with a pulpy kind of ſubſtance, probably formed by an expanſion of the blood-veſſels and nerves belonging to it. A tooth with one root or fang has commonly only one hole or opening in it; but ſome teeth have ſeveral fangs, and every fang has a canal paſſing through it, and is ſupplied with diſtinct blood-veſſels, and probably with ſeparate branches of nerves, although theſe have never been clearly traced into them.

The teeth are fixed in what is termed the Alveolar Proceſs of each jaw. This conſiſts of a broad thick edge, with which the jaws are furniſhed, divided into ſeparate cells or openings for the fangs of the different teeth; and the roots of the poſterior teeth being larger and more expanded than the others, we find accordingly that this part of the jaw is thicker and broader than the fore part of it. In the upper jaw this

this difference, with reſpect to thickneſs, is increaſed by the antrum Highmorianum, a large ſinus or cavity in each maxillary bone immediately above the large molares or grinders of each ſide. This ſinus has no communication with the mouth, but it opens into the noſtril between the two oſſa ſpongioſa, by a canal, which in the ſkeleton is large enough to admit a common quill. The alveolar proceſs of the upper jaw is divided from this cavity by a thin plate of bone, in which the roots of the poſterior molares commonly terminate; but in ſome inſtances they paſs through this plate into the antrum itſelf.

The lower jaw is in infancy compoſed of two bones, united at the chin by what is termed the Symphyſis of the jaw. Theſe bones however are ſoon joined ſo firmly together, as to have the appearance of one continued and connected piece. Beſides the alveolar proceſs, the under jaw is on each ſide furniſhed with other two proceſſes, with which it is neceſſary for practitioners to be acquainted. The anterior,

which ſeems to be chiefly intended for the inſertion of the temporal muſcle, is termed the Coronoid Proceſs. It ariſes in the form of a ridge from the outſide of the jaw oppoſite to the two poſterior molares; and proceeding backward and upward, it terminates in a thin ſharp point: And the poſterior, or condyloid proceſs, which is ſhorter, thicker, and ſtronger than the other, terminates in an oblong head or condyle, by which the articulation is formed between this bone and the head.

The coronoid proceſs gives a degree of ſtrength and thickneſs to the external plate of the alveolar proceſs in this part of the jaw that does not take place in any other part of it. This renders it highly improper to attempt the extraction of the two laſt molares by turning them outwards. They ſhould always be pulled towards the inſide of the mouth. Through all the reſt of the jaw, the ſockets or alveolar proceſſes are weakeſt on the outſide, although the difference is inconſiderable; and they are in both ſides weaker in the upper than in the under jaw.

The

The full number of teeth in an adult is thirty-two; and as they are of different forms, and intended for different purpoſes, they are accordingly diſtinguiſhed by particular names. The four anterior teeth in each jaw are named Inciſores; the next to theſe on each ſide are the Canine; and the five poſterior teeth on each ſide are termed the Molares or Grinders; the two firſt the ſmall molares, and the other three the large grinders.

In childhood there are only twenty or twenty-four teeth, which continue till the ſixth or ſeventh year, when they begin to drop, and are ſucceeded by others which are termed the Adult or Permanent teeth. The firſt ſet, or milk teeth as they are commonly called, as well as ſome of the others, are formed in the jaw before birth; but they do not in general appear above the gums till the child is ſeveral months old. In ſome inſtances, about the fourth or fifth month, but moſt frequently about the eighth or ninth, two of the inciſores appear in the lower jaw. Theſe are com-

monly ſucceeded by two in the upper jaw, and the other four fore teeth appear afterwards, at uncertain periods, between this and the tenth or twelfth month. About the ſixteenth or ſeventeenth month, four of the large molares appear; for in childhood there are no ſmall molares: One of theſe puſh out on each ſide, leaving a ſpace between them and the inciſores for the canine teeth; which being formed farther up in the jaw, ſeldom appear before the twentieth month: but about this period, or between this and the end of the ſecond year, both they and other four molares have commonly made their appearance.

Theſe are the periods at which the infantine ſet of teeth uſually appear; but much variety is met with in this point. I have known the canine teeth appear before any of the molares. In one inſtance they came forward before two of the inciſores. In ſome caſes the inciſores have been obſerved in the ſecond and third months, nay even at birth; whilſt in others, I have known

known the fourteenth or fifteenth month paſs over before any have appeared.

Theſe teeth continue firm till the fifth or ſixth year. About this period they begin to looſen; and between the ſeventh and twelfth year they are commonly all ſhed and ſucceeded by others. By this period too, the jaws are ſomewhat lengthened, ſo as to admit of other four molares. Between the twelfth and ſixteenth years four others appear; and in general about the twentieth year the four laſt of the molares appear, uſually named the Dentes Sapientiæ.

The two ſets of teeth we have deſcribed have very different appearances, inſomuch that we may in general know, from the appearance of a tooth, whether it belongs to the infantine or permanent ſet; and as this is often a point of importance, it ought to meet with particular attention. It is particularly neceſſary to be acquainted with their appearances in the treatment of thoſe diſorders of the teeth which occur about the time of ſhedding the firſt ſet;

for it frequently happens that we would have no heſitation in pulling a tooth, were we certain that it belonged to the firſt ſet; while we would rather decline to take it out if it appeared to be one of thoſe which ſhould continue during life. It has happened indeed in a few inſtances, that a third ſet of teeth have appeared; but this is a very rare occurrence, and is only to be conſidered as a very unuſual deviation of nature.

The ſockets of the teeth, and a ſmall portion of the teeth themſelves, are covered with a red, firm, fleſhy kind of ſubſtance, termed the Gums. This ſubſtance ſeems to be almoſt entirely vaſcular; for the ſlighteſt wound or ſcratch in it is always attended with a diſcharge of blood. The alveolar proceſs of each jaw is entirely covered with it; ſo that we find a ſmall portion of the gums between every two teeth. In ſome diſeaſes, particularly in the ſcurvy, a partial ſeparation often occurs of the gums from the teeth; but in a healthy ſtate they adhere ſo firmly to the necks of

the

the teeth as to have ſome effect in fixing them in their ſockets.

We ſhall now proceed to treat of the diſeaſes of theſe parts, and of the operations performed upon them.

SECTION II.

Of Dentition.

DURING the approach of the firſt ſet of teeth, and in ſome inſtances of that of the ſecond, much diſtreſs is frequently experienced from the irritation produced by the teeth upon the gums. For this reaſon I have thought it right, before proceeding to the diſeaſes of the mouth, to offer a few general obſervations on Dentition.

In Dentition the gums inflame and become full about the part where the teeth are afterwards to appear. The child is conſtantly rubbing the gums with his fingers. The ſaliva is for the moſt part in-

creaſed in quantity; but in a few inſtances it is otherwiſe, and the mouth becomes perfectly dry. The bowels are commonly very irregular, the patient being on ſome occaſions extremely coſtive, and on others diſtreſſed with a diarrhœa. The heat of the body becomes increaſed, and quickneſs of pulſe takes place along with other ſymptoms of fever. Theſe are the moſt frequent ſymptoms attending dentition; but it often happens that they are accompanied with ſubſultus tendinum, and even with convulſions.

As theſe ſymptoms originate from irritation, thoſe means are chiefly to be depended on which are moſt effectual in counteracting this. Hence we derive much advantage from opiates, bliſters, and eſpecially from warm bathing. But when theſe fail, which they often do, we have it frequently in our power to remove every ſymptom, by making an inciſion through the gums directly upon the approaching tooth or teeth; an operation uſually termed ſcarifying the gums.

A common prejudice prevails against this operation, from an idea of its doing harm, in the event of a cicatrix being left upon the gums, which sometimes happens when the tooth is not just at hand; for it is supposed that the cicatrix will afterwards be worse to penetrate than if the gum had not been touched. For this reason the operation is seldom or never done till the tooth is observed to have elevated the gum considerably: but in this we are wrong; for when delayed so long, almost all the advantages which may be derived from it are lost. I have commonly observed, that the very worst symptoms which occur from dentition take place before the teeth have come this length; and that they usually abate on the teeth approaching towards the surface of the gums, probably from the gums being rendered more insensible by the long continued pressure of the teeth beneath.

Whenever we have reason to suspect, therefore, from the nature of the symptoms, that they are owing to this cause, we ought

ought without heſitation to make a free inciſion through that part of the gums where there is moſt reaſon to expect a tooth; and if this inciſion ſhould afterwards heal, and if the ſymptoms ſupervene again, no riſk can occur from the operation being repeated. I have frequently found it neceſſary to cut two or three times upon the ſame tooth; but with a view to prevent the neceſſity of this, I commonly make a crucial inciſion down to the depth of the tooth, and I have never obſerved any inconvenience to occur from it. We have no cauſe whatever to be afraid of hemorrhagy. Indeed the cut ſeldom bleeds above a few drops, and it commonly heals eaſily.

The operation may be done with a common lancet, or with a biſtoury or ſcalpel, the inſtruments uſually employed for it: but it cannot be neatly done with any of them; and beſides, we are in danger, either with a lancet or ſcalpel, of hurting the contiguous parts. The inſtrument repreſented in Plate XLIX. fig. 4. is not liable to any of theſe objections; and being

of

of a small size, it may be entirely concealed in the palm of the hand. The child being secured by the nurse, the surgeon with the fingers of one hand should open the mouth; and conducting the edge of the instrument with the fore-finger of the other, the incisions should be finished before withdrawing it, by making a crucial cut over every tooth that appears to be approaching. The incision, as we have already advised, should always be carried to the depth of the tooth, so as to lay it entirely bare; and when this is freely done, the effects which result from it are often remarkable. I have seen instances of children being instantly relieved by this operation who previously appeared to be in the most imminent danger.

It sometimes happens too, as we have already observed, that disagreeable symptoms take place from the approach of the second set of teeth. I have known pain produced over the whole jaw, attended with swelling and inflammation of the gums and cheeks, from a single tooth not

getting

getting freely out. This happens moſt frequently with the dentes ſapientiæ; in ſome inſtances, from the uſual cauſe of irritation produced upon the gums, which in the back part of the jaws are very thick; but in others from there not being room in the jaw to admit them. In the firſt caſe, we have it commonly in our power to remove all the ſymptoms, by making a free inciſion directly upon the tooth; but in the other this does not always prove ſufficient, and nothing will frequently anſwer but the extraction of the tooth. When it is diſcovered that the ſymptoms originate from this cauſe, we ſhould not heſitate about the removal of the tooth: for it ſeldom happens that any advantage is gained from delaying it, and the inflammation induced upon the gums often ſpreads to the throat and other contiguous parts; and is thus productive of much diſtreſs, which might be eaſily prevented. When the throat inflames and ſwells from this cauſe, no other remedy will prove ſucceſsful; and it is often ſurpriſing how

ſoon

soon the most violent degree of inflammation is removed by it. I have known instances of much distress in the throat relieved immediately by the removal of a tooth, which had obstinately resisted every other means for several weeks.

SECTION III.

Of the Derangement of the Teeth.

THE second set of teeth frequently appear in a very irregular manner: Some of them will be very properly placed, while some are farther out upon the jaw, and others farther in, than they ought to be. When the derangement is not very remarkable, it seldom meets with much attention; but in some instances the deformity produced by it is so considerable as to require the assistance of art for removing it. It occurs most frequently in the inci-

inciſores and canine teeth, ſeldom or never in any of the molares.

Derangements of the teeth may occur from different cauſes:—from a deficiency of ſpace in the jaw, by which they cannot be all admitted in one circle;—from a natural mal-conformation;—or from ſome of the firſt ſet remaining firm after the ſecond ſet have appeared.

It will ſometimes happen, that the teeth which are out of the circle will fall into it without any force being applied to them, on ſpace being given to them by one or more of thoſe which are in the circle being pulled. When it appears, therefore, that the derangement is owing to any of the firſt ſet not having dropped, they ought to be taken out immediately; for the longer it is delayed, there will be the leſs chance of the irregular teeth falling into their ſituation: but when it is even owing to thoſe of the ſecond ſet being too large for the ſpace they are to fill, we ſhould not heſitate in removing ſome of them, for no other method will prove ſucceſsful. When the teeth which occupy the natural circle of the

jaws

jaws are regular and have a good appearance, the tooth or teeth which are out of the circle ought to be pulled; but when either of the contiguous teeth do not fill the place ſo properly as theſe would do, or when they are rough or otherwiſe of a diſagreeable appearance, it may ſometimes be adviſeable to pull one of theſe that are in the circle, and endeavour to bring the others into the range. If this be done before the teeth have been long fixed, and if they are not far diſtant, they will ſometimes in a gradual manner, as we have ſaid, fall into the vacancy without any aſſiſtance; but when this does not happen ſoon from an effort of nature alone, we may frequently employ means for promoting it. No attempt, however, of this kind can be made till the body of the deranged tooth has paſſed freely out from the gums, as till then it cannot be eaſily laid hold of.

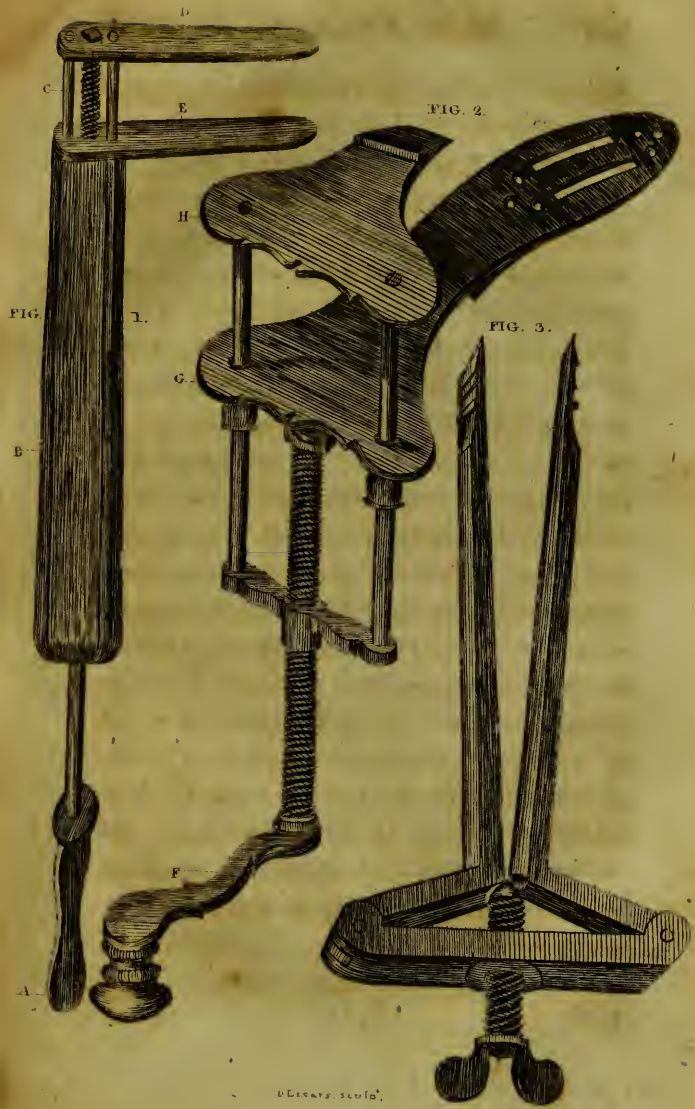
The uſual method of moving teeth which are out of the circle, is by applying a ligature round them, and tying each

end

end of it firmly to the contiguous teeth, and pulling it tighter from time to time: or a plate of gold or ſilver is fitted to the contiguous teeth, and made to ſurround the deranged teeth in ſuch a manner, that when it is firmly preſſed down by the oppoſite jaw, it acts with conſiderable force in bringing the teeth nearer together. This laſt method, however, proves troubleſome to the patient; and the other, at the ſame time that it will in ſome degree move the deranged teeth towards the circle, will nearly in the ſame proportion draw the others out of it; but we may in another manner apply a ligature for this purpoſe with perfect ſafety, and it is by much the beſt we have yet ſeen of moving deranged teeth. Let a thin plate of gold, of a length ſufficient to paſs over four of the contiguous teeth, be exactly fitted to the ſide of thoſe teeth oppoſite to that which is to be moved. The plate ſhould be perforated with ſeveral ſmall holes: On being applied to the teeth, and tied to them by a bit of waxed thread, let

a

PLATE LV.



a piece of flexible wire be paſſed through two of the holes; and the doubling of the ligature being carried over the tooth to be moved, the two ends of it ſhould be firmly drawn through the holes, and ſhould now be fixed with a pair of pliers. Every three or four days the ligature ſhould be made ſomewhat tighter; and this being perſevered in, almoſt every tooth in this ſituation may at laſt be brought into the circle.

It ſometimes happens that a good deal of deformity is produced by an opening in the anterior part of the jaw, formed either by one or more teeth being accidentally driven out, or from their being a natural want of them. When a practitioner is called immediately on a tooth being driven out, he ought by all means to replace it; or if the tooth be broke, or otherwiſe much injured, he may conſult the inclination of the patient with reſpect to the tranſplanting of a ſound one from the mouth of another perſon. But in matters of this kind the patient ſeldom complains till the

parts affected have become inflamed and tumefied, when it is too late to put this method of treatment in practice. In this ſituation we muſt wait till the pain and ſwelling are entirely removed; when, if more than one tooth is wanting, the deficiency muſt be ſupplied with artificial teeth fixed to thoſe which remain firm; but when one tooth only is wanting, we may frequently, in young people, be able to remove the deformity by paſſing a ligature round the two contiguous teeth, ſo as by degrees to draw them nearer together. Nature will frequently effect this, in ſome degree, of herſelf: but the operation is commonly ſlow; and beſides, it is ſeldom done ſo completely as when a ligature is employed. By this means the bodies of the teeth are equally drawn together; but when the ligature is not uſed, although the teeth, from want of ſupport, will fall nearly together at their points, the opening will commonly remain nearly the ſame at their roots.

SECT.

SECTION IV.

Of Gum Boils.

THE gums, like all the ſoft parts of the body, are liable to abſceſſes; but collections of matter occur more frequently in the gums than in other parts, from their being more expoſed to cauſes which tend to produce them. Abſceſſes may in this ſituation originate from cold and from external violence, as well as from every cauſe which tends to produce inflammation in other parts; but they are for the moſt part traced as the conſequence of toothach: and they occur not only from carious teeth, but from inflammation at the roots of teeth, when perhaps in every other reſpect the teeth may appear to be ſound.

A gum-boil commonly appears after a fit of toothach has continued for ſome time. It begins with ſome degree of pain, attend-

ed with a ſmall tumor on the part affected. By degrees the cheek ſwells; and this ſwelling frequently ſpreads over the whole face ſo as to produce much deformity. On ſuppuration taking place, the ſmall tumor, which is commonly ſeated on the outſide of the gums exactly oppoſite to the diſeaſed tooth, begins to point; and if it be not opened, it generally burſts either through an opening in the ſide of the gum or between the gum and the tooth. A quantity of matter is now commonly diſcharged, by which the patient in general receives effectual relief: But as the cauſe ſtill remains, the diſcharge likewiſe continues; for as the diſeaſe is moſt frequently induced by ſome affection of a tooth, or by a portion of the jaw becoming carious, a ſtillicidium of matter uſually continues, either till the diſeaſed tooth is removed, or till the carious part of the jaw has exfoliated: Or, if the opening happens to cloſe, the diſeaſe will be ſoon renewed by the ſwelling returning, and again going thro' all the ſtages of inflammation and ſuppuration

ration in the manner we have already deſcribed. When indeed the diſeaſe is owing merely to inflammation at the root of a tooth, and when the root happens not to be denuded of its perioſteum, after the matter of the abſceſs is evacuated, the ſides of it may collapſe and adhere, and a cure will in this manner take place: But when the diſeaſe is produced either by a carious tooth, or by a carious portion of the jaw, or even when it proceeds from inflammation alone, if the root be laid bare by the matter, the diſeaſe will not be perfectly eradicated till the tooth or carious part of the jaw is removed; for theſe will continue to irritate the contiguous parts in the ſame manner with extraneous bodies of any other kind. In the caſe of a ſpoiled tooth, we ſhould adviſe it to be immediately removed: but when the diſeaſe originates merely from inflammation at the root of a tooth, before pulling it every method of a more ſimple nature ought to be tried; and the ſame means which we employ in the treatment of abſceſſes in other parts

ſhould be put in practice here. When a free opening is formed by the burſting of the abſceſs, we may ſometimes be able to dry up the running, by injecting from time to time a little lime-water—ardent ſpirits—tincture of mirrh—or tincture of Peruvian bark properly diluted. But although trials of this kind may be adviſeable with timid patients, who will not ſubmit to other means, we can ſeldom place much dependence upon them: The moſt effectual practice is to lay the abſceſs open by an inciſion from one end to the other, and to endeavour to heal it from the bottom by inſerting a ſmall doſſil of lint between the edges of it, to keep it open till it is nearly filled beneath with proper granulations. This is the ſureſt method of obliterating the cavity of the impoſthume; and when any portion of the ſocket is carious, it will more readily exfoliate than it would do were it ſtill covered with the gums.

We have hitherto been ſuppoſing that the abſceſs is ſeated in the gums, or between

tween the gums and the tooth, or perhaps that it ſurrounds the ſocket of the tooth; but it often happens that more deeply ſeated abſceſſes occur, which create not only more immediate pain and diſtreſs, but more ſubſequent riſk: for when the more ſolid parts of the jaw become carious, which they commonly do when the matter of impoſthumes gets into contact with them, the cure not only proves tedious, but marks of a diſagreeable nature are apt to occur from it externally. With a view to prevent theſe diſtreſſing occurrences, we ought not to ſolicit the formation of pus by the uſual method of applying warm poultices outwardly; we ſhould rather, by warm fomentations taken into the mouth, and by the application of any warm ſtimulating ſubſtance, ſuch as a roaſted onion, to that part of the gum which appears to be moſt affected, to endeavour to excite a ſuppuration that may point into the mouth; and as ſoon as there is reaſon to ſuppoſe that

matter is formed in the abſceſs, it ought to be opened without waiting for a complete ſuppuration.

In the after-treatment of the abſceſs, all that we can do is to preſerve a free depending orifice for the diſcharge of any matter that may form, by which any farther miſchief will be prevented, and by which alone we can reaſonably expect a cure; for even where the diſeaſe is connected with a carious ſtate of the jaw, giving a free vent to the matter is perhaps all that art ought in this ſituation to attempt. If the conſtitution is otherwiſe ſound, this, together with the removal of any of the contiguous teeth that are ſpoiled, and of ſuch parts of the jaw as are carious and ſeparate from the reſt, will ultimately effect a cure if this by any means be practicable. But in diſeaſed habits of body, eſpecially in ſcrophulous conſtitutions, affections of this nature are always productive of much diſtreſs, and can ſeldom indeed be healed till the general diſeaſe of the ſyſtem is removed.

SECT.

PLATE LV.

FIG. 1.

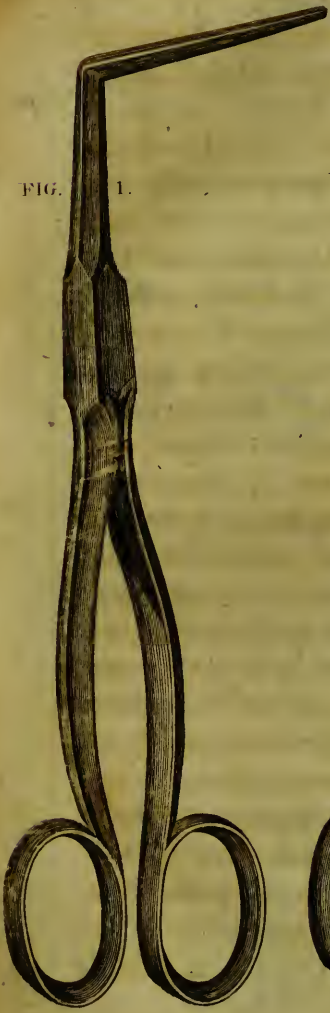
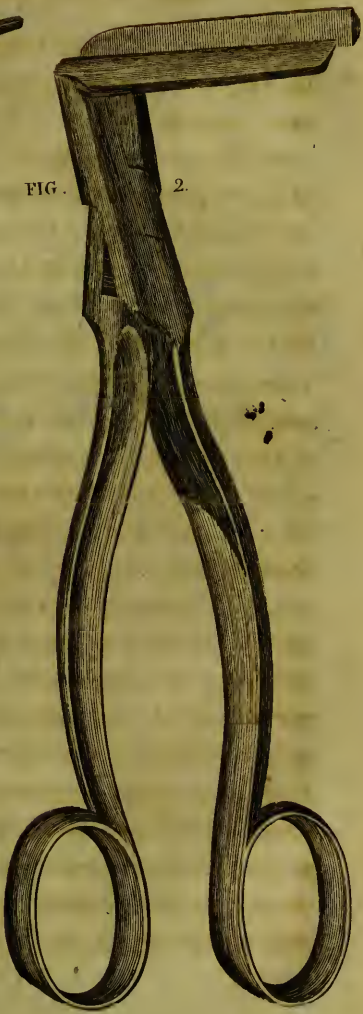
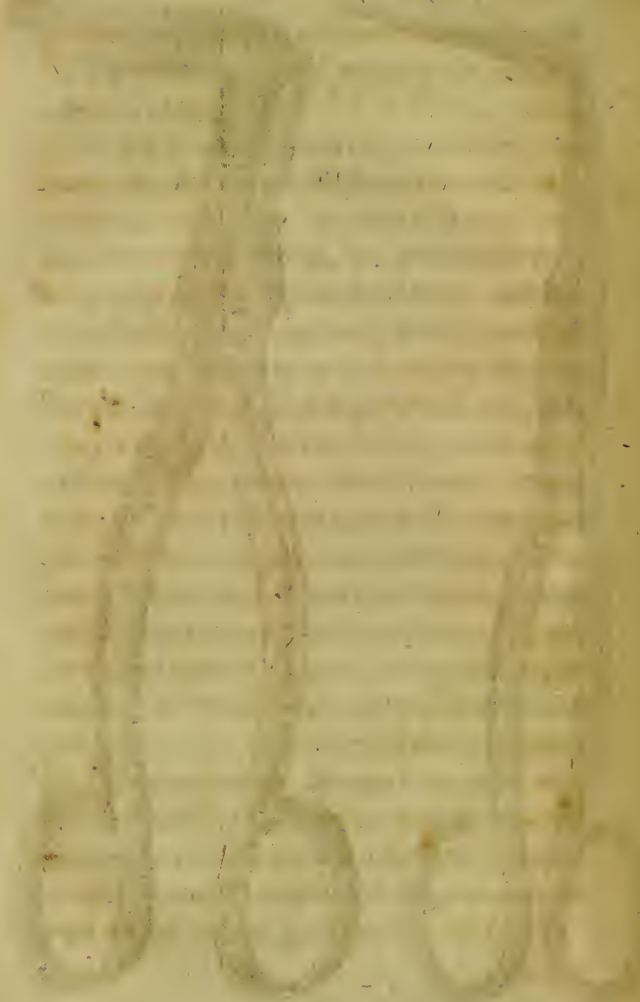


FIG. 2.



.o LIZARS Sculp'



SECTION V.

Of Abscesses *in the* Antrum Maxillare.

Collections of matter may occur in the antrum maxillare from various cauſes: Whatever tends to induce inflammation on the lining membrane of this cavity may be productive of them. Hence they may be induced by blows and other injuries done to the cheeks. Inflammatory affections of the membrane of the noſe, and even long-continued inflammation of the eyes, by ſpreading to the contiguous membrane of the antrum, have often appeared to have ſome effect in producing collections of this kind; and much expoſure to cold has frequently been traced as the cauſe of them. But the moſt frequent origin of this diſeaſe is pain and irritation produced in the jaw by repeated and violent returns of toothach.

From this account of the cauſe of the diſ-

diſorder, the nature of the ſymptoms will be readily underſtood. Indeed, if we make allowance for the nature of the parts in which they occur, they will be found to be nearly ſuch as take place from inflammation and abſceſſes in other parts of the body. At firſt ſome degree of pain is felt over the cheek of the affected ſide, and this frequently continues for a conſiderable time before any external ſwelling is perceived. On a farther continuance of the diſeaſe this pain becomes more ſevere, and in ſome inſtances ſpreads to the neighbouring parts, ſo as to create uneaſineſs in the eye, noſe, and ear; and at laſt an extenſive hard ſwelling appears over the whole cheek, which ſooner or later points at a particular place, moſt frequently in the centre of the cheek, a little above the roots of the poſterior molares. In ſome inſtances, indeed, the matter burſts out between the roots of theſe teeth and the gums, by which the external tumor upon the cheek is prevented from pointing. This, however, does not commonly happen; and only takes

takes place, I imagine, when the roots of the teeth penetrate the antrum, by passing through the plate at the bottom of the socket. For the most part, too, as soon as matter is fully formed in the antrum, we find some of it discharged by the corresponding nostril, when the patient lies upon the opposite side with his head low; and if this occurs frequently, it prevents the external swelling for a considerable time from pointing at any particular place, and consequently from bursting, which it always would do if the matter was not evacuated in some other manner.

This discharge of matter by the duct leading from the antrum to the nostril does not indeed occur in every instance; but as I have met with it in several cases, I am not inclined with Mr Hunter to consider the obliteration of this duct as a frequent cause of these collections*: Indeed I doubt if it is ever the cause of them. For the most part, they may be traced as the consequence of one or other of the causes

* See a Practical Treatise on the Diseases of the Teeth, &c. by John Hunter, F. R. S. &c. p. 44.

cauſes we have mentioned; particularly of toothach, or of inflammation excited in ſome other manner. It therefore appears probable, when obſtructions are met with in this duct, that they are rather to be conſidered as a conſequence of the diſeaſe: perhaps moſt frequently as the effect of the adheſive ſtage of inflammation, than as the cauſe of the collection.

A diſcharge of matter from one of the noſtrils, when it ſucceeds to pain and inflammation of the cheek, will for the moſt part be found to originate from an abſceſs in the correſponding antrum maxillare; but we ought to remember that matter may be diſcharged from the noſtrils from other cauſes; particularly from an inflamed ſtate of the membrana Schneideriana; from an ozena; from affections of the frontal ſinuſes; and from abſceſſes in the lachrymal ſac. In forming an opinion, therefore, of ſuch an occurrence, every circumſtance connected with it ſhould be taken into conſideration, otherwiſe much diſappointment and inconvenience may fre-

frequently occur by our treating one diſeaſe for another.

In the treatment of abſceſſes of the antrum maxillare, nothing will ever accompliſh a cure but a free diſcharge being given to the matter: indeed collections of matter in this ſituation ſhould be conſidered in the ſame light with ſimilar affections in whatever part of the body they may occur. Wherever matter is diſcovered, it ought to be diſcharged as quickly as with propriety it can be done: and in no inſtance is it more neceſſary to attend to this than in abſceſſes of the antrum maxillare: for if the matter be not evacuated, it will diſtend and elevate the bones of the cheek, and at laſt will probably render them carious.

With a view to prevent ſuch a diſagreeable occurrence, a perforation ſhould be made into the antrum as ſoon as there is ſufficient evidence, from the nature of the ſymptoms, to conclude that matter is collected in it. It may be perforated in two different parts. In that part of it which projects

projects outwardly over the two great molares; or one of theſe teeth may be taken out and an opening made into the antrum, by perforating directly upwards in the courſe of one of the fangs. As moſt people wiſh to avoid the pulling of a tooth when it does not appear to be abſolutely neceſſary, the perforation is commonly made in caſes of this kind above the roots of the teeth. This lenity, however, proves often hurtful; for in this manner the perforation muſt be made in the ſide of the antrum, by which a depending opening cannot be given to the matter; nor can this be effectually obtained in any other way but by a perforation made in the manner we have mentioned in the direction of one of the roots of the teeth.

We have already obſerved, that either of the two large molares may be drawn in order to admit of this perforation. When either of them is ſpoiled, the diſeaſed tooth ought to be taken out; for, being carious, there will be ſome reaſon to ſuſpect that it may have ſome ſhare in the formation of the

the diſeaſe: but when this does not happen, we ſhould remove the ſecond great molares, or that tooth which lies next to the dens ſapientiæ; for although the tooth immediately anterior to this is ſomewhat more acceſſible, the difference in this reſpect is inconſiderable; and the plate of bone which ſeparates the antrum from the roots of the teeth being thinner in the back part of the jaw than in the anterior part of it, the perforation is accordingly more eaſily made in it.

On removing one of theſe teeth, it ſometimes happens that the matter is immediately diſcharged with freedom from the antrum; owing either to the roots of the teeth having been naturally ſo long as to penetrate this cavity; or, to the matter having corroded the bone which ſeparates them from it. In this caſe, if the opening is ſufficient for evacuating the matter, the operation, will thus be completed: but as it is eaſily enlarged, it ought always to be done where there is any cauſe to doubt that

that the matter will not be diſcharged with freedom. But when no diſcharge of matter occurs on pulling the tooth, an opening muſt be made into the antrum in the manner we have already adviſed, by puſhing a ſharp inſtrument into it in the direction of one of the fangs. A common trocar is uſually employed for this, and in general the operation may be well enough done with it; but the curved inſtrument repreſented in Plate L. fig. 2. anſwers better. In making the perforation, the patient ſhould be ſeated on the floor oppoſite to a clear light, and his head ſhould be laid back upon the knee of the operator, who may either be ſtanding or ſitting behind him. The inſtrument ſhould be withdrawn as ſoon as it has entered the antrum, which will be eaſily known by the reſiſtance being removed from the point of it. The matter will now flow out freely; and as ſoon as it is all evacuated, a ſmall wooden plug exactly the ſize of the trocar ſhould be introduced into the opening,

ing, with a view to prevent not only the air, but the food during maſtication, from finding acceſs to the antrum; and if the plug be properly fitted to the opening, it will remain ſufficiently firm, while at the ſame time there will be no riſk of its ſlipping in, if it be formed with a knob or head ſomewhat larger than the reſt of it.

This plug ſhould be removed from time to time, perhaps twice or thrice in the courſe of a day; by which all the matter will be quickly evacuated; and no more being allowed to collect, the diſpoſition to form it will in general be ſoon removed, and a cure will thus be obtained. But in ſome inſtances, either from much relaxation of the lining membrane of the antrum, or from ſome other cauſe of a ſimilar nature, the diſcharge of matter does not diminiſh, but continues nearly the ſame both in quantity and conſiſtence long after the operation. In this caſe we may often forward the cure by throwing liquids of a moderate degree of aſtringency from time to time into the antrum. A decoction of

bark is commonly employed for this purpoſe: but nothing ſhould be uſed that contains the leaſt particle of ſolid matter, as there is always ſome riſk, when any thing of this kind is injected, of depoſitions being left in the antrum; and in different inſtances I have ſeen miſchief occur from this. I commonly employ a ſolution of alum, brandy properly diluted, or lime-water.

When the contiguous bones are all ſound, a due continuation of this practice will at laſt accompliſh a cure; but when any of them are carious, it will be in vain to expect a cure till the diſeaſed portion either exfoliates, or till it diſſolves and comes away in the matter. The introduction of a probe will always render us certain whether any part of the bones in the antrum be carious or not; but we may in general reſt ſatisfied with reſpect to this point, from the ſmell and appearance of the diſcharge. When the bones are carious, the matter is always thin and fetid, and it becomes thicker and leſs offenſive as this affection of the bone diminiſhes.

We

We have hitherto been ſuppoſing that the antrum is perforated for the purpoſe of diſcharging matter collected in it; but the ſame operation becomes neceſſary for the removal of other cauſes. I once met with an inſtance of a violent blow on the cheek terminating in a collection of blood in this cavity; and worms forming in it can only be removed by this operation. In what manner worms are produced in this ſituation is difficult to determine; but whenever their preſence is indicated by ſevere pains in the region of the antrum, not induced by toothach or any other obvious cauſe, there can be no riſk in making an opening for extracting them; but in this caſe there will be no neceſſity for removing any of the teeth. A perforation made into the antrum, immediately above the roots of the large molares, will anſwer the purpoſe ſufficiently. We ſhould not however reſt ſatisfied merely with extracting ſuch worms as appear at the opening: We ought to inject from time to time ſuch liquids into the antrum as will moſt pro-

bably deſtroy any that may remain; particularly oil, a filtrated ſolution of aſafœtida, and perhaps a weak infuſion of tobacco: And the perforation ſhould be kept open for a conſiderable time, to prevent as much as poſſible the riſk of any worms being left.

I have mentioned the only two parts in which I think the antrum can with propriety be opened; namely, in the direction of the roots of the two large molares of the upper jaw; and immediately above the roots of theſe teeth on the outſide of the jaw. I think it right however to obſerve, that it has been ſaid that a perforation may be alſo made into the antrum from the noſtril. There is no doubt of this being practicable; but we might with perhaps equal propriety ſay, that an opening may be made into it by entering the inſtrument from the roof of the mouth. It is evident, however, that it would not be ſo proper to perforate the antrum in either of theſe parts as in thoſe we have mentioned; and therefore I would not have thought it neceſſary to take notice of them, were it not

not with a view to give my opinion of this method of making an opening from the noſtril; which being propoſed by very reſpectable authority, I think it right that the younger part of the profeſſion, for whom this is chiefly intended, ſhould know that there is much cauſe to doubt of the propriety of it *.

By purſuing the means we have recommended, almoſt every diſorder ariſing from collections of any kind in the antrum maxillare may be completely carried off: But the antrum is liable to ſwellings of a different kind, of a much more dangerous nature, and which frequently do not terminate but in the death of the patient. They ſeem to originate from an enlargement of the bones of the cheek. No matter is found in the antrum; and therefore no advantage is derived from any perforation that is made into it. I have in different inſtances, indeed, obſerved much miſchief

* V. The Natural Hiſtory of the Human Teeth, Part II. page 46. firſt edition. By John Hunter, F. R. S. &c.

enſue from it: for thoſe who are not much accuſtomed to this branch of practice are apt to be miſled by the appearance of theſe ſwellings; and, ſuſpecting that they contain matter, they very commonly make perforations into them, which frequently aggravates all the ſymptoms, by occaſioning a more rapid increaſe of the diſeaſe. We ought therefore to be attentive in endeavouring to diſtinguiſh ſwellings of this kind from real collections of matter in the antrum. In abſceſſes of this cavity the cheek ſeldom ſwells to any great extent; and when the diſeaſe has been of long duration, if the matter does not find an opening into the noſtril, or along the roots of the teeth, it commonly points towards the moſt prominent part of the cheek. But when no matter is collected, and when the diſeaſe proceeds from ſome affection of the bones, the ſwelling by degrees arrives at a conſiderable ſize, but it ſpreads equally over the whole cheek, without pointing at any particular part, excepting in the very lateſt ſtages of it, when the ſurrounding

ſoft

ſoft parts becoming affected, ſuppuration ſometimes occurs in them. Till the ſkin becomes inflamed, which never happens except where the diſeaſe has been of long continuance, the ſwelling remains quite colourleſs. But the moſt characteriſtic mark of it is a remarkable degree of elaſticity which it acquires. The bones yield to preſſure; but they inſtantly return to their ſituation on the finger being removed; and if in this ſtate an inciſion be made into them, which I have known done, they are found to be reduced to a ſoft cartilaginous ſtate, and in the advanced ſtages of the diſeaſe to a conſiſtence ſomewhat gelatinous.

This kind of ſwelling is of a nature ſo very obſtinate, that hitherto I have ſcarcely known any advantage reſult from any remedy that has been employed in it. In a few caſes where carious teeth have appeared to have ſome effect in producing it, the removal of them has put a temporary ſtop to the progreſs of the diſeaſe: but even this has never produced any permanent advantage; I mean in the real

diſeaſed ſtate of the bones we are now conſidering: for the cheek is, like other parts of the body, liable to ſwellings of a more harmleſs nature, which yield to the remedies commonly employed for them. But in this no benefit occurs either from internal medicines or external applications. Long continued gentle courſes of mercury, along with decoction of mezereon, I have ſometimes thought have proved uſeful; but the good effects reſulting from them have never been of long duration.

SECTION VI.

Of Excrescences *on the* Gums.

THE gums are liable to excreſcences of different degrees of firmneſs. They are all of a red colour, nearly the ſame with the gums themſelves; but ſome of them are ſoft and fungous, while others are firm, and even of a hard warty nature. In ſome caſes, they are attended with pain; but

PLATE LVI.

FIG. 1.

FIG. 2.

but for the most part they create no farther inconvenience than an impediment in speech and mastication. They are met with in both jaws, but most frequently in the under jaw and in the inside of the teeth. In some instances they are connected to the gums by a small neck, but in general they adhere firmly through their whole extent.

Excrescences of this kind frequently originate from carious teeth, and in a few instances from a carious state of the alveoli; in which case the removal of the spoiled teeth, and the subsequent exfoliation of the carious part of the jaw, will often accomplish a cure. Like fungous excrescences in other parts of the body depending on a carious bone beneath, as soon as the deceased part of the bone is removed the excrescence usually begins to shrivel, and at last commonly disappears altogether: but when this does not happen, the tumor should be removed as soon as it proves in any degree troublesome; and this should be the more readily proposed, as the operation

tion is attended with very little riſk. With thoſe not accuſtomed to this branch of practice, an averſion indeed prevails againſt meddling with tumors of this kind, either from an idea which almoſt univerſally takes place of their being of a cancerous nature, that will probably be rendered worſe by an operation; or from a fear of the hemorrhagy that will ſucceed to the extirpation proving troubleſome. We know from experience, however, that there is in general no cauſe to be afraid of either of theſe circumſtances. I have extirpated ſeveral tumors of this kind; and I never knew an inſtance of a cancer ſucceeding to it, or of any hemorrhagy of much importance.

When the excreſcence is attached to the gums by a narrow neck, it ſhould be removed by paſſing a ligature round it of a ſufficient tightneſs for making it drop off; but when it is connected to the contiguous parts by a broad baſe, we are under the neceſſity of taking it away with the ſcalpel. The actual and potential cautery uſed to be employed

employed for this purpoſe; but as this practice is now laid aſide, and will not readily be revived again, we do not think it neceſſary to deſcribe it.

In proceeding to the extirpation of the tumor, the patient ſhould be firmly ſeated oppoſite to a clear light, and the head ſhould be ſupported by an aſſiſtant ſtanding behind. If he is poſſeſſed of ſufficient reſolution, there will be no need of inſtruments for keeping the mouth open; but where this cannot be with certainty depended on, which is commonly the caſe with children, a ſpeculum oris becomes abſolutely neceſſary. There are various forms of this inſtrument. The one in common uſe is repreſented in Plate LIV. fig. 3.; but it occupies too great a ſpace in the mouth to admit of a free application of other inſtruments. To obviate this, I ſome time ago propoſed the one delineated in the ſame plate, fig. 1.; and it has by experience been found to anſwer.

A common ſcalpel will for the moſt part anſwer for diſſecting off the tumor; but

but an operator ought always to be provided with others, particularly with a curved knife, ſuch as is repreſented in Plate XXXVIII. fig. 1. Vol. III. and likewiſe with crooked ſciſſars, ſuch as are delineated in Plate XLIX. fig. 1. and 2.; for in ſome inſtances the roots of theſe excreſcences are more eaſily ſeparated with inſtruments of this kind than with thoſe of a ſtraight form. But whatever inſtrument may be employed, much advantage may be derived from elevating the tumor as much as poſſible from the parts beneath with a diſſecting hook; and for this purpoſe a hook ſhould be uſed with two fangs, ſuch as is repreſented in Plate L. fig. 3. which anſwers much better than the ſingle hook in common uſe. In the courſe of the operation, care ſhould be taken to remove the diſeaſed parts entirely, at the ſame time that the inciſion ſhould not be carried ſo deep as to injure the parts beneath, unleſs the tumor be firmly and cloſely attached to them; in which caſe, it may not only be proper to remove a portion

tion of the gums, but even to go to the depth of the socket: But as this will be attended with some risk of injuring the contiguous teeth by laying their roots bare, it ought never to be advised when with any propriety it can be avoided.

After the operation a moderate degree of hemorrhagy is advisable, and ought to be encouraged with a view to prevent the sore from inflaming: But when it proceeds too far, it should be restrained, by the patient taking from time to time a mouthful of spirit of wine or of tincture of myrrh; or if this does not prove sufficient, the application of lunar caustic will seldom or never fail.

The situation of the sore renders the application of dressings inadmissible: For some days, however, after the operation, the mouth should be frequently washed with a warm emollient decoction; and afterwards, if a cicatrix should not form so readily as might be expected, the cure may be promoted by the application of lime-water,

water, Port-wine, tincture of roſes, or any other mild aſtringent.

SECTION VII.

Of Loose Teeth.

THE teeth ought naturally to continue firm till they become looſe by the ordinary effects of old age: but they are liable to ſome affections which render them looſe, and which even make them drop out at very early periods of life; and as this is often productive of much diſtreſs and deformity, it becomes frequently an important object with practitioners.

As the teeth may become looſe from various cauſes, all of which require a different method of treatment, we ſhall enumerate the moſt material of them, and at the ſame time ſhall point out thoſe means of cure which ſeem to be beſt adapted for each of them.

The

The teeth are frequently looſened by external violence: By falls and blows—and often by an improper uſe of inſtruments in pulling the contiguous teeth when carious or otherwiſe diſeaſed.

Teeth looſened in this manner can be made faſt only by being kept for ſome time as firm as poſſible in their ſituation; which may be done by preſſing them as far into the ſocket as they will go, and fixing them with ligatures of Indian-weed, cat-gut, or waxed ſilk, to the contiguous teeth, and feeding the patient upon ſpoon-meat till they become firm.

In young people, when teeth are looſened by external violence, as the ſockets at this age are complete, they readily become firm again when they are kept a due time in their ſituation by ligatures: nay, even when they are forced entirely out of the ſockets, they will ſoon become firm, if they be immediately replaced and retained in their ſituation. I have in ſeveral inſtances put this method of treatment ſucceſsfully

ceſsfully in practice, and no harm can reſult from the trial. But in old age, when the teeth become looſe, from whatever cauſe this may happen, the chance of their being again firmly fixed is very ſmall; ſo that in very advanced periods of life the practice ought never perhaps to be attempted.

The teeth ſometimes become looſe from thick layers of tartar forming upon them, and paſſing in between the gums and the roots, and in ſome caſes even between the ſockets and the roots: In this caſe the removal of the cauſe, if it has not ſubſiſted too long, will commonly be attended with a removal of the effect. The tartar ſhould be completely ſcaled off: but it ought to be done as ſoon as poſſible; for the longer the teeth remain looſe, the leſs chance there will be of their ever again becoming firm.

We frequently find the teeth become looſe, from the gums becoming ſoft and ſpongy, and ſeparating not only at their necks, but often a conſiderable way down from

from the roots. This ſometimes occurs from a long continued courſe of mercury; but it is commonly, although often improperly, attributed to the ſcurvy. It no doubt occurs as a ſymptom in the real ſea-ſcurvy: but this is a very uncommon diſeaſe at land; while the other, viz. a ſoft ſpongy ſtate of the gums, is frequently met with.

When, however, it originates from a general ſcorbutic affection of the ſyſtem, nothing but a removal of this will accompliſh a cure; but when it is a local diſorder merely, topical remedies are alone to be depended on. When teeth have remained long looſe, we cannot with any certainty ſay that any means we may employ will render them firm; but the moſt effectual remedy hitherto employed, is, ſcarifying the gums both in the outſide and inſide of the affected teeth. The inciſions ſhould be carried deeply into the ſubſtance of the gums: They ſhould be allowed to diſcharge freely, and ſhould even be repeated from time to time as long as any of the teeth remain looſe. By

this means the full ſpongy ſtate of the gums we have deſcribed is often removed, and a diſpoſition produced in them to adhere to the inveſting membrane of the teeth, by which they often become perfectly firm.

With a view to remove this ſpongineſs of the gums, aſtringents are frequently preſcribed; but I never knew any advantage reſult from them: On the contrary, a frequent uſe of them ſeems to do harm, by inducing a diſpoſition in the gums, which deprives them for ever of the power of adhering to the parts beneath: at leaſt, I have met with different inſtances where this appeared evidently to be the caſe; in which, by a long continued uſe of remedies of this kind, the gums became ſo hard and firm, that the ſcarifications which were afterwards employed had no effect in fixing them. They ſhould not therefore be uſed till an adheſion is produced between the gums and the teeth, either by means of ſcarifications, or in ſome other manner; and when this is accompliſhed, they may be employed with freedom, and even with advantage.

advantage. The remedies of this kind that are to be moſt depended on, are, tinctures of Peruvian bark, of oak bark, tincture of myrrh, and a ſtrong ſolution of alum. The mouth ſhould be frequently waſhed with cold water, ſtrongly impregnated with any of theſe, at the ſame time that the patient ſhould be directed not to uſe thoſe teeth that have been looſe till they have for ſome time been perfectly firm.

The teeth are ſometimes looſened by the formation of abſceſſes between their roots and the alveoli; eſpecially when the alveoli, from being thus immerſed in matter, at laſt become carious: but having already treated minutely of this point when ſpeaking of gum-boils, in the fourth ſection of this chapter, we muſt now refer to what was then ſaid upon it.

It is ſcarcely neceſſary to mention the looſening of the teeth which occurs in old age; for this takes place from a cauſe for which there is no remedy. Not from the roots of the teeth decaying, or from their being puſhed out of their ſockets, but from

a real annihilation of the ſockets; probably in conſequence of the oſſeous matter of which they are compoſed being abſorbed, while nature having now no uſe for teeth, does not continue to ſupply it.

SECTION VIII.

Of CLEANING *the* TEETH.

THE teeth are apt to become foul from different cauſes, and frequently require the aſſiſtance of a dentiſt to render them clean.

1. They ſometimes loſe their natural healthy colour, and acquire a duſky yellow hue: Or they become to a certain degree black, without any adventitious matter being perceptible on any part of them.

2. On other occaſions they become foul, and give a diſagreeable putrid taint to the breath, merely from a too long remora of the natural mucus of the mouth.

3. But

PLATE LVII.

FIG. 1.

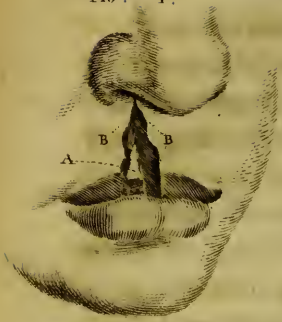


FIG. 2.

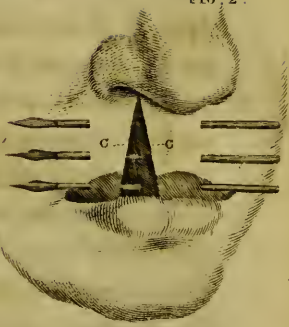


FIG. 3.

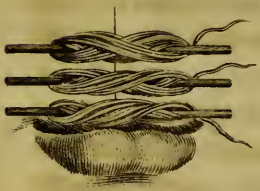


FIG. 4.

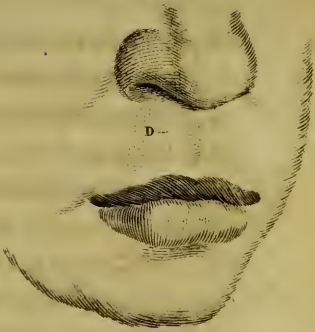


FIG. 5.

FIG. 6.

FIG. 7.

3. But the moſt frequent cauſe of foul teeth is a calcareous matter forming upon them commonly termed the Tartar of the Teeth, which ſeems to be a depoſition from the ſaliva, as calculi in the bladder are from the urine. There are few people entirely exempted from this; but ſome are much more liable to it than others, inſomuch that I have known different inſtances, of the teeth becoming thickly incruſtated with it, in the courſe of a few weeks after they have been completely freed from it.

The tartar firſt appears in the fore-teeth, and in thoſe parts of them that are leaſt liable to be rubbed upon by the tongue or by the lips. Hence it is firſt perceived on the outſide, in the angles between two of the teeth near to the junction of the gums. The ordinary effects of maſtication prevents it in general from ſpreading towards the points of the teeth: but the diſpoſition to form it is in ſome conſtitutions ſo remarkable, that I have known it proceed from the gums upwards even over the flat ſurfaces of the grinders; and in ſuch in-

ſtances if it be not removed, it is apt to ſpread over the whole teeth ſo as to give the appearance of a continued incruſtation from one end of the jaw to the other. In ſome caſes again, inſtead of paſſing over the whole, it ſeems to fix more particularly on one or two teeth; and in ſuch inſtances the depoſition of this matter goes on ſo quickly as to give cauſe to ſuſpect that the whole calcareous matter of the mouth is by ſome cauſe or other attracted to this particular point. I have known one or two teeth completely covered with it in the ſpace of a few weeks, while the reſt of the mouth has remained entirely free of it. In ſome caſes theſe partial incruſtations become ſo large as to disfigure the cheek outwardly; and, by thoſe not accuſtomed to this branch of practice, they are ſometimes miſtaken for diſeaſes of a more formidable nature. They have even been treated as exoſtoſes of the jaw bone.

While the tartar conſiſts of a thin ſcale only, and as long as it is confined to the external ſurface of the teeth, and does not prove

prove hurtful to the gums, it ſeldom meets with much attention: but when it forms in any conſiderable quantity, it very commonly hurts the gums by producing ſlight ulcerations upon thoſe parts to which it lies contiguous; or, it inſinuates itſelf between the gums and the alveoli, ſo as to ſeparate them to a conſiderable depth from one another. In either of theſe events, thoſe means ſhould be employed by which we know that it will be moſt effectually removed.

When the teeth have remained long covered with extraneous matter of any kind, if it has acquired any degree of firmneſs, it is ſcarcely poſſible to remove it without the aſſiſtance of inſtruments. Even a ſlight diſcolouring, although it may not be attended with any perceptible covering of an adventitious matter, if it is of long continuance, it can ſeldom be removed in any other manner. But when once the teeth are thoroughly cleaned with ſcaling inſtruments, they may in general be preſerved in this ſtate with a very ordi-

nary degree of attention. Frequent waſhing with cold water; and rubbing them every ſecond or third morning with burnt bread; Peruvian bark; cream of tartar; chalk; or any other mild application in fine powder, will for the moſt part keep them perfectly clean and white: but this we muſt obſerve is not univerſally the caſe; for the tendency we have mentioned to a foulneſs of the teeth, eſpecially to a depoſition of tartar, is in ſome inſtances ſo great, that the greateſt pains and attention will not prevent the renewal of it. This, however, is not a common occurrence; for we all know, that a due attention to cleanlineſs will very generally prevent every formation of this kind.

We have ſaid, that when once the teeth have become very foul, they cannot be cleaned without the aſſiſtance of inſtruments. This is at leaſt the beſt, as it is the ſafeſt method. It is neceſſary however to obſerve, that the application of acids of a certain ſtrength will in general render the teeth perfectly clean, and even white; for the tartar

and

and other matter that adheres to them being ſoluble in acids, a frequent uſe of them will remove it completely; and we accordingly find, that acids of one kind or another form the baſis of almoſt every waſh that has been advertiſed for the teeth. The public, however, ought to be much on their guard againſt every application of this kind; for the teeth themſelves are very apt to be hurt by acids, inſomuch that it is perhaps impoſſible to employ any remedy of this nature of a ſufficient ſtrength for diſſolving any extraneous matter upon them, that will not at the ſame time prove injurious to the enamel. Every one knows that even the mildeſt vegetable acid will render the teeth rough, or ſet them on edge: We may therefore very readily ſuppoſe, that thoſe of a ſtronger nature, the mineral acids, which are very commonly uſed for this purpoſe, muſt prove much more hurtful; and in fact many have loſt their teeth entirely by the uſe of applications of this kind.

It is indeed ſaid by many, that inſtruments have done much harm, by hurting the

the enamel of the teeth, at the ſame time that they remove the incruſtation with which they are covered. This I believe has happened in ſome inſtances: but it ought not to be conſidered as the fault of the remedy, but of the manner of applying it. A ſharp inſtrument may no doubt be ſo improperly uſed as to remove the enamel entirely; but this muſt always be the fault of the operator: for every incruſtation to which the teeth are liable may be taken off with ſafety, and without doing any injury whatever to any part of the teeth.

In Plate LVIII. inſtruments of various forms are repreſented for this operation. Figs 2. 3. and 4. are the beſt, and will anſwer for moſt purpoſes; but the others are ſometimes neceſſary for the removal of ſuch parts of the incruſtation as form between the teeth. They ſhould all be moderately ſharp, otherwiſe the operation will be done with difficulty: but the edge of none of them ought to be fine, otherwiſe it will be apt to turn, and even to break, with the force neceſſary for ſcaling off the tartar.

In

FIG. 1.

FIG. 2.

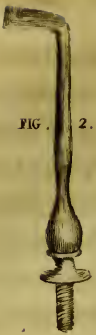


FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.

FIG. 8.

FIG. 9.

FIG. 10.

D. Tucker fecit.

In performing this operation, the patient ſhould be placed upon a low ſeat, with his face oppoſite to a clear light, and his head ſupported by an aſſiſtant. The ſurgeon himſelf ſhould be ſeated upon a chair ſomewhat higher. It is commonly indeed done while the operator is ſtanding; but we have elſewhere had occaſion to remark, that practitioners ought to ſit at every operation when it can be done with propriety.

The ſurgeon ſhould now wrap the forefinger of his left hand in a wet cloth, with which he is to preſs with ſome firmneſs upon the point of the tooth intended to be firſt cleaned, while the back part of the ſcaling inſtrument will form a point of reſiſtance for the thumb of the ſame hand. In this manner the tooth may be firmly ſupported ſo as to prevent every riſk of its being moved or looſened by the inſtrument. This in every caſe is a neceſſary precaution; but it is particularly ſo when the teeth are in any degree looſe.

The ſharp edge of the inſtrument is now

to

to be inſinuated beneath the under part of the incruſtation, care being at the ſame time taken to avoid the neck of the tooth, otherwiſe, if it be puſhed down this length, and if much force be employed, there will be much riſk of looſening, or even of turning out, the tooth entirely. On being certain that the inſtrument is properly placed, it muſt be puſhed with ſome firmneſs from below upwards to the top of the tooth, and muſt be repeatedly applied in the ſame direction as long as any of the incruſtation remains either on the outſide or inſide of the tooth: And one tooth being completely cleaned, all the reſt which require it muſt be treated in the ſame manner. This being done, the teeth ſhould all be well rubbed over with a bit of ſponge in the form of a bruſh, covered with a fine powder prepared of equal parts of cream of tartar and Peruvian bark; and this being continued from time to time, it will ſeldom happen that any farther aſſiſtance will be neceſſary: but if, notwithſtanding of this, the teeth are again obſerved

ſerved to turn foul, any incruſtation that may form upon them muſt be ſcaled off in the manner we have mentioned.

This is the ſafeſt and moſt effectual method of cleaning the teeth when they become foul from any kind of extraneous matter forming upon them; but they ſometimes loſe their colour, as we have already obſerved, and acquire a kind of foulneſs, when no matter of this kind is perceptible. Even in ſuch caſes, as long as the ſurface of the teeth remains ſmooth and ſound, moderate friction with the edge of a ſcaling inſtrument will frequently prove ſerviceable: and if the operation be done with caution, no riſk whatever will accrue from it. But when the teeth become black from a cauſe of this nature, we ſometimes find the enamel corroded, or perforated as it were with an infinite number of ſmall holes; and this, we muſt obſerve, is the worſt kind of foulneſs to which they are liable: for it is difficult to remove, and when removed, it in general ſoon returns,

and

and ſeldom ſtops till all the teeth which have been attacked with it are deſtroyed.

As this kind of foulneſs cannot be removed with inſtruments, we are under the neceſſity of employing ſome chemical preparation for diſſolving it. All the mineral acids will do this in the moſt effectual manner; but, for the reaſons we have already given, they ought never to be uſed. I have commonly employed ſaponaceous, or even pure alkaline applications; by which the teeth may be often rendered perfectly clean without any injury being done to the enamel. A ſtrong lather of common ſoap will often anſwer; and a ſolution of ſalt of tartar applied over the teeth with a ſmall pencil or bruſh, will on ſome occaſions prove equally ſucceſsful.

When in this manner the foulneſs is removed, frequent waſhing with cold water, and rubbing from time to time with one of the powders above mentioned, are the moſt effectual means for preventing a return of it. I have ſometimes thought too, that

that repeated applications of tincture of Peruvian bark have proved ſerviceable in preventing it. Indeed, as this variety of the affection ſeems to depend upon ſome cauſe of a putreſcent nature; for it is evidently attended with a caries or mortification of the affected teeth; there is reaſon to ſuppoſe that antiſeptics of every kind may prove uſeful in the treatment of it.

For the purpoſe of applying powders and other applications to the teeth, bruſhes of different forms, and various kinds of roots properly prepared, are daily uſed. Lucerne and alkanet roots dried and beat at one end into the form of a bruſh, are much employed for this purpoſe, and they may be uſed both with ſafety and advantage for cleaning the interſtices between the teeth: but neither theſe nor any kind of bruſh ſhould be employed for rubbing the roots of the teeth and the upper parts of the gum; for as their points paſs in between the gums and the ſockets, they are apt to ſeparate the one from the other, from which much miſchief is apt to enſue.

For

For this reaſon, I always employ a piece of ſponge fixed in a ſmall handle, with which the roots of the teeth may be rubbed with ſafety.

SECTION IX.

Of Toothach.

TOOTHACH appears to be more unſupportable than any other kind of pain. It renders thoſe who are affected with it very unhappy; and as it is one of the moſt frequent diſeaſes to which the human body is liable, it requires much attention from practitioners. The pain induced by toothach, even when it is confined to a ſingle tooth, is often productive of great diſtreſs; but this is trifling when compared with the conſequences which ſometimes enſue from it. Indeed many inſtances have occurred of the ſtrongeſt conſtitutions being ruined by frequent returns of it. Beſides the

the uſual ſymptoms of pain in one or more of the teeth, and of ſwelling in the contiguous gums; the cheek frequently becomes tumefied; the eye, and even the ear of the affected ſide, are often attacked with pain and inflammation; and to theſe, fever, with all its conſequences, is apt to ſucceed.

Theſe ſymptoms may be induced by different cauſes, and by affections of the teeth ſeemingly of oppoſite natures.

1. They may originate from the nerve and other parts within the cavity of a tooth being denuded, either by external violence, or by the enamel falling off in conſequence of becoming carious or otherwiſe diſeaſed.

2. They may proceed from inflammation, either of the parts within the affected tooth, or of the membrane which ſurrounds the root of it. And,

3. The teeth and contiguous parts of the jaws are often attacked with very violent pain in conſequence of what is uſually termed Sympathy; that is, they

often become pained from affections of diſtant parts, very ſevere fits of toothach being ſometimes induced by diſeaſes of the eye, of the ear, and of the ſtomach. We ſhall proceed to treat ſeparately of theſe cauſes in the order they are here mentioned.

§ 1. *Of Toothach from the Nerve being laid bare, and of the Various Methods of Extracting Teeth.*

In whatever manner the cavity of a tooth be expoſed, we find from daily obſervation, that for the moſt part it is productive of much pain; and the reaſon is obvious. Nature, as we have already obſerved, has provided the teeth with nerves, but at the ſame time ſhe has given them a very complete covering of bone: When this protection, therefore, is deſtroyed, either by accident or diſeaſe, it muſt neceſſarily follow, that theſe parts which were not formed for being expoſed, will ſuffer various injuries, not merely from the food and drink finding acceſs to them, but

but from the external air being at all times freely applied to them.

But it is not the mere exposure of a nerve, or the violence employed in laying it bare, which produces pain; it is the consequence of this exposure, the effects which result from it, to which all the distress which ensues ought to be attributed: Of this every practitioner must have met with frequent instances. Thus I have often known the cavity of a tooth laid entirely open by a tooth being broke by a fall or a blow, and no inconvenience ensue from it but a temporary pain somewhat proportioned to the nature of the accident; and it frequently happens that teeth begin to spoil and at last moulder away without any pain or uneasiness. It is therefore evident, that exposure of the nerve alone is not to be considered as the ultimate cause of toothach. It is a certain degree of irritability induced by this exposure which appears to be the cause of it; and to this our views ought to be directed in the treatment of it.

This irritable ſtate of the nerve may be induced by various cauſes, and more eſpecially by ſaccharine, acid, and other ſtimulating ſubſtances contained in food, being frequently applied to it;—by a too frequent uſe of toothpicks, which may often be traced as the origin of a fit of the toothach;—and by much expoſure to a ſtream of cold air. Expoſure to cold, particularly in a damp ſtate of the air, often terminates in toothach by inducing inflammation; but it frequently produces very violent degrees of pain in a tooth already deprived of part of its enamel, when no other ſymptom of inflammation can be diſcovered.

Theſe are the moſt common cauſes of toothach when the nerve of a tooth has previouſly been laid bare; and in ſuch circumſtances their mode of operating may be eaſily accounted for; but we cannot ſo eaſily explain or ſuggeſt a reaſon for this ſtate of a tooth being ſuch a frequent occurrence, nor does it appear in what manner it is for the moſt part produced.

duced. The enamel is ſometimes broke by falls and blows, and it frequently ſuffers by attempts to break nuts and other hard ſubſtances with the teeth: In ſuch caſes the cauſe is obvious; for we know by daily obſervation, that the oſſeous part of a tooth very ſoon becomes carious and waſtes away on the enamel being deſtroyed. But how do we account for the moſt frequent of all cauſes of toothach, the decay or waſting of the enamel by rottenneſs, when no evident external violence has been applied to it? It has been alleged that we may often trace it to a too free uſe of acids, which are generally known to prove hurtful to the enamel; and by ſome it is ſaid that it depends moſt frequently upon a want of cleanlineſs in not waſhing or otherwiſe clearing the mouth of putreſcent particles after meals. Particles of this kind by reſting upon the teeth are ſuppoſed to be capable of communicating ſome degree of their own nature to the enamel; and the affection being once produced in a ſingle point, the

contiguous parts will become diſeaſed, we are told, from the ſame cauſe that mortification ſpreads in other parts of the body.

We will readily admit that a frequent application of acids to the teeth, even thoſe of the mildeſt nature, will prove hurtful to the enamel; and therefore they ſhould be avoided; while it is equally clear, that the mouth ſhould be regularly waſhed after meals, not only for preventing that kind of incruſtation upon the teeth which we have already conſidered, but for preſerving a ſweetneſs of breath: It does not however appear probable, that the diſeaſe of which we are now treating, ſpoiled or carious teeth, depends upon either of theſe cauſes. Were it to originate from a too free uſe of acids, it ought to affect all the teeth, or at leaſt a conſiderable part of them, at the ſame time and in an equal degree; whereas it begins almoſt in every inſtance in a very ſmall point or ſpot, which in general extends much more ſlowly than it probably would do if the diſeaſe proceeded from any cauſe of this nature. And

again,

again, with reſpect to the effect of any putreſcent particles lodging upon the teeth, we do not think it probable that this diſeaſe can be ever induced by them. A piece of meat remaining in the mouth from one meal to another, may acquire ſome degree of fetor; but it cannot probably in that ſhort period become ſo highly putrid as to deſtroy the living principle in thoſe parts with which it comes into contact. It is a point, however, which may be eaſily determined by experiment; and from the reſult of ſome trials which I made for this purpoſe, there is reaſon to ſuppoſe that the common opinion with reſpect to it is ill-founded. A tooth newly pulled was put into the centre of a piece of putrid beef, and after remaining in it for eight days, it was as free from putrefaction as when firſt put into it, neither the enamel nor internal parts of the tooth being in any degree affected; and the experiment being repeated with teeth which had been pulled for a conſiderable time, the reſult was exactly ſimilar. Now, if this

happens with teeth entirely dead, even when totally immerſed in highly putrid matter, we may fairly conclude, that a partial application of putreſcent particles to teeth ſtill enjoying life and connected with the reſt of the body, will not probably have much effect: for we know, that in other parts of the body the vital principle has a conſiderable effect in reſiſting putrefaction; and there is no reaſon to doubt of the teeth being endowed with the ſame power of ſelf-preſervation. But, beſides this general argument in ſupport of our opinion, we may remark, that if the common idea on this point was well founded, thoſe parts of the teeth ſhould be moſt liable to corruption where particles of food are moſt apt to lodge; while, on the contrary, thoſe parts of them which are not expoſed to this, ſhould ſeldom or never ſuffer. Now every practitioner knows that this is by no means the caſe; for it muſt be acknowledged, that one part of a tooth is juſt as apt to become carious as another. The moſt likely part for food

to

to reſt in is between two teeth; and we allow that the teeth ſometimes ſpoil in theſe parts, but by no means more frequently than in other parts not ſo much expoſed to this inconvenience.

It does not appear, therefore, that the cauſes uſually ſuppoſed to be moſt productive of carious teeth have much effect, nor do we know of any incidental occurrence to which in particular this affection can be attributed: From all the obſervation I have been able to make upon it, I think we ought rather to conſider it as depending for the moſt part upon ſome general conſtitutional cauſe; upon ſome tendency in the ſyſtem to produce a waſting or decay of this particular part. The cauſe of this again I ſhall not pretend to explain; but I think it perhaps equally probable that this rotting of the teeth we are now conſidering, depends upon ſome general affection of the ſyſtem, as that pain in the gout originates from ſome general cauſe. Inſtances no doubt occur, of teeth becoming carious evidently from ſome parti-

particular occaſional cauſe, and eſpecially from external violence breaking or cracking the enamel. This, however, is not a common occurrence: indeed it is very rarely met with when compared with the frequency of carious teeth; a diſeaſe which in moſt inſtances begins without any evident cauſe, and which in general has ſubſiſted for ſome time before being noticed.

But allowing that the opinion we have offered upon this point were admitted, it may be aſked, To what purpoſe will it tend? Will it ſuggeſt any difference in the treatment of the diſorder? I think it will.—As the pain of the toothach creates much impatience, and is with difficulty ſubmitted to, if the affected tooth is carious, it is in general not only the deſire of the patient, but the earneſt advice of practitioners, to have it extracted, as being the moſt certain means of obtaining relief. In violent degrees of toothach, when the other remedies uſually employed are found to fail, extraction of the diſeaſed

ſed tooth ought certainly to be adviſed; and in ſuch circumſtances no perſon can be more clearly of this opinion than I am; but I am equally clear, that, in common practice, this is carried too far, and that many teeth are pulled daily which ought not to be touched. In moſt inſtances, the pain will be removed immediately on the diſeaſed tooth being extracted: but it very commonly happens that relief thus obtained is only temporary, and that the caries ſoon fixes upon ſome other tooth, which in a ſhort time becomes as much diſeaſed as the firſt; and this being likewiſe removed, the diſorder often proceeds from one to another, till ſcarcely any are left. I have met with various inſtances of this, where almoſt the whole teeth have been ſucceſsfully taken out, one becoming carious ſoon after the removal of another. Nor is there even at laſt any advantage gained by the practice; for, after all the teeth are taken out, the pain in many caſes remains equally ſevere in the jaw itſelf.

The frequent occurrence of caſes of this kind

kind tends much to eſtabliſh the opinion of carious teeth being often a conſtitutional diſeaſe; and it likewiſe ſuggeſts the propriety of leſs frequent extraction than what in common practice is found to prevail. As we can never at firſt be certain whether the diſorder depends upon a general cauſe of this nature or not, it is perhaps right in every caſe to extract the firſt, and even the ſecond tooth that becomes affected, as ſoon as the violence of pain renders it neceſſary: but whenever the diſpoſition is ſo ſtrongly fixed in the habit that a third or a fourth are ſoon obſerved to be diſeaſed, the patient ſhould be always adviſed rather to ſubmit to a good deal of diſtreſs than to extract any more: and it often happens, when he has reſolution to ſubmit to one fit of the tooth-ach, and to wait till it is completely over, that he never afterwards, in this tooth at leaſt, feels any return of it. Caſes no doubt occur in which this does not ſucceed; but it anſwers often enough to warrant the propriety of giving it a fair trial in perhaps every

every instance: Even where it fails, there is no harm done by the trial; and when it is found to succeed, the advantage gained by it is great indeed. For a considerable time I adopted the common practice on this point in its full extent: Every carious tooth attended with pain I advised to be pulled; but finding in general that no advantage was derived from it, the result being for the most part nearly as I have already described, I was hence induced to attempt a different method; and now after a patient has had two or three teeth extracted, if the disease still continues to return, I never advise the practice to be pushed farther, unless when the pain is so very severe as to render it absolutely necessary, which is not however often the case. By avoiding exposure to cold during the fit, and by exhibiting doses of laudanum proportioned to the degree of pain, the distress produced by it is at last in general removed; and by due attention to cleanliness, particularly by frequently washing the mouth with cold water, and, when practicable,

by

by ſtuffing the opening in the carious tooth ſo as to prevent the air from finding acceſs to it, many have been ſaved, not only from the pain and diſtreſs of pulling theſe teeth which became firſt affected, but of loſing others, which in all probability would have become carious if the common practice had been followed of extracting every diſeaſed tooth as ſoon as it becomes in any degree painful.

Having thus endeavoured to ſhow that carious or ſpoiled teeth are moſt frequently produced by ſome general conſtitutional cauſe, we ſhall now proceed to conſider more particularly the means to be employed, not only for preventing, but for removing toothach depending upon this cauſe.

In caſes of carious teeth, it has been a prevailing practice to adviſe the black or mortified ſpot to be removed with a file, with a view to prevent the diſeaſe from ſpreading; but, ſo far as my obſervation goes, it ought not to be adopted; for the diſeaſed part of a tooth can never be removed

moved without expoſing thoſe parts which remain to a more free acceſs of air than they were previouſly liable to; and therefore, inſtead of proving uſeful, I have almoſt univerſally ſeen it do harm. In many inſtances, I have known it induce pain where there was none before; and inſtead of preſerving a tooth, it frequently ſeems to have the effect of rendering the remaining ſound parts ſooner carious than they would probably have become if they had not been touched. I am therefore clear, that this practice of filing ſhould be laid altogether aſide; and whoever conſiders the neceſſary effect of it will probably be of the ſame opinion. It is evident that the part of a tooth already carious cannot be ſenſible of pain. For what purpoſe, therefore, ſhould we remove it? While it remains, it ſerves in ſome degree to cover and protect the ſound parts beneath, while by taking it off they are left perfectly bare, and apt to be hurt by whatever is taken into the mouth.

When, again, as much of the enamel is removed,

removed, either by caries or external violence, as to form a hollow of any magnitude, we have it frequently in our power to prevent an acceſſion of toothach, by ſtuffing or ſtopping up the opening, ſo as to prevent the air and particles of food from getting acceſs to the nerve. Different ſubſtances are made uſe of for this purpoſe: ſuch as gum lac, maſtich, olibanum, bees-wax, and ſealing wax, tin, lead, and gold. When the opening made by the diſeaſe is large, and eſpecially when it is narrow at the bottom, and wider outwardly, maſtich and gum lac, or even a bit of bees-wax, will ſometimes anſwer when none of the harder ſubſtances will remain in the cavity: but as they are quickly rubbed down in maſtication, they require to be frequently renewed; ſo that ſome of the metals are preferable when the form of the opening admits of their being employed, which is always the caſe when the tooth is much ſcooped out inwardly, with a ſmall hole leading into it. Gold leaf is ſometimes uſed for this purpoſe; but nothing anſwers

ſwers ſo well as common tin-foil. As much of it ſhould be cut off as it is imagined will be needed; and one end of it being puſhed into the hollow of the tooth with the inſtruments, fig. 6. 7. or 8. Plate LVIII. the reſt of it ſhould be gradually preſſed in till the cavity is completely filled: and this being done, any portion of the tin that may be left ſhould be cut off, when the ſurface of the whole ſhould be made perfectly ſmooth by frequent rubbing with the burniſher, fig. 9. of the ſame plate. But before any attempt is made for ſtopping a tooth, the nerve ſhould be rendered as inſenſible as poſſible; for till this is accompliſhed, the patient will not be able to bear that degree of preſſure which fixing the tin requires. In general the nerve becomes ſufficiently callous for admitting of this, merely by the delay of a few weeks from its being firſt laid bare: but when this does not prove effectual, we may often accompliſh our intention by inſerting daily into the cavity of the tooth a few drops of oil of origanum or of thyme,

or any other eſſential oil; by which any ſlight degree of irritability in the nerve may be often removed, ſo as to admit of preſſure being applied to it with freedom.

We have already obſerved, that neither tin, lead, nor any hard ſubſtance, will remain in the hollow of a tooth unleſs the opening into it be ſomewhat contracted. It has been propoſed, however, when the opening is of a different form, and when the ſtuffing cannot be fixed in any other manner, to do it by drilling a ſmall hole through the ſides of the tooth; ſo that when the lead is preſſed into it, it may be retained by paſſing a peg of ſilver, gold, or any other metal, from one ſide of the tooth to the other. In a few caſes this may ſucceed; but it will not anſwer either where the opening is very wide outwardly, or where the ſides of the tooth are not tolerably firm; for where the external opening is very wide, even a peg paſſed through the centre of the ſtuffing will not keep it ſufficiently firm to prevent ſome parts of the food from finding acceſs beneath it; and,

and, when the remaining part of the tooth is become thin and brittle, it will be apt to break by the means employed for making the hole.

When, however, by any of the means we have mentioned, the hollow of a tooth can be properly ſtopped, it will not only prove the moſt effectual method of preventing frequent returns of toothach, but will have ſome influence in preſerving the remaining part of the tooth. I have known various inſtances of this where ſpoiled teeth have been preſerved for a great number of years, without being productive either of pain or any other inconvenience; but this requires the cavity to be very completely ſtopped, ſo as to prevent every poſſibility of acceſs either to food or drink, or even to air.

When a patient with ſpoiled teeth has been liable to frequent fits of toothach, beſides ſtuffing them in the manner we have mentioned, he ſhould be as attentive as poſſible to avoid much expoſure to cold: His head ſhould be kept warm by proper

coverings through the night; and he ſhould live in a dry ſituation. Indeed, a moiſt atmoſphere proves ſo deſtructive to the teeth, that people who live in wet ſituations find it very difficult to preſerve them; and I have known various inſtances of frequent returns of toothach being prevented entirely, by the patient's removing from a damp to a dry ſituation: Nay this will ſometimes ſucceed when every other means have failed.

By due attention to the means we have mentioned, much may be done in preventing people with carious teeth from ſuffering ſo much as they otherwiſe would do: but, notwithſtanding all our endeavours, teeth in this ſituation are very apt to become painful, and are often productive of much miſery; ſo that the moſt effectual method of removing it becomes a very important object.

There are ſome varieties of toothach which we know from experience may be removed by remedies applied to diſtant parts of the body. Thus when pain occurs

curs in a tooth, as it ſometimes does, from inflammation which firſt began in the ear, it may be more effectually removed by applying a bliſter behind the ear than by any other means: Or when a foulneſs of the ſtomach is the cauſe of it, a vomit will prove the moſt effectual remedy. This we ſhall afterwards conſider in a more particular manner. But when toothach proceeds from the nerve of a tooth being laid bare, it will ſeldom happen that any application will prove uſeful that is not made directly to the part itſelf. Bark, electricity, and a variety of noſtrums, are frequently employed; but in this variety of toothach, the only remedies I have ever known any advantage derived from, are, anodynes, corroſive applications, and extraction of the tooth.

In ſlight degrees of toothach, the pain is ſometimes relieved, or even altogether removed, by applying either opium or laudanum directly to the bare nerve: I have known camphor too prove uſeful, both by itſelf and when conjoined with

opium; and it ſometimes anſwers in a liquid form, when diſſolved in ſpirit of wine, when it will not ſucceed in any other way: Ether may likewiſe be mentioned as a remedy which in this kind of toothach ſometimes affords relief; but as theſe and other applications of a milder nature do not commonly ſucceed, we are for the moſt part obliged to employ others of a more active kind, with a view to deſtroy the nerve entirely.

A long-continued uſe of any of the ſtrong eſſential oils will in ſome caſes, as we have already obſerved, render the nerve callous or ſomewhat inſenſible, but they will never deſtroy it ſo effectually as to prevent the riſk of future returns of toothach. This, however, may be done by remedies of a different kind; by the application of ſpirit of vitriol or any other concentrated mineral acid; by inſerting a bit of lunar cauſtic into the cavity of the tooth; or by burning the nerve with the actual cautery. But, in uſing either the lunar cauſtic or any of the ſtrong acids,

much

much attention is neceſſary to prevent the contiguous parts from being hurt; for if they be not inſerted with much caution, they are apt to ſpread and to do a great deal of miſchief. The actual cautery may, however, be employed without any riſk of this kind: but in order to derive any real advantage from it, the hot iron muſt be puſhed farther into the hollow of the tooth than patients in general will allow; for if the nerve be not deſtroyed to the very extremity of the root, no advantage will be gained; and this being both tedious and painful, we do not find many that will admit of it; but when a proper application of it is agreed to, we may deſtroy the nerve completely. It may be done with a piece of ſmall wire made ſharp at the point, or the inſtrument repreſented in Plate LVIII. fig. 8. may be employed for it.

It often happens, however, that none of theſe remedies prove effectual, either from patients not ſubmitting to a due application of them, or from practitioners not

puſhing them ſo far as they ought to do. In this caſe, when the pain continues violent, we are under the neceſſity of deſtroying the nerve in a different manner, namely, by the extraction of the tooth; and this being done, if the tooth be not much ſpoiled, and if it be not broke in the operation, after the ſocket is properly cleared of blood, it may be replaced in the manner we ſhall afterwards mention when treating of the method of tranſplanting teeth. This will not always ſucceed, eſpecially in the molares; but in the back part of the mouth it is not ſo neceſſary as when the inciſores or canine teeth are taken out, when it will often anſwer: and when a tooth thus replaced becomes firm, it will prove equally uſeful as before; while, from the total deſtruction of the nerve, it will not afterwards be apt to produce pain. We ſhall now proceed to conſider the method of extracting teeth.

As the pulling of teeth is a very frequent operation, much pains has been taken to render it as eaſy as poſſible; and although

although it is ſtill neceſſarily attended with pain, yet it is now performed both with more eaſe and ſafety than it could poſſibly be in former times, while the inſtruments employed for it were rude and unmanageable.

It is evident that a tooth may be pulled in different directions: It may either be pulled in a perpendicular direction with reſpect to its roots; or it may be made to turn upon its axis by depreſſing the corona or upper part of it, by which the point of the root will be proportionally raiſed; or a ſufficient degree of force may be applied for puſhing it out of the ſocket in a lateral direction.

If theſe methods of operating were all equally practicable, we would not heſitate in determining to which the preference ſhould be given. In raiſing a tooth perpendicularly, it is clear that much leſs violence muſt be done to the contiguous parts than by forcing it out in a lateral direction: for as the roots of the teeth are all firmly fixed in bone, they cannot poſſibly be preſſed out laterally, but with ſuch a force

force as is ſufficient for breaking or burſting open that part of the alveolar proceſs of the jaw-bone with which they are ſurrounded; and as this is in general attended with ſome laceration, and always with much contuſion, of the contiguous ſoft parts, it is neceſſarily productive of a good deal of pain: but as all the ſpace we can obtain, even by the greateſt wideneſs of the mouth, will not admit proper inſtruments for moving the teeth in the back part of the mouth in a perpendicular direction, we are for the moſt part under the neceſſity of uſing ſuch as move them laterally. All the inciſores and canine teeth may indeed be taken out in this manner, and even ſome of the molares, when they are very looſe; but when the molares are firmly fixed, no inſtruments with which we are acquainted will pull them in this direction. Various propoſals have been made for this purpoſe; but although hitherto every attempt of this kind has failed, ſome farther trials may perhaps render our inſtruments ſufficiently perfect for effecting it.

The

The only inſtruments which practitioners in former times were poſſeſſed of for the extraction of teeth, were different kinds of forceps or tenets, named according to their forms, Hawks-bills, Cranes-bills, &c. and different kinds of levers both ſtraight and crooked. Theſe, however, were rudely conſtructed, and it was with much difficulty that teeth firmly fixed were moved by them. In proceſs of time, therefore, various improvements were propoſed on them; but few of theſe being of much importance, we do not think it neceſſary either to deſcribe them, or to give delineations of them; and this eſpecially as they may be ſeen in the works of Garengeot, Scultetus, Hildanus, and other writers of the laſt and preceding centuries. All that we mean to do, is to delineate thoſe inſtruments which are approved of by modern practitioners of reputation; to propoſe ſuch improvements upon theſe as by experience have been found to prove uſeful; and to give a detail of the method of uſing them.

For

For a conſiderable time paſt, an inſtrument termed a Key has been almoſt the only one employed in Britain for extracting firm teeth, and it is now very generally uſed in different parts of the Continent. It is delineated in Plate LIX. fig. 1. and 2.

In operating with this inſtrument, if the tooth to be taken out is in the lower jaw, the patient ſhould be ſeated in a chair, oppoſite to a clear light, while his head ſhould be ſupported by an aſſiſtant ſtanding behind; but if it be in the upper jaw, he ſhould be ſeated upon a pillow, with his head turned back, and ſupported upon the knees of the operator, who in this caſe muſt ſtand behind him, whether the tooth be in the right or left ſide of the jaw: but when a tooth is to be extracted from the lower jaw, if it be on the right ſide, the operator ſhould be placed ſomewhat to the left; and, vice verſa, when the tooth is on the left ſide, the ſurgeon ſhould place himſelf ſomewhat to the oppoſite ſide. With a view to admit of as free an application of the inſtrument as

poſ-

PLATE LIX

FIG. 3.

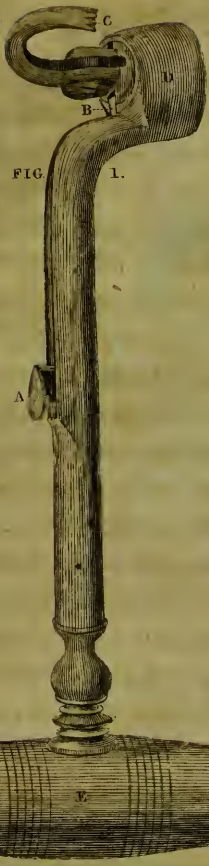


FIG. 1.

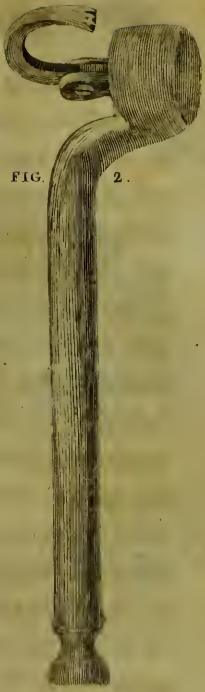


FIG. 2.

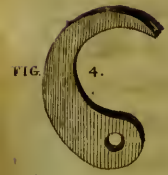


FIG. 4.

FIG. 5.

Scalp!

poſſible, as well as to prevent the gums from being lacerated, all the ſoft parts adhering to the teeth ſhould be ſlowly and cautiouſly ſeparated from it by inſinuating between them the point of the ſcarificator, fig. 1. Plate L.; and this being done, the operator muſt proceed to the application and uſe of the key. The patient having cleared his mouth of blood, the point of the claw *C*, Plate LIX. fig. 1. muſt be preſſed as far down between the gum and the tooth as poſſible; and in this ſituation it muſt be firmly fixed and retained by the fore-finger of the left-hand, while the fulcrum *D*, being placed as far down as it will go upon the gums on the oppoſite ſide of the tooth, the operator muſt now with his right-hand apply ſuch a force as he may find neceſſary for moving it; and by turning the hand ſufficiently round, almoſt any tooth may be taken out at one pull without raiſing the inſtrument: but whenever a tooth is found to be very firmly fixed, and eſpecially if it be one of the large molares whoſe roots diverge conſiderably, it

is

is better, after it is freely looſened, to remove the inſtrument; and having turned the claw to the oppoſite ſide, to apply it ſo as to turn the tooth to the other ſide of the jaw, by which it will be rendered ſo completely looſe as to be eaſily taken out with the common teeth forceps, Plate LXI. fig. 3.

In uſing the key-inſtrument, when the tooth to be taken out is firmly fixed, and eſpecially when there is little or no vacant ſpace between it and the contiguous teeth, ſome attention is neceſſary to prevent theſe from being looſened. When it cannot be prevented in any other manner, the edges of the tooth to be removed ſhould be filed down with a very thin file, which may be done without hurting the neighbouring teeth, by uſing an inſtrument that is quite ſmooth or poliſhed on one ſide.

This I believe to be the beſt method hitherto known of extracting firm teeth from the back part of either of the jaws; and the inciſores and canine teeth may likewiſe be pulled in the ſame manner: but

theſe,

theſe, namely, all the fore-teeth, as well as looſe teeth in every part of the jaw, may be pulled in a different manner, which we ſhall afterwards deſcribe.

Although there is ſome difference, as we have already obſerved, between the outer and inner plates of the alveoli of the teeth with reſpect to ſtrength; yet this is ſo inconſiderable, that in pulling a tooth it merits little conſideration. Neither is it a matter of much importance to attend to the direction of the roots in the molares: For although it be alledged by ſome, that theſe teeth may be turned with moſt eaſe towards the inſide of the mouth, from their roots ſpreading in general towards the outſide of the jaw; yet this is by no means the caſe. For the moſt part, the roots of the large molares diverge equally towards both ſides of the jaw; ſo that in this reſpect they may be pulled with the ſame propriety to the one ſide as to the other. But the two laſt molares of the lower jaw afford an exception to this; for they are ſo ſituated, that in every inſtance where the common

common key is employed, they ſhould be turned inwards. The baſis or origin of the coronoid proceſs forms a ſtrong ſharp ridge on the outſide of the jaw, exactly oppoſite to the roots of theſe teeth; ſo that when they are turned outwards, as the heel of the inſtrument muſt reſt upon this ridge, the gums which cover it are neceſſarily much bruiſed and lacerated. As this is ſeldom attended to, I have ſeen various inſtances of much miſchief being done by it. When a tooth is much ſpoiled on one ſide, it is almoſt the univerſal practice in pulling it, to fix the point of the claw on the ſound ſide; and as this is conſidered as neceſſary, it may be given as a reaſon for our being obliged in ſome inſtances to turn even one of theſe teeth towards the outſide of the jaw. It is not, however, by any means neceſſary that this ſhould be univerſally adopted: for although in general it is ſuppoſed to anſwer beſt to fix the claw of the inſtrument on the ſoundeſt ſide of a tooth, and to turn it to the oppoſite ſide; yet with

a

a very little pains and attention we might perhaps in every inſtance follow the very reverſe of this with equal ſucceſs: for with a proper application of the ſcarificator we may almoſt always ſeparate the gums ſo effectually as to be able to preſs the point of the claw far enough down upon the root, ſo as to turn it with eaſe to the oppoſite ſide.

The key-inſtrument, however, may be made ſo as to turn even the two fartheſt back molares outward, without doing any injury to the gums lying above the proceſs we have juſt mentioned. A form of it for this purpoſe is delineated in Plate LIX. fig. 3. which I propoſed ſeveral years ago, and which I have often uſed. By the heel of the inſtrument reſting upon the gums beneath the firſt great molares, while the claw is bent in ſuch a manner as to apply to the two poſterior teeth, they may in this manner be turned out with ſafety. The heel ſhould be made long, ſo as to paſs far down upon the gum; otherwiſe, for this particular purpoſe, it will not anſwer ſo

well. Indeed the heel of the key-inſtrument ſhould be always longer than it is uſually made; for when it is ſhort, it acts with much leſs power, and is more apt to break the tooth, than when it is made of a greater length. The contrary of this I know has been much inculcated; but after having given a fair trial to both methods, I am now convinced that the key with a long heel is much preferable to the other. The principal objection that has been raiſed to the uſe of a long heel is, that it muſt bruiſe the gum more than when a ſhort one is uſed. This, however, is not the caſe, as will be readily allowed by any who attentively conſiders the ſubject: For even the ſhorteſt heel muſt preſs upon ſome part of the gum; otherwiſe, if it be applied upon the tooth itſelf directly oppoſite to the point of the claw, as ſome have adviſed, it will act in nearly the ſame manner, and with no farther power than the common forceps: While again, a long heel does not, as is commonly imagined, injure the gums in proportion to the length

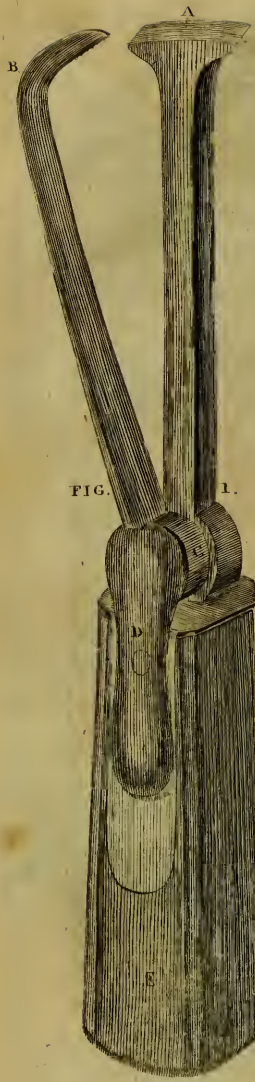


FIG. 1.

FIG. 2.

FIG. 3.

length of it: for although the flat ſide of it be applied to the gum at firſt, as ſoon as it begins to act the fartheſt extremity of it only will be found to touch them; and accordingly this part of the heel, as well as all the reſt of it, ſhould be made as ſmooth as poſſible; ſo that in turning upon the gum, it will do leſs miſchief than when it is made rough according to the uſual form.

We have already obſerved, that in the pulling of teeth there is no cauſe for being attentive to which ſide they are turned, from any difference of ſtrength between the outer and inner plates of the alveoli or ſockets; for in this reſpect they are nearly ſimilar. But even although the difference was greater than we find it to be, it ſhould not be regarded: for in pulling a tooth in the manner we have deſcribed, namely in an oblique or lateral direction, it is evident that the ſocket muſt be broke on both ſides of it; at leaſt this muſt be always the caſe where the roots of the tooth are of the uſual length, and not ſhortened, as they

ſometimes are, by diſeaſe; for while the corona of the tooth is forced down upon one ſide of the ſocket, the point of the root muſt neceſſarily be turned in nearly the ſame proportion upon the other. The ſofter parts will not indeed ſuffer ſo much, as they will not be bruiſed by the heel of the inſtrument; but it is clear that the ſocket muſt be always much hurt by it: ſo that in every point of view, little or no conſideration is due in this operation to any diff rence that is ſuppoſed to take place in the ſtrength of the two plates of which the ſockets of the teeth are formed.

But as it is of much importance to ſave both ſides of the alveoli as far as is poſſible, nothing ſhould be omitted that can with any propriety be done to protect them. For this purpoſe a form of the key inſtrument has been propoſed, by which it is intended to ſupport the gums and alveoli: while at the ſame time the tooth is raiſed and ſeparated from them, by turning the inſtrument in the uſual manner. But if the ſocket be ſo effectually ſupported as to

prevent

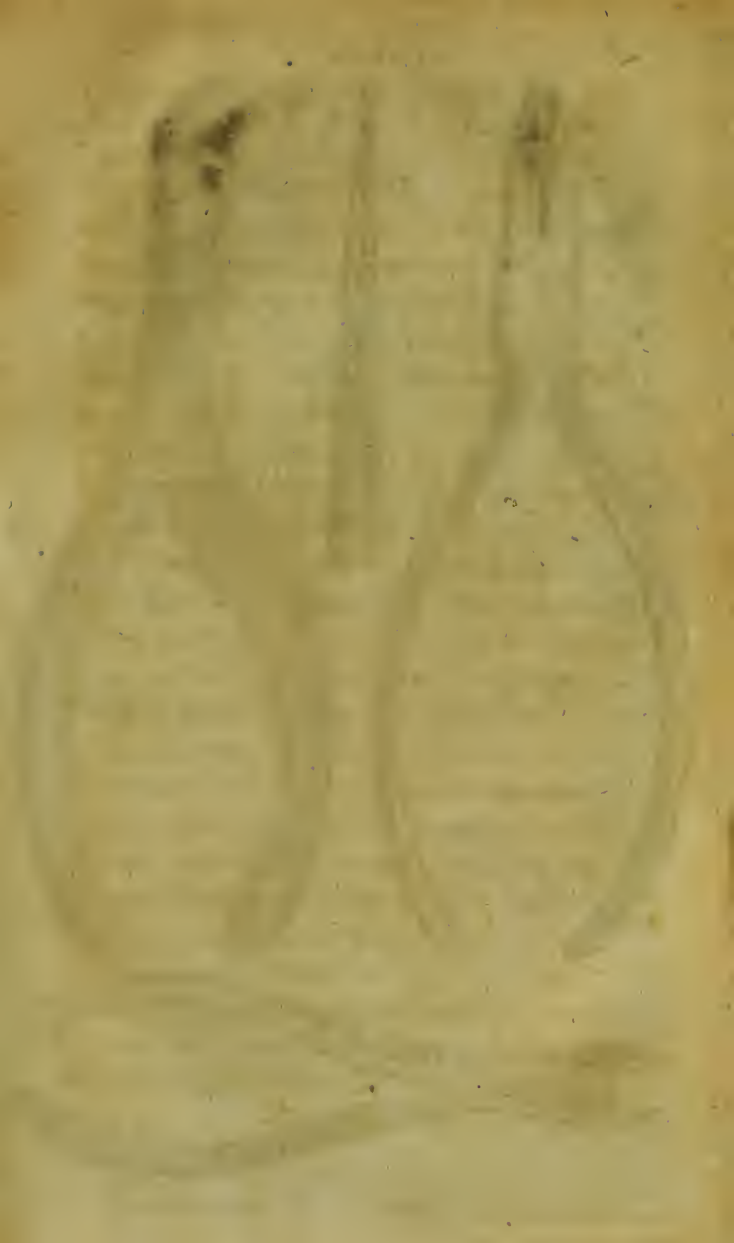


PLATE LXI

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

D. Lizars sculp.

prevent it from yielding on the tooth being preſſed towards it, there is much reaſon to fear that the tooth itſelf will break; and if the inſtrument be not applied in ſuch a manner as to have this effect, it will anſwer no other purpoſe than the key in common uſe; while, being more complex, it is managed with more difficulty. The propoſal, however, is ingenious, and may lead to improvement in the operation of tooth-drawing *.

In pulling a tooth with the key-inſtrument it is the common practice to force it out at once. But although this may often ſucceed, it is by no means adviſable: for when the roots diverge much, or when any portion of the fang is enlarged, as is ſometimes the caſe, we run a great riſk, by this method of breaking them, at the ſame time that the ſocket muſt be much more broke than when the tooth is looſened in

* This inſtrument is the invention of Dr John Aitken. For a more particular account of it, ſee Eſſays on ſeveral important ſubjects in Surgery.

the manner we have directed, by turning it firſt to one ſide and then to the other with the key-inſtrument, ſo as to be able afterwards to take it out with the common forceps. And if this be done ſlowly, with a gradual equal preſſure, and if the heel of the key has been properly covered with ſeveral plies of ſoft old linen, ſcarcely any miſchief of importance can be done by it: But inſtead of this, when the hard inſtrument is applied directly to the gum, without the intervention of any ſoft ſubſtance, and when the tooth is turned out, as is frequently done, by a ſudden jerk, the gums will not only be greatly bruiſed and lacerated, but the ſocket will be much more broke, at the ſame time that the tooth itſelf will run a much greater riſk of being broke than when pulled in a more gradual manner. It is natural for patients who are ignorant of the riſk attending it, to wiſh for the operation to be quickly done; but it is unpardonable in practitioners to indulge them in this, when a moment's reflection muſt convince them, that it can

ſeldom

ſeldom be done but with much riſk of breaking either the jaw or the tooth.

Even when the operation is done in the moſt cautious manner, troubleſome accidents will ſometimes occur from it: And theſe particularly are, bruiſing of the gum; ſplinters of bone being ſeparated from the jaw; and alarming hemorrhagies.

Laceration or even bruiſing of the gum being a very painful part of the operation, it ſhould be prevented as far as poſſible, not merely by covering the heel of the inſtrument in the manner we have adviſed, but by avoiding the application of it altogether, when it can poſſibly be done, while the gums are much inflamed: for while the inflammation continues, the operation proves neceſſarily much more hurtful than it otherwiſe would do. For obviating the effects of laceration, when any ſmall portion of gum is much ſeparated from the reſt, it ſhould be cut off with a pair of ſciſſars; the mouth ſhould be fomented from time to time with warm milk or any emollient decoction; and

when there is reaſon to imagine that ſuppuration will take place. it ſhould be encouraged by the application of roaſted figs by way of cataplaſm. In this manner, if an abſceſs occurs, it will be ſoon brought to maturation; when, if it does not ſoon burſt, it ſhould be opened: And again, in caſes of ſlighter contuſions, nothing alleviates the pain induced by them ſo effectually as the applications we have mentioned.

When the bone happens to be ſplintered, if it is the ſocket merely that has ſuffered, very little uneaſineſs will probably enſue from it; and therefore it is ſcarcely neceſſary to mention it even to the patient. But when the ſplinter extends to the more ſolid part of the jaw, which in children eſpecially is apt to happen, if the operation be not done with the utmoſt attention, as the ſore which enſues proves commonly tedious, and as it will not readily heal as long as any looſe pieces of bone remain in it, any of theſe that are perfectly detached ſhould be taken away immediately; but

as

as they are ſeldom ſo completely ſeparated as to come away eaſily at firſt, no force ſhould be uſed in it, as they will afterwards either fall out of themſelves or will be taken away without any difficulty, on a free formation of matter taking place. After this, if the matter be prevented from lodging, and if the conſtitution be in other reſpects ſound, the ſore will probably heal with eaſe.

Hemorrhagies of importance do not frequently occur from tooth-drawing; for the blood veſſels which ſupply the teeth being ſmall, it is ſcarcely poſſible that much blood can be diſcharged by them. But when the roots of teeth are deeply fixed in the jaw, and when much force has been uſed in the operation, we can eaſily ſuppoſe that in this manner ſome of the larger arteries of the contiguous parts may be divided; and it is thus I imagine that any troubleſome hemorrhagy which occurs here is ever produced. At firſt we adviſe the patient to take frequent mouthfuls of cold water, red wine, brandy, vinegar, or even alcohol;

alcohol; and for the moſt part one or other of theſe will prove ſucceſsful; but when they happen to fail, other means muſt be employed, and the eaſieſt of theſe is compreſſion. A doſſil of ſoft lint being fitted to the opening, muſt be puſhed into it; and the patient being deſired to make a conſtant preſſure upon it, by keeping the mouth ſhut, if this be perſiſted in for a ſufficient length of time, it will very rarely fail. I have met with inſtances, however, even of every trial of this kind proving unſucceſsful, and of fainting and other diſagreeable ſymptoms occurring from the violence of the hemorrhagy. In ſuch a ſituation the actual cautery is alone to be depended on; and it muſt be applied with freedom, otherwiſe no advantage will be derived from it. A ſmall bit of lunar cauſtic inſerted into the opening might in ſome caſes anſwer the ſame purpoſe; but it does not act with ſuch certainty as the other, while at the ſame time there is a greater riſk of miſchief being produced by it,

it, from its being apt to ſpread ſo as to injure the contiguous ſound parts.

The key-inſtrument which we have recommended, is perhaps the beſt hitherto invented for the pulling of teeth in an oblique or lateral direction; but there are ſeveral others which are uſed in different parts of Europe that act nearly on the ſame principles: Theſe, however, being leſs perfect, will not all be delineated here; but with a view to convey ſome idea of them to ſuch as may not have an opportunity of ſeeing them, I have given a repreſentation of two of them in Plate LX. figs. 1. and 2. But even theſe, although they are the beſt I have met with, are very inferior to the key: for they act with much leſs power; and they have this great defect, that they can never be employed for pulling teeth towards the inſide of the mouth.

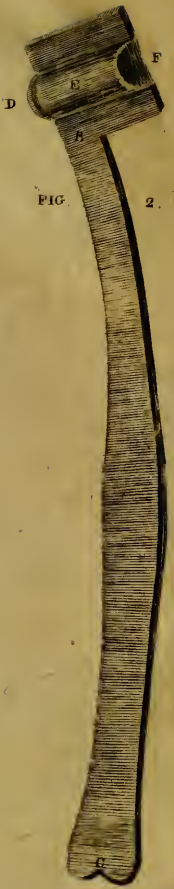
We have thus deſcribed the method of extracting firm teeth from the back part of the mouth. Any of the fore-teeth may likewiſe be pulled, as we have already obſerved, with the ſame inſtruments; for they may

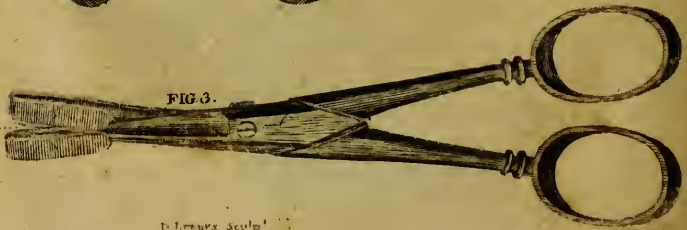
may be turned either inwards or outwards by a proper application of the key: but they may alſo be pulled in a different manner; and as this may be done with inſtruments which do not bruiſe the gums, it ſhould perhaps in every inſtance be preferred.

The inciſores and canine teeth, and even the two ſmall molares, have only one root; ſo that they are never ſo firmly fixed in the jaw as the large grinders; and therefore they may be extracted with more eaſe. For the moſt part this may be done with the common teeth-forceps repreſented in Plate LXI. figs. 1. 3. or 4. In uſing this inſtrument, it ſhould be preſſed as far down upon the tooth as poſſible, otherwiſe it is apt to break off the corona or upper part of it, and to leave the root; and the tooth ſhould not be pulled directly upwards, but ſhould be twiſted alternately from one ſide to the other till it becomes looſe, when it may be taken out without further trouble.

In ſome caſes, however, even theſe teeth are too firmly fixed to admit of their being pulled

PLATE LXII.





D. Lizars Sculp.

pulled with this inſtrument: we have therefore given a repreſentation of forceps that act with more power; a very ingenious invention firſt made public in the Britiſh Magazine in the year 1762. It is delineated in Plate LXII. figs. 1. and 2. Fig. 1. repreſents a common ſtrong forceps with moveable claws. The axis of the claws is ſhown at *A*. Fig. 2. is a fulcrum. *B*, *C*, is the handle going off obliquely from *B*, by which it is more eaſily applied. *B*, *F*, *D*, is a plate of iron covered underneath with a piece of ſoft buff; and *E* is the other ſide of the ſame plate made round, ſmooth, and uncovered. The tooth intended to be pulled is laid faſt hold of with the forceps, fig. 1. then the fulcrum *B*, *F*, *D*, is placed upon the neighbouring teeth, when the forceps being placed upon the round part of the plate *E*, by a proper motion of the lever *G*, *H*, *I*, *K*, the tooth is in this manner to be extracted. In the pulling of looſe teeth, this inſtrument may be uſed ſo as to draw them nearly ſtraight up; and this we are told may even be done where

where the teeth are quite firm, provided their roots do not diverge much, and that there be no oſſeous adheſions between them and the ſockets: but with a view to prevent any bad conſequences that might occur from the application of much force, we are deſired by the anonymous author of the inſtrument, inſtead of attempting to pull firm teeth directly upwards, to twiſt them a little outwards, which looſens them ſo much, that they may then be pulled almoſt in a perpendicular direction with much eaſe.

The advantages ſuppoſed to be derived from forceps with moveable claws is this: When the common forceps is uſed with immoveable claws, if the tooth be firm, it muſt either be forced out obliquely, or the firſt hold muſt be loſt, and the inſtrument fixed again: but when the claws are moveable, it will always retain its hold, and the tooth will be pulled nearly in a perpendicular direction; for the claws, by turning upon centres, will always fall into the way

of

of the tooth; and will therefore raiſe it very nearly in a ſtraight line.

We have taken different opportunities of obſerving, that the moſt painful part of tooth-drawing ariſes from the bruiſing and laceration of the gums and ſockets; a circumſtance which cannot be altogether avoided when the key-inſtrument is employed. The great object of the forceps we have juſt been deſcribing being to pull in a ſtraight direction, by which the gums and ſockets are almoſt entirely ſaved, would render it the moſt complete inſtrument that has hitherto appeared, were it not liable to ſome very material objections. The ingenious author of this forceps thinks it may be employed for the extraction of any teeth; even of the large molares: but, as the mouth cannot be ſo widely opened as to admit of the proper application of it, this ſhould never be attempted. It muſt therefore be confined, as we have already obſerved, to the pulling of teeth in the fore part of the mouth. But beſides this, as the fulcrum is placed upon the contiguous

ous teeth, when the tooth to be pulled is firmly fixed, it is ſcarcely poſſible to prevent thoſe from being hurt: for they will be very apt to ſuffer even when the preſſure is made as nearly as it can be done in the direction of their roots; and when this is not attended to with much exactneſs, they are apt to be broke, or even to be forced entirely from their ſockets. In the pulling of all looſe teeth, however, and whenever it is found that the fore-teeth are not ſo firmly fixed as to require much force to move them, this inſtrument may be employed with much advantage. When again, it is diſcovered upon trial, that an unuſual degree of force is neceſſary, a prudent practitioner will rather lay the forceps aſide, and finiſh the operation with ſome other inſtrument. The common key, as we have already obſerved, may be uſed; or either of the inſtruments, fig. 1. and 2. Plate LX. may be employed for looſening the tooth; after which it may be taken out either with theſe or with the common forceps.

We

We have hitherto been ſuppoſing that the tooth to be pulled is only carious in a particular part, and that a conſiderable part of the corona is ſtill remaining. When a tooth becomes ſo much diſeaſed that the upper part of it falls entirely off, ſo as to leave little, or perhaps nothing, above the gums, the remaining part of it is thus reduced to what is commonly termed a Stump.

In this ſtage of the diſeaſe, the connection between the remaining roots and the ſockets undergoes a very important alteration. By the corona being removed, the roots, whatever number there may be, are all ſeparated from each other; for as they are united ſolely through the intervention of the corona, it is evident that their connection muſt be deſtroyed on this being taken away. In this manner their connection with the ſockets is rendered not ſo firm as when diverging roots, tied together above, tend all to ſupport each other; but they become ſtill more looſe by a diſſolving or waſting

proceſs, to which teeth in this ſituation are particularly liable. A conſiderable part of the corona of a tooth may become carious, and fall away, without any effect being produced upon the roots; but I have ſcarcely known an inſtance of the corona being completely removed for any length of time, where the roots did not ſuffer a remarkable diminution. Nay, in ſome caſes, the roots, even of the largeſt molares, have been almoſt completely annihilated; and inſtead of the long fangs with which theſe teeth are furniſhed, only a ſmall point or two of ſpoiled bone has been met with. In conſequence of this they become looſe; and their connection with the jaw being now very ſuperficial, they may be forced out much more eaſily than it is poſſible to extract a large tooth. I know that practitioners in general are of a different opinion, the pulling of a ſtump being for the moſt part conſidered as a more difficult as well as a more painful operation than the extraction of a large tooth. This, however,

ever, can proceed only from want of experience in this branch of practice; for thoſe who are more verſant in it know well, that there is much more pain, hazard, and difficulty, in the pulling of a complete tooth when firmly fixed, than in the taking out of ſeveral ſtumps.

When the point of the claw can be forced ſo far down upon a ſtump as to get a firm hold, it may be pulled with the key-inſtrument in the manner we have adviſed for the extraction of large teeth; but this ſhould not in general be adviſed, as we may commonly employ a ſufficient force with inſtruments which do no injury to the gums, and by which a very painful part of the operation may be avoided. When the ſtump can be laid hold of either with the common forceps or with thoſe with moveable points, this will be the eaſieſt method of pulling it: but when it is ſo much ſpoiled as to be nearly, or perhaps entirely, covered with the gums, the points of the forceps cannot be preſſed ſufficiently down upon it; in which

caſe, we are under the neceſſity of forcing it out with a ſimple lever. This inſtrument is commonly termed a Punch: different forms of it are repreſented in Plate LXIII. figs. 1. 2. and 3. In uſing it, the gums muſt be freely ſeparated from the ſtump with a ſcarificator; and the point of it being preſſed down upon the root, a degree of force muſt be applied ſufficient for raiſing it completely out of the ſocket: and this being done with one of the fangs, the inſtrument muſt be applied in a ſimilar manner to the reſt of them.

With thoſe accuſtomed to the uſe of the punch, this operation is ſimple and eaſy, while with others it is often both difficult and tedious. In order to be able to apply as much force as poſſible, the point of the inſtrument is commonly puſhed as far as it will go towards the root of the fang: But by this means much of the force that is employed is loſt againſt the alveoli of the oppoſite ſide; which being firmer and ſtronger towards the baſe of the jaw, they do not ſo readily yield at this part

PLATE LXIII.

FIG. 1.

FIG. 2.

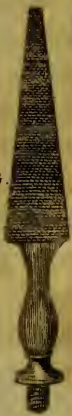
FIG. 3

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.



part as where they are thinner and not ſo firmly ſupported. In general, it will be found to anſwer better to puſh the inſtrument no farther down upon the fang than is merely neceſſary for procuring a ſufficient reſt for the point of it; for I know from experience, that a ſtump may be forced out in this way with much more eaſe than in any other manner. When it does not come out at once with the punch, but is merely looſened by it, it may in this ſtate be laid hold of with the forceps, and removed in the manner we have already pointed out.

For the moſt part, a punch of ſuch a form as is repreſented in Plate LXIII. fig. 1. anſwers beſt. With this the force is applied ſo as to puſh the fang towards the oppoſite ſide of the jaw; but it ſometimes happens that the upper point of the root is of ſuch a form as does not ſo readily admit of force being applied to it in this direction: in this caſe we employ a kind of hook or crooked lever, ſuch as is repreſented in fig. 3. by which the

ſtump is drawn or raiſed in a contrary direction.

I have thus deſcribed what by experience I have found to be the ſureſt and eaſieſt method of extracting teeth. A variety of inſtruments may indeed be met with in other authors, which I have not mentioned, and by which it is ſaid, by the inventors of them, that the operation may be done with more eaſe. But this not being ſupported by the reſult of practice and obſervation, it will not be expected that I ſhould give any account of them.

§ 2. *Of Toothach from Inflammation.*

THE ordinary ſymptoms of toothach ariſe, for the moſt part, as we have already remarked, from the nerve being laid bare, either from a tooth becoming carious, or from the enamel being broke by external violence. It ſometimes happens, however, in a very violent manner, merely from an inflamed ſtate of the membrane ſurrounding the root of a tooth,

tooth, or from the parts within the body of the tooth becoming inflamed. We judge of this being the cause of toothach, when a severe permanent pain attacks a tooth which outwardly appears to be sound: and this especially when it has been evidently induced by much exposure to cold; or when it is connected with other symptoms of inflammation, such as an inflamed state of the contiguous cheek, swelling and suppuration in the adjoining gums, &c.

In most instances, we may be able to trace this variety of toothach to the cause we have mentioned, namely exposure to cold; in some cases, however, it proceeds from causes of a different nature. Whatever will produce inflammation in other parts of the body, will be attended with the same effect when applied to the membrane surrounding the root of a tooth: and we know from experience, that inflammation of this membrane is sometimes induced by a disease to which the roots of the teeth are liable; what is termed the Swelling

of the Fang, a hard knot or exoſtoſis which now and then forms at the point of the root. At firſt, the pain induced by this may be ſuppoſed to originate from diſtenſion alone; but ultimately it commonly terminates in a very ſevere degree of inflammation. And inflammation of theſe parts, by whatever cauſe it may be induced, is always attended with a more violent pain than what commonly takes place from ſimilar affections in other parts, owing to their being here ſurrounded with bone, which prevents them from yielding ſo readily to that diſtenſion of the veſſels with which inflammation is always accompanied.

In the treatment of this variety of the diſeaſe, we will find in general, that thoſe remedies prove moſt ſucceſsful which anſwer beſt in inflammatory affections of other parts. Local blood-letting, either by ſcarifying the contiguous gums with a lancet, or by the application of leeches, often gives relief. I have known the pain removed entirely by the application of a

bliſter directly oppoſite to the part affected: and much advantage is often derived from a large doſe of laudanum; for by procuring a temporary diminution of pain, it thus leſſens irritation, and hence an abatement of the inflammation itſelf. The head ſhould be kept warm by covering it completely with flannel; a practice which ſhould be inculcated with all who are liable to toothach, from whatever cauſe it may proceed, but particularly when it originates from inflammation; and in this caſe fomenting the head with the ſteams of emollient herbs, or even of warm water alone, will often procure relief when every other remedy has failed. In ſome caſes indeed, cold water, vinegar, or ardent ſpirits taken into the mouth, prove ſerviceable; but for the moſt part warm applications prove more uſeful in this variety of toothach.

By a due perſeverance in the uſe of one or other of theſe remedies, the pain will commonly be at laſt removed; and in toothach ariſing from inflammation, we

are

are particularly induced to perſevere in applications of this kind, from our knowing that the diſeaſe is not apt to return after it is once removed. But when they do not prove ſucceſsful, we are under the neceſſity of adviſing the extraction of the tooth, which is often the only remedy to be depended on. In extracting a firm tooth, we have already adviſed it to be done in a ſlow gradual manner in every caſe, with a view to prevent the tooth from breaking, and the jaw from ſuffering ſo much as it is apt to do when a tooth is forced quickly out. This caution, however, is more particularly neceſſary in the extraction of teeth under the circumſtances we are now conſidering; for when the pain originates merely from inflammation, without any part of the tooth being ſpoiled, the roots are always entire, and more firmly fixed, than when the corona of a tooth is moſtly conſumed, and when the roots are always in ſome degree decayed. And beſides, when the pain and inflammation are induced, as we have already

already remarked, by a ſwelling or enlargement of the fang, and which can never be previouſly diſcovered, if the tooth be turned quickly round, it will for certain break; and the ſwelled part of it being left behind, ſcarcely any advantage will be derived from the operation, while all the pain and diſtreſs with which it is uſually attended will be ſeverely felt by the patient.

On pulling a tooth which does not in any part appear to be carious, we are adviſed by ſome practitioners to replace it and to tie it to the contiguous teeth till it become ſufficiently firm. This I have done in different inſtances; but I think it right to obſerve, that it is a practice which frequently fails, owing, I preſume, to the experiment being tried with teeth in a ſtate of inflammation. I know it will often ſucceed where a tooth has been merely productive of pain, and when no ſymptoms of inflammation have taken place; but whenever the membrane ſurrounding the roots of teeth, or even when

the

the contiguous parts only are much inflamed, it will ſeldom or never ſucceed, while at the ſame time the trial of it will always be productive of much pain and diſtreſs. It ought not therefore to be adviſed indiſcriminately in every caſe, as has frequently been done.

§ 3. *Of Toothach ariſing from Affections of diſtant Parts.*

It is no common occurrence to find all the ſymptoms of toothach produced in the moſt ſevere degree, in one, two, or more teeth, where we cannot by the moſt accurate examination diſcover the leaſt appearance of diſeaſe; where we are therefore certain that no part of them is carious, and where there is every reaſon to conclude that the diſeaſe does not originate from inflammation.

In ſuch circumſtances, as the patient is at firſt always unwilling to part with a tooth which in other reſpects appears to be ſound, all the remedies uſually employed in

in toothach are made uſe of; ſuch as bliſters,—blood-letting with leeches,—the application of ardent ſpirits and ſtrong eſſential oils to the pained part, &c.; and after being for ſome days tormented with theſe, with little or no advantage, the pulling of the tooth is recommended as a never failing remedy. Even this ſevere alternative is at laſt ſubmitted to; but unfortunately no benefit enſues from it. The tooth in which the pain ſeems to be moſt ſevere is firſt taken out: But the contiguous teeth becoming ſoon pained in an equal degree, they are from time to time all taken out, till at laſt I have known all the teeth of one ſide of a jaw extracted, and ſtill the pain continue equally ſevere in the gums as at firſt.

In ſuch circumſtances, we will often find, that the pain in the tooth is induced by an affection of ſome other part, and that no remedy will prove effectual that is not directed to the original diſeaſe. It originates in ſome inſtances from rheumatiſm;—it has been known to proceed from

from an arthritic diatheſis;—it occurs as a frequent ſymptom in hyſterical affections;—pregnant women are frequently liable to it;—and it is often found to depend upon a foul ſtate of the ſtomach.

When the pain originates from a foulneſs of the ſtomach, which may be often known by the ſtate of the tongue, as well as other circumſtances, no remedy proves ſo effectual as emetics. I have known the moſt violent toothach, which for many weeks had reſiſted the effects of every other remedy, almoſt inſtantaneouſly removed by a vomit: and when the ſtomach is once ſufficiently cleared, a plentiful exhibition of Peruvian bark proves often effectual in preventing a return of it; particularly where the fits of toothach have returned periodically, as they ſometimes do, ſo regularly as to give cauſe to imagine that they depend upon a tendency to ague.

In this variety of toothach, ariſing from an affection of the ſtomach, no benefit is derived from laudanum. Inſtead of

of procuring eaſe, it ſeems rather to increaſe the pain, and, by inducing ſickneſs, to render the patient in every reſpect more miſerable. But in theſe varieties of the diſeaſe, originating either from rheumatiſm, from gout, or hyſterical affections, opiates will for the moſt part remove the pain entirely: and a return of it may be frequently prevented merely by keeping the parts ſufficiently warm. In hyſterical patients, a combination of laudanum with ether has ſometimes proved uſeful, when opiates in every other form have failed.

Opiates are often uſed too in toothach induced by pregnancy; but ſeldom with advantage. In large doſes indeed they ſometimes procure a ſhort relief from pain; but nothing I have ever tried proves ſo effectual in preventing a return of it as blood-letting. A plentiful diſcharge of blood, by the application of leeches to the neighbouring gums, will ſometimes anſwer the purpoſe; but as the pain in caſes of this kind ſeems to originate from a general

neral plethoric ſtate of the ſyſtem, it commonly proves more effectual to empty the veſſels by taking away eight, ten, or twelve ounces of blood from the arm. I have known women immediately relieved by blood-letting, who for ſeveral weeks had been liable to very violent degrees of toothach, and in whom neither tooth-drawing, opiates, bliſters, nor any other remedy, were productive of any advantage.

When a practitioner finds that he has pulled a tooth in the circumſtances we are now deſcribing, where there is neither inflammation nor much caries, he may with much propriety replace it. After clearing the tooth and ſocket entirely of blood, it ſhould be put as nearly as poſſible into its natural ſituation; where it ſhould be tied to the two contiguous teeth till it becomes ſufficiently firm.

SECT.

SECTION X.

Of Transplanting Teeth.

THE advantages of a ſound ſet of teeth, both with reſpect to beauty and utility, are ſo great, that we are not ſurpriſed at finding the fertile genius of modern artiſts employed in endeavouring to ſupply the loſs of thoſe which accident or diſeaſe may have occaſioned. The method of ſupplying deficiences of this kind with artificial teeth, and even of making complete ſets of them, has been long known, and the art has by many dentiſts been carried to great perfection; but the tranſplanting of human teeth from one living body to another is the invention of modern artiſts. The mere propoſal of ſuch a nice operation was intitled to much credit; and in no inſtance does the art of ſurgery appear to more advantage than in rendering the practice of it perfect. It will

readily be conceived, however, that it is not admiſſible in every caſe. Various circumſtances muſt concur to render it practicable; but it may commonly be done wherever it is very neceſſary.

1. As it is in general more with a view to obviate deformity, than to be productive of any real advantage, that the tranſplanting of teeth is practiſed, it is ſeldom conſidered as neceſſary with any of the large molares. Indeed with theſe teeth it could not often take place; for as the roots of them often diverge in a very uncertain manner, and as the number and length of the roots can never be previouſly determined, it would for the moſt part be impoſſible to procure teeth exactly fitted to the vacancies intended to be filled up. The practice is therefore confined almoſt entirely to the inciſores and canine teeth, although it may be done with nearly an equal certainty in the ſmall molares; for in them the roots are either ſingle, or if there are two fangs they are almoſt always united.

2. In order to enſure ſucceſs, the alveoli and

and gums muſt be perfectly ſound. They muſt be free from ſcurvy and the lues venerea; nor muſt the patient undergo this operation for a conſiderable time after a ſalivation. The uſe even of a ſmall quantity of mercury frequently leaves ſuch a ſoft ſpongy ſtate of the gums, as renders it improper during the continuance of it to attempt any operation upon them. Hence thoſe who are to have teeth tranſplanted, ſhould carefully avoid even the riſk of contracting any complaint for the cure of which mercury may be neceſſary *. A patient being liable to gum-boils has been conſidered as an objection to this operation; but where every other circumſtance concurs to render it proper, it ſhould not be forbid by this: for although it would not probably ſucceed where the ſurrounding ſocket is carious; yet we know that gum boils frequently occur where the ſocket is not in any reſpect diſeaſed.

* This caution is particularly inculcated by the very ingenious Mr John Hunter, in his Treatiſe on the Diſeaſes of the Teeth, page 98.

3. As the ſucceſs of the operation will depend in a great meaſure not only on a ſound ſtate of the alveoli, but on the ſockets being full and complete, it will ſeldom anſwer where teeth have remained long in the ſtate of ſtumps: for in this ſtate the roots commonly waſte away ſo as to loſe conſiderably both of their length and thickneſs; and the alveoli diminiſhing in nearly the ſame proportion, there is not ſufficient ſpace left for the roots of a ſound tooth to be fixed in. It may always, however, be attempted where any conſiderable part of the corona of a tooth is left; for in this caſe the roots, as we have formerly remarked, are uſually complete, however extenſively the caries may in other reſpects have ſpread.

4. It is in youth and middle age only that this operation is admiſſible. In childhood and old age it ſhould not be attempted. In childhood, it is not probable that a tooth put in, in this manner, would ever become firm, as the approaching tooth of the ſecond ſet would always be acting againſt

againſt it; and beſides, as any vacancy produced at this period will be filled up when the ſecond ſet comes forward, it can never be in any reſpect neceſſary. In old age again, two ſtrong objections occur to it. At this period the ſockets of the teeth are commonly much diminiſhed, particularly in depth: and in old age, when many of the ſmaller blood-veſſels become obliterated, it is not probable that any tranſplanted tooth, whether taken from a dead or a living ſubject, would ever become ſufficiently firm: For, when the operation ſucceeds, as there is always a firm union produced between the tooth and the contiguous parts, by means of blood-veſſels paſſing from one to the other, we are led to imagine that this is neceſſary for the ſucceſs of it. Now this, for the reaſon mentioned above, can never happen to any extent in advanced periods of life.

5. The tranſplanted tooth ought to fit the ſocket in every point as exactly as poſſible: but it ſhould not require much

force to inſert it; for if it be in any degree larger, either in length or thickneſs, it will create a great deal of unneceſſary pain. The irritation produced by it will probably terminate in ſuppuration; and in this manner the operation will be rendered abortive. Several people therefore ſhould be provided for the purpoſe of furniſhing teeth; ſo that the operator may have no difficulty in finding one of a proper ſize: and it will frequently happen, that a tooth of the ſame ſize taken from one perſon, will fit the ſocket of the ſame tooth in another perſon very exactly. When it is found, however, that the roots of the tooth newly pulled are either too long or too thick for the ſocket in which they are to be placed, they ſhould be filed down till they go eaſily in; for it is not found that the removal of a ſmall part of the root prevents the ſucceſs of the operation. And care ſhould be taken to make the ſurface of the tranſplanted tooth ſomewhat lower than the level of the contiguous teeth, ſo that no inconvenience

venience may occur from thoſe in the oppoſite jaw preſſing againſt it. There is no neceſſity, however, for this difference being ſo conſiderable as to be very perceptible; for the ſmalleſt difference will anſwer the purpoſe, and a greater degree of it will always be attended with ſome deformity.

But although we have ſaid that the roots of teeth to be tranſplanted may be leſſened with a file, no part of the corona ſhould be touched with it. It is ſometimes indeed done by dentiſts, and it may in ſome inſtances ſucceed; but as it muſt always be attended with ſome riſk of the tooth becoming carious, it ſhould never be adviſed; and this eſpecially as a very little attention will render it at all times unneceſſary; for although we may be miſtaken with reſpect to the ſize of the roots of a tooth, we have it always in our power to determine with exactneſs, whether the upper part of the tooth to be pulled will fit the vacancy or not.

6. In taking out the new tooth and removing

moving the old one, much care and attention is neceſſary; for if the new tooth be much broke, or if the ſocket in which it is to be placed be much injured, the operation will not probably ſucceed. When it is poſſible therefore to take out the old tooth with the forceps, it is better to do it in this manner than with the key-inſtrument, which can ſcarcely be uſed without injuring the parts too much.

7. When the tooth is removed, the ſocket cleared of blood, and the new tooth inſerted under the reſtrictions we have mentioned, we are next to endeavour to keep it firmly fixed till an adheſion ſufficient for retaining it takes place between it and the neighbouring parts. This muſt be done by tying it to the two contiguous teeth, and by much attention on the part of the patient to do nothing that can probably looſen it. In tranſplanting a canine tooth, the ligature, which ſhould be made of ſeveral plies of fine ſilk properly waxed, ſhould be firſt tied round the upper part of the new tooth, immediately above where

it

it begins to ſwell; and on the tooth being properly placed, it ſhould be tied to the two contiguous teeth, taking care to paſs the ligature as near as poſſible to the gums. But when an inciſor or ſmall molaris is tranſplanted, it anſwers better to fix the ligature firſt to the contiguous tooth near to the junction of the gums, and then to paſs it over the ſurface of the new tooth, and bringing it again back, to fix it where it commenced, round the necks of the other teeth. In this manner the tranſplanted tooth is pulled down by the ligature into the ſocket; but much attention is neceſſary in this part of the operation to prevent it from being drawn too much either to one ſide or another; for nothing more certainly prevents it from proving ſucceſsful than the new tooth being made to preſs upon either of the contiguous teeth. This, however, will never happen in the hands of an expert artiſt who has been ſufficiently accuſtomed to this branch of practice; nor can it happen with any

any who is properly warned of the conſequences that may enſue from it.

When the ligatures are properly fixed, they may not perhaps need to be renewed; but when they either ſlip off accidentally, or become in any degree looſe, they ſhould by all means be renewed immediately; and the patient ſhould be conſtantly on his guard to avoid whatever might in any degree looſen or ſhake the tooth. Nor is it ſufficient to attend to this for a few days only: the ſame kind of caution muſt be perſiſted in till the teeth becomes perfectly firm; and the length of time neceſſary for this will depend on the circumſtances of every caſe: on the particular ſtate of the alveoli; on the age and habit of body of the patient; and on the operation being done with more or leſs exactneſs. In ſome caſes a tooth will become perfectly firm in the ſpace of eight or ten days; while in others it will remain ſomewhat looſe for two or three months. During all this period the patient ſhould live as much as poſſible upon ſpoon-meat: and he ſhould

guard

guard particularly againſt cold; for nothing renders the ſucceſs of this operation liable to ſo much hazard as expoſure to cold or dampneſs.

The moſt important objection that has been ſtarted to the tranſplanting of teeth, is the riſk with which it is attended of communicating diſeaſes; and I muſt own that *à priori* it appears to be a very material one. It has not however been found on experience to be ſufficient to counterbalance the advantages which are ſuppoſed to be derived from this operation; for it is daily practiſed; and we ſeldom hear even of any ſuſpicion of infection being carried into the ſyſtem by it. I am not, however, of opinion, with thoſe who think that diſeaſes cannot be communicated in this manner. On the contrary, I think thoſe practitioners do not deſerve to be employed, who treat a matter of ſuch importance to their patients with indifference. Teeth for the purpoſe of tranſplanting ſhould never be taken from people with any appearance whatever of diſeaſe. Thoſe only ſhould be uſed which are taken

ken from conſtitutions in which there is every poſſible evidence of health; and with a view to prevent as much as it can be done, every riſk of infection being conveyed in this manner, the tooth to be tranſplanted ſhould be immerſed for a few ſeconds in luke-warm water, and ſhould afterwards be entirely cleared of any blood or matter that may adhere to it, by rubbing it gently between the plies of a piece of ſoft old linen.

There is reaſon indeed to imagine, from the reſult of ſome experiments made with a view to inoculate the meaſles, as well as ſome other diſeaſes, with the blood of thoſe infected with them, that infection cannot be communicated in this manner. But the point is by no means ſo certain as to warrant our placing much dependence upon it.

SECT.

SECTION XI.

Of the RANULA.

WE frequently find tumors of different degreesof conſiſtence ſeated beneath the tongue, ſometimes on one ſide, and at others on both ſides, of the frænum; which in general are diſtinguiſhed by the term Ranula. They are ſeldom attended with much pain; but they become ſo large in ſome inſtances as to impede the ſucking of infants, and the maſtication, and even the ſpeech, of adults. In ſuch circumſtances, the aſſiſtance of ſurgery becomes neceſſary in the treatment of them.

In ſome caſes, tumors of this kind contain a fatty kind of matter: This, however, is rare; and for the moſt part, perhaps in nineteen caſes of twenty, they are filled almoſt entirely with a thin limpid liquor very much reſembling ſaliva; and

we

we find, on cutting into them, that they are often produced by a ſtoppage of the ſalivary ducts from calculous concretions forming in them. They ſometimes arrive at conſiderable degrees of magnitude; but in general the tumor burſts when of the ſize of a large nut, leaving an ulcer which is commonly difficult to heal, if the real cauſe of the diſeaſe be not diſcovered and removed. I have known an ulcer of this kind treated with much attention for the ſpace of ſeveral months—various detergent and even corroſive applications being employed for it—nay, in one inſtance a long mercurial courſe was adminiſtered, but with no advantage whatever; and at laſt, on the true origin of the diſorder being found out, it was cured in the ſpace of a few days, merely by removing a portion of hard calcareous matter, which, by ſtopping the natural paſſage of the ſaliva, firſt produced the tumor, and afterwards prevented the ulcer, in which it terminated, from healing. In ſome inſtances concretions of this kind are ſmall, not lar-

ger

ger perhaps than the head of a middle ſized pin; whilſt in others they are large. I have in different inſtances found them of the ſize of a kidney-bean.

In every tumor of this kind that is not of a firm conſiſtence, the moſt effectual mode of treatment is to lay it open with a ſcalpel from one end to the other; by which any calcareous particles contained in it are eaſily diſcovered; and theſe being removed, the remaining ſore commonly heals eaſily. There is no neceſſity for waſhing the ſore, as we are generally adviſed, with tincture of bark and other aſtringents: On the contrary, warm water and other emollients anſwer better, by waſhing out more effectually any particles of ſtone that may not have been previouſly diſcovered. When indeed the ſore proves afterwards difficult to heal, the others may ſometimes be employed with advantage.

The ſame kind of management ſhould be purſued in the treatment of old fiſtulous ſores of theſe parts. In almoſt every caſe where

where the diſeaſe is ſeated in any of the ſalivary glands or ducts, it will appear to be kept up by the cauſe we have mentioned, namely a ſtoppage of the duct by a particle of ſtone; and the removal of this, by making an inciſion upon it, and turning it out with a probe or a ſcoop, will very commonly accompliſh a cure.

When, again, tumors in this ſituation are of a fatty or even of a firmer conſiſtence, inſtead of making an inciſion into them, they ſhould be extirpated entirely; and unleſs they lie deep, and are of a large ſize, it may always be done with ſafety, practitioners are very properly indeed afraid of hemorrhagies in this ſituation; for as the arteries lie deep, it is always difficult, and moſt frequently impoſſible, to ſecure ſuch of them with ligatures as happen to be cut. But any tumor of this kind that is looſe, and not deeply attached to the contiguous parts, may be taken out without any riſk from ſubſequent hemorrhagies; for as the ſuperficial arteries of theſe parts are ſmall,

any

any diſcharge that occurs from them, in general, ſtops by the application of ſpirit of wine—alcohol—or tincture of myrrh.—In more violent hemorrhagies, it would no doubt be proper to employ the potential or even the actual cautery; but theſe means are ſeldom neceſſary.

In removing tumors of this kind by diſſection, where they lie ſo deep that they cannot be eaſily laid hold of with the fingers, the common ſmall forceps is uſually employed; but a ſmall hook with two fangs, ſuch as is repreſented in Plate L. fig. 3. anſwers better.

SECTION XII.

Of Ulcers *of the* Mouth *and* Tongue, *and extirpation of the* Tongue.

THE tongue and other parts within the mouth are liable to all the variety of ulcers incident to other parts of the body;

and we need ſcarcely remark, that the treatment of them ſhould be nearly ſimilar. When they ſeem to originate from the lues venerea, ſcrophula, or ſcurvy, our views ſhould be chiefly directed to the cure of the general diſorder of the ſyſtem; while, on the contrary, local applications only ſhould be employed, when they appear to be of a local nature.

Beſides other cauſes of ulcers, however, to which theſe parts are liable, it is proper to obſerve, that there is one to which they are more particularly expoſed, and which appears to give riſe to the greateſt part of them, namely ragged teeth. I have known very troubleſome ſores not only produced, but kept up for a great length of time, on the ſides of the tongue, and on the inſides of the cheeks, by the ſharp points of broken or carious teeth; and as long as the rough part of a tooth, which has once induced a ſore of this kind, is allowed to remain, no remedy whatever will heal the ſore. In every caſe therefore of ulcer in the mouth, we ſhould inquire with much attention

attention into the ſtate of the contiguous teeth; and when any of them are found to be rough and pointed, they ſhould be made as ſmooth as poſſible with one of the ſmall files, Plate LXIII. fig. 5. or 6. Or when the ſore appears to be induced by the formation of tartar upon the teeth, it ſhould be effectually removed in the manner we have already adviſed in the eighth ſection of this chapter.

The removal of the cauſe is for the moſt part ſoon followed by a cure of the ſore; but when this fails, we frequently derive ſome advantage from waſhing the mouth with gargles compoſed of decoctions of bark,—a ſolution of alum,—lime-water,—infuſions of red roſe leaves—of oak-bark,—and other aſtringents.

In ſome caſes, however, the ſores become worſe, notwithſtanding the uſe of theſe, mercury, and every other remedy. They become ragged and unequal about the edges; they diſcharge a thin, fetid ſanies; and in this ſtate they are commonly attended with much pain.

As long as a ſore of this kind remains ſmall, without ſhowing any tendency to ſpread, there is in general reaſon to expect a cure; and therefore any violent remedy is conſidered as unneceſſary: But whenever a ſore has aſſumed the appearances we have enumerated, and when it does not yield to any of the means we have mentioned, as there will be little or no cauſe to doubt of its being of a cancerous nature, we ſhould certainly adviſe it to be removed by extirpation, and it ought to be done without farther delay.

A cancerous ſore, whether it be ſeated on the tongue, or on the inſide of the cheek, if it is only ſuperficial, and does not run deep, may be extirpated with eaſe and ſafety; but when the ſubſtance either of the cheek or of the tongue is much affected, it becomes an object of more importance, as being attended both with difficulty and hazard. Whatever the riſk may be, however, if the diſeaſed parts can be all removed, the operation ſhould certainly be adviſed: for as we know of no other remedy

medy upon which any dependence can be placed for the cure of cancer, it is ſurely better to ſubmit to ſome riſk than to be left to certain miſery.

When a deep-ſeated cancer in the cheek is to be removed, the eaſieſt and moſt effectual method of doing it is to make an inciſion through the whole ſubſtance of the cheek, commencing at the contiguous angle of the mouth, and ending at the ſame part, after ſurrounding the ſore: The diſeaſed parts being thus entirely removed, the ſides of the cut muſt be laid as neatly as poſſible together; and a number of gold pins being introduced at proper diſtances along the courſe of it, a cure will in this manner be completed by the twiſted future in a manner ſimilar to what is employed for the hair-lip, deſcribed in Section 1. Chap. XXX. In this way very extenſive cancerous ſores may be removed without leaving much deformity; while a very diſagreeable unſeemly cicatrix is always left after the uſual method of doing this operation, by removing

the diſeaſed parts only, and allowing them to heal without drawing them together by ſutures.

In removing any conſiderable part of the tongue with the ſcalpel, as the hemorrhagy which enſues is the only occurrence from whence any danger is to be dreaded, the operator ſhould be previouſly provided with all the ordinary means of putting a ſtop to it. When ligatures can be paſſed round the divided arteries, no other remedy ſhould be truſted; and this we may remark, may be done more frequently, and at a greater depth in the mouth, than is commonly imagined. As the tongue can be puſhed a conſiderable way out of the mouth, ligatures may be applied for this purpoſe, even when a good deal of it has been taken away, merely with the common tenaculum or with crooked needles; but when this does not anſwer, it may ſometimes be done in a manner ſimilar to what we have deſcribed in Section V. Chap. XXVIII. for the removal of ſcirrhous tonſils. A ligature being paſſed round

round the artery with the needle uſed in fig. 3. Plate LI. it may then be tightly twiſted by paſſing the two ends of it thro' the double canula, fig. 1. Plate XLIV. or a knot may be formed upon it with the inſtrument, fig. 2. Plate LI.

When, however, it is found to be impracticable to ſurround the divided arteries either in this way or in any other manner, we muſt endeavour by ſome other means to put a ſtop to the hemorrhagy. If the veſſels are not large, keeping the mouth filled with aſtringent gargles, either of alcohol, a ſtrong ſolution of alum, diſtilled vinegar, or water ſtrongly impregnated with the vitriolic acid, will often anſwer: But when theſe do not ſucceed, the potential, or even the actual cautery, muſt be employed as the laſt reſource.

The removal of any conſiderable part of the tongue we muſt allow to be a very formidable operation: as ſuch it has been always conſidered; and accordingly it has been rarely practiſed. But, for the reaſons mentioned above, I have no heſi-

tation in ſaying, that it is ſometime neceſſary, and in general that it may be done with ſafety. It ought not, however, to be attempted by every operator; for as it is always attended with a ſudden diſcharge of blood, the application of means proper for the ſtoppage of this, obviating the effects of fainting, and other unexpected difficulties, which ſometimes occur, require that ſteady deliberate coolneſs which a natural firmneſs of nerves, conjoined with much experience, alone can give.

SECTION XIII.

Of the Diviſion of the FRÆNUM LINGUÆ.

IT is ſometimes found in children at birth, that the tongue is too cloſely tied down to the bottom of the mouth, owing to the frænum being either too ſhort,

ſhort, or continued too near to the point of it. The method of cure is obvious. This membrane or ligament muſt be divided ſo as to allow the tongue to have a free eaſy motion; and it ſhould be done as ſoon as it is obſerved to be neceſſary, otherwiſe the ſucking of the child may in the firſt place be impeded, and afterwards an interruption to ſpeech may ariſe from it.

It is proper, however, to obſerve, that it is not a common occurrence; for although nurſes often ſpeak of children being tongue-tacked, who either do not ſuck readily, or that are backward in ſpeaking, an attentive practitioner will ſeldom diſcover it.

The diviſion of this membrane is an eaſy operation; but it muſt be done with attention, otherwiſe the contiguous blood-veſſels will be apt to be injured, by which ſuch a quantity of blood may be loſt as might prove hurtful to an infant: It is commonly done either with a ſcalpel or with common ſciſſars; but it is done both with more eaſe and ſafety with the inſtrument,

ſtrument, fig. 3. Plate LXII. The child being laid acroſs the nurſe's knees, the ſurgeon ſhould open the mouth, and elevate the tongue with the index and middle finger of his left hand, while with the other he muſt introduce the inſtrument, ſo as to receive the middle of the frænum into the ſlit, which he may now divide with ſafety to any neceſſary depth.

SECTION XIV.

Of the Diviſion of the Parotid Duct.

THE parotid gland of each ſide tranſmits the liquor which it ſecretes by a duct of the ſize of a crow's quill, which, after paſſing over part of the maſſeter muſcle, penetrates the buccinator in an oblique direction, and empties itſelf into the mouth about the middle of the cheek.

In the operation which we have juſt deſcribed,

ſcribed, of extirpating cancerous ſores from the cheek, as well as by various accidents, this duct is apt to be cut; and if the two divided ends of it be not retained together till they heal, it often happens that the whole quantity of liquor which it ought to convey to the mouth is poured over the cheek; and the diſcharge being conſtantly kept up, the ſore is thus prevented from healing, and a fiſtulous opening left correſponding to the ſize of the duct. As the ſore commonly heals altogether internally, the diſcharge would neceſſarily continue during life, if means were not uſed for preventing it.

In the caſe of a recent diviſion of this duct, the beſt practice is to lay the two ends of it as exactly together as poſſible, and to retain them in this ſituation till they are united; by adheſive plaſters, when this proves ſufficient; or by the twiſted ſuture, when the retraction of the divided muſcle is conſiderable: But when this has either been neglected at firſt, or when it fails of ſucceſs, as the diſtant extremity of the

the duct ſoon heals, and is entirely obliterated at the divided end of it, owing to none of the fluid ſecreted by the gland paſſing through it, the only way in which a cure can be obtained is to make an artificial opening into the mouth, and to endeavour to form an union between it and the upper part of the duct leading from the parotid gland.

In making a paſſage of this kind, we ſhould carry it as much as poſſible in the direction of the natural duct; but in order to inſure the ſucceſs of it, it ſhould be rather of a larger diameter than the other. For this purpoſe a ſharp-pointed perforator of a proper ſize ſhould be entered on the other ſide of the ſore, exactly oppoſite and contiguous to the under extremity of the ſuperior part of the duct; and being carried with ſome degree of obliquity, it muſt in this manner be made to penetrate the mouth. This being done, a piece of lead probe, exactly the ſize of the perforator, ſhould be introduced along the courſe of the newly-formed opening, to be retained

tained in it till the ſides of it become callous; when, the lead being withdrawn, the extremity of the duct ſhould be drawn into contact with the ſuperior part of the artificial opening by means of a piece of adheſive plaſter, and kept in this ſituation till a firm union has taken place. After taking out the lead, we have it in our power to forward the cure, by rendering the end of the duct and of the newly formed opening raw with the edge of a lancet or ſcalpel, before bringing them together. Till a firm adheſion takes place between them, the patient ſhould be directed to live upon ſpoon-meat; to ſpeak little or none; and to make as little exertion with his jaws as poſſible.

In this manner, ſores, which would otherwiſe continue to diſcharge ſaliva for life, may be eaſily healed, with ſcarcely any mark of their having ever exiſted. I have had three different inſtances of it; in all of which complete cures were obtained. A common ſeton or cord of cotton has been recommended for this operation

ration inſtead of lead; and a bit of catgut has been uſed inſtead of it: but nothing renders the parts ſo quickly callous as lead; and beſides, it is more cleanly than a cord or tent of any ſofter ſubſtance.

CHAP.

CHAPTER XXXI.

Of the DISEASES *of the* EARS *and Operations practiſed upon them.*

SECTION I.

Of DEAFNESS.

DEAFNESS may proceed from various cauſes: for as a free paſſage of ſound to the Tympanum or Drum of the ear, together with a ſound ſtate of this membrane and of the parts connected with it, are requiſite for the ſenſe of hearing, ſo

ſo whatever tends to obſtruct the one, or to induce diſeaſes of the other, will neceſſarily be productive of more or leſs deafneſs.

There are two paſſages for the purpoſe of conveying ſound to the ear; one of them termed the Meatus Externus, terminating in the external ear; and the other the Tuba Euſtachiana, ending in the throat. It is true that the firſt of theſe is of more importance than the other, for it is larger, and more conveniently placed for collecting ſound: but it is certain that the latter or internal paſſage is a very neceſſary part of the organ of hearing; for when by any means it is ſtopped, deafneſs to a greater or leſſer degree almoſt conſtantly enſues. Thus we obſerve, that any preternatural fulneſs or enlargement of the amygdalæ, eſpecially when they are attacked with inflammation, is always attended with ſome degree of deafneſs. In this way, too, we account for that deafneſs to which patients are liable who have ſuffered much from venereal ulcers in the throat; and poly-

pous

pous excrescences which extend back from the nose and fauces, by compressing the Eustachian tube, are frequently productive of a similar effect.

In that variety of deafness which originates from this cause, a removal of the polypus, or of the swelled amygdalæ, will frequently accomplish a cure, while no other remedy will be of any utility. But when the disease is the consequence either of an ulcerated state of these parts, or of much inflammation, as the extremity of the duct will probably be obliterated, it would be in vain to employ any means whatever. It has indeed been proposed in this variety of obstruction, to endeavour to open the duct, by inserting the end of a curved blunt probe into it, or even to inject milk and water, or any other mild fluid, into it with a curved syringe. But although a person well acquainted with the anatomy of the parts, may, by much practice, arrive at such perfection as to be able to do this with little difficulty upon a dead body, there is scarcely any

reaſon to imagine that in practice any advantage will be derived from it: for even in a healthy ſtate of theſe parts, the irritation produced by the end of a probe or of a ſyringe muſt be ſo conſiderable as to render every attempt for inſerting them very uncertain; and the difficulty muſt neceſſarily be greatly increaſed where the extremity of the duct is obſtructed by diſeaſe. But if we have not much in our power in the treatment of deafneſs ariſing from this cauſe, we are in many inſtances able to afford much relief, and even to reſtore the moſt perfect hearing where it has been entirely wanting, when the diſeaſe proceeds from obſtruction in the external paſſage of the ear.

The meatus externus may be obſtructed in various ways. It may be in an imperforated ſtate at birth;—it may be more or leſs filled with extraneous bodies forced into it;—tumors or excreſcences may form in it;—and it may be too much ſtuffed with wax, the natural ſecretion of the part. As each of theſe cauſes requires a

method

method of treatment peculiar to itſelf, we ſhall conſider them under ſeparate heads.

§ 1. *Of an Imperforated Meatus Auditorius.*

AMONG other natural deficiencies to which the human body is liable, none occurs more frequently than an imperforated ſtate of ſome of the paſſages. This is not ſo frequently met with in the Meatus Auditorius as in others, owing perhaps to the lining membrane of this paſſage being every where attached to bone, by which it is prevented from collapſing. Notwithſtanding, however, of this, different inſtances have occurred of it, and ſome variety is diſcovered in the nature of it.

In ſome caſes the obſtruction is formed by a thin membrane ſpread over the mouth of the paſſage; while in others a conſiderable part of the conduit is entirely filled with a fleſhy kind of ſubſtance.

In the treatment of this variety of deafneſs, nothing, it is evident, can be of any advantage but the removal of the cauſe by

an operation. When this is determined upon, the patient's head ſhould be ſecured in a proper light, and at a convenient height, by an aſſiſtant; when the operator, with a ſmall ſharp-pointed biſtoury, ſhould make an inciſion of a proper length exactly on the ſpot where the external paſſage of the ear ſhould terminate. If it is covered by a membrane only, the operation will ſoon be finiſhed; but when it is impervious to any great depth, the inciſion muſt be continued, by paſſing the biſtoury in a gradual manner farther in, either till the reſiſtance is entirely removed, or till there is reaſon to fear that the tympanum would be hurt, if it were carried deeper: In which caſe the inſtrument ſhould be withdrawn; and in order to prevent the parts from adhering together, a bit of bougie properly oiled ſhould be introduced, and retained till the cure is completed; care being taken to remove it daily for the purpoſe of cleaning it, and for wiping off any matter that may have collected in the ear.

In

In this manner deafneſs depending upon this cauſe may often be removed when the obſtruction lies between the tympanum and the farther extremity of the external paſſage; and it ſhould be always attempted about the time when the child ſhould be beginning to ſpeak. At a more early period the child would not be ſo able to bear it; and when delayed much later the ſpeech would be impeded; for we know that dumbneſs depends more frequently on a want of hearing than on any other cauſe.

§ 2. *Of Extraneous bodies impacted in the Ear.*

ALTHOUGH the viſcid nature of the wax of the ears is well calculated for preventing duſt and other foreign matters from getting acceſs to them, yet we know that much diſtreſs is in ſome inſtances induced by this cauſe. Children often puſh ſmall peas, cherry-ſtones, lead-drops, and other ſuch articles into their

ears, and flies and other inſects frequently creep into them.

When theſe lie near to the extremity of the paſſage, flies and other things that can be laid hold of ſhould be extracted with ſmall forceps, ſuch as are delineated in Plate LXI. fig. 2. But peas and other round bodies are more eaſily removed, by turning them out with the end of a curved probe, or paſſing the inſtrument, Plate XLII. fig. 1. behind them; and their extraction is facilitated by a little oil being previouſly dropped into the paſſage.

When inſects have got ſo far into the ear that they cannot be taken out with forceps, the beſt method of removing them is to waſh them out, by throwing in quantities of warm water, or any other mild liquid, with a ſyringe; but as they adhere while living with conſiderable firmneſs to the neighbouring parts, we ſhould firſt endeavour to kill them, by filling the ear with oil, or any other liquid that proves poiſonous to them, without injuring the tympanum. Lime-water, ſpirit of wine, and

and many other articles, might be employed for this purpoſe: but nothing proves ſo harmleſs as oil; and although it does not kill every ſpecies of inſect inſtantaneouſly, yet few of them will live if immerſed in it for any length of time. The patient ſhould therefore be deſired to reſt his head upon the oppoſite ſide; and ſome tepid oil being poured into the affected ear, it may thus be eaſily kept in it as long as may be neceſſary.

Peas and other ſoft bodies which ſwell with moiſture, are apt to become ſo large when they remain long in the ear, that they cannot but with much difficulty be extracted entire. In this caſe we ſhould endeavour to break them, either with the points of ſmall forceps, or with a ſharp ſmall hook cautiouſly introduced along the paſſage; and as ſoon as they are ſufficiently divided, they muſt either be taken out piece-meal with the forceps, or waſhed out with a ſyringe.

§ 3. *Of Excreſcences in the Meatus Auditorius.*

We have already treated of polypi in the noſe and throat; and we may now remark, that the external paſſage of the ear is equally expoſed to them. It is not indeed common for excreſcences of this kind in the ear to arrive at ſuch a bulk as they do in the noſe; but whoever has paid attention to this branch of practice, will acknowledge that they are by no means unfrequent, and they often appear to be the cauſe of very obſtinate deafneſs.

On examining the Meatus Auditorius, we ſometimes find it filled with a polypous excreſcence hanging looſe by one pedicle; while on other occaſions the paſſage is obſtructed merely by a thickneſs or fulneſs of the lining membrane of the ear, when no particular part of it appears to be more affected than another.

As the polypi of this part are uſually of a firmer texture than thoſe excreſcences which occur in the noſe, and as the membrane

brane of the ear is firm, and does not readily yield, they cannot with propriety be extracted with the forceps; but they may be taken out either with the knife or by ligature. When they lie near to the external paſſage of the ear, and can be laid hold of either with ſmall forceps, or with the diſſecting hook, Plate L. fig. 3. they may be eaſily cut out with a probe-pointed biſtoury, ſuch as is repreſented in Plate LII. fig. 3. and as they do not appear to be ſo vaſcular as ſimilar excreſcences in the noſe, they may in this manner be removed with ſafety; for they ſeldom diſcharge much blood. But when they lie deep, it is better to remove them with ligatures; for as the paſſage is ſtraight, a knife is in this ſituation introduced with difficulty, and uſed with uncertainty.

Various methods have been propoſed of applying ligatures to excreſcences in this ſituation; but the method of removing polypi of the noſe, deſcribed in the explanation of Plate XLVI. appears to be more adviſable than any of them. With the forked

forked probe, fig. 2. the doubling of a ligature may be puſhed up at one ſide of a polypus till it reaches the root of it; and the two ends of the thread being carried round the excreſcence, and inſerted into a ſhort double canula, ſuch as is delineated in Plate XLIV. fig. 1. the canula muſt now be puſhed to the root of the polypus on the oppoſite ſide; when the two ends of the ligature being drawn ſufficiently tight, and fixed upon the knobs at the end of the tube, the probe may be withdrawn, and the polypus in all probability will drop in a day or two.

But it often happens, that theſe excreſcences cannot be removed in this manner; for inſtead of being pendulous by a ſmall neck, they frequently extend a conſiderable way along the lining membrane of the ear. In this caſe eſcharotic applications have been recommended: but as they cannot be employed but with much riſk of hurting the tympanum, they ſhould never be uſed; and this eſpecially as the diſeaſe may in general be removed by means of

of a more ſimple nature. This affection of the membrane of the ear I conſider to be very ſimilar to that variety of obſtruction in the urethra in which bougies prove particularly uſeful; and the ſame remedy, when duly perſiſted in, proves equally ſerviceable in the one diſeaſe as in the other. In the introduction of the bougie, care muſt be taken not to paſs it to the depth of the tympanum, otherwiſe it may do more harm than good; and the ſize of it muſt be enlarged from time to time till the paſſage is rendered ſufficiently open.

When bougies are firſt paſſed into the ear, they are apt to create ſome degree of uneaſineſs, by irritating the parts to which they are applied; but this ſoon ſubſides when they are employed with caution, and properly oiled before being introduced.

§. 4. *Of Deafneſs from Wax collected in the Ears.*

WHETHER it be from the lining membrane of the ear being poſſeſſed of ſome degree of a contractile power, or from the outward

outward extremity of the paſſage being ſomewhat lower than the other, that the cerumen or wax does not uſually lodge in it is perhaps difficult to determine; but it is certain, that in a healthy ſtate of theſe parts they are for the moſt part only thinly covered with this ſecretion: ſo that it does not appear ſurpriſing that deafneſs ſhould enſue when it is collected in large quantities; for in this ſtate it very effectually obſtructs the paſſage of ſound to the tympanum. It commonly happens too when wax remains long collected in the ear, that it becomes thick, and even hard, inſomuch that in ſome inſtances it becomes almoſt as firm as a bit of timber.

The treatment of this variety of deafneſs is very obvious. By an attentive examination of the ear, we can diſtinguiſh with certainty whether there be a ſuperabundance of wax or not: for by placing the ear in a clear ſun-ſhine, we can ſee even to the tympanum; and whenever it is obſerved that the paſſage is much obſtructed

ſtructed with wax, we ſhould not heſitate in adviſing it to be removed.

Different methods have been propoſed for clearing the ears of wax; but the ſafeſt and eaſieſt is by waſhing or ſyringing with warm water or any other mild liquid, ſo as to force out all the ſtuff that is collected. Milk and water, or ſoap and water, anſwer the purpoſe as well as any other article: but before the operation a few drops of oil ſhould be poured into the ear, not with a view to diſſolve the wax, for more powerful ſolvents of this ſubſtance might be mentioned; but for the purpoſe of lubricating the paſſage, by which it is more eaſily forced out. By a proper uſe of the ſyringe, which a little experience will teach, the ears may be effectually cleared of every obſtruction proceeding from wax.

Although obſtruction of the external paſſage of the ear is the moſt frequent cauſe of deafneſs; yet it is proper to know, that in ſome inſtances it is produced in a different manner. It may occur from a morbid

bid ſtate of the tympanum, and of the parts contained within it. To a certain degree it will take place, if either by accident or diſeaſe the external parts of the ear be deſtroyed; and it ſometimes occurs from a deficiency of wax.

In ſcrophulous conſtitutions the ſmall bones of the ears ſometimes become diſeaſed; in conſequence of which, a great degree of deafneſs is produced which is never in any inſtance removed. In ſuch caſes all that art can do, is to preſerve the parts clean and free from ſmell, which is moſt effectually done by waſhing out any matter that may collect in the paſſage, morning and evening, by throwing in a little warm milk and water with a ſyringe: for if this be not attended to, the matter diſcharged from the carious bones is apt to become offenſive; and it commonly ſubſiſts either till the diſeaſed parts of the bones are entirely diſſolved and diſcharged, or perhaps during the life of the patient.

We ought not, however, to confound this

this diſeaſe with a diſcharge which frequently takes place from the ears, of a milder nature. In ſome caſes it appears to be the conſequence of a boil or abſceſs in the meatus externus; while in others it occurs without any previous impoſthume, and ſeems to be induced by ſome ſlight inflammatory affection of the lining membrane of the ear, or perhaps of the tympanum itſelf.

This is a very common occurrence, and for the moſt part I think it is improperly treated. In general it is ſuppoſed to originate from morbid humours in the ſyſtem; ſo that ſome riſk is ſuppoſed to attend any attempt that may be made for ſtopping it.

This however is an erroneous idea. In moſt inſtances it may be traced to the cauſe I have mentioned, an inflammatory affection of the membrane of the ear; which being of a local nature, no riſk can enſue from checking it. And accordingly I very commonly treat it with injections of a moderately aſtringent nature, nearly

nearly ſuch as often prove effectual in putting a ſtop to the diſcharge of a gonorrhœa. A weak ſolution of alum, or of ſaccharum Saturni, frequently anſwers, or French brandy ſomewhat diluted. In ſome caſes, putting a few drops of any of theſe into the ears, morning and evening, will prove ſufficient; but when this fails, they may be gently thrown in with a ſyringe.

It is proper to remark, that the earlier in the diſeaſe this practice is employed, the more effectual it uſually proves; ſo that it ſhould never be long delayed. And beſides, when the diſcharge has been of long duration, it is not only apt to do harm, by relaxing, or even deſtroying the tympanum, but ſome riſk may occur from putting a ſudden ſtop to an evacuation to which the ſyſtem has been for ſome time accuſtomed. The danger, however, may be obviated by the previous introduction of an iſſue ſomewhat adequate to the diſcharge from the ear, either in the head, neck, or any other part; but

in

PLATE LXIV.

FIG. 1.

FIG. 2.

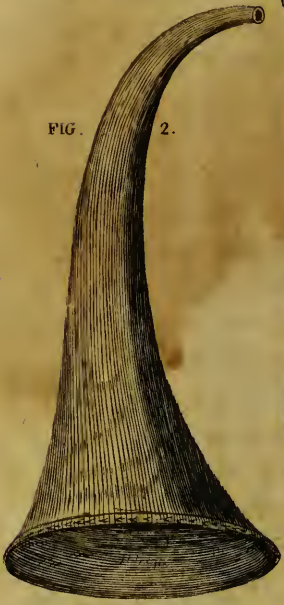


FIG. 3.

FIG. 4.

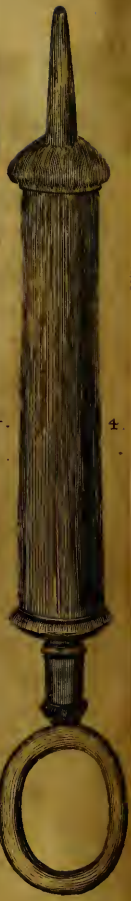


FIG. 5.

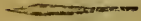
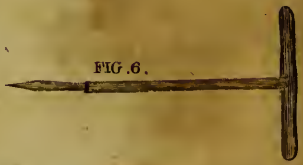


FIG. 6.



in recent caſes of this kind there is no neceſſity for putting the patient to any of the inconveniences with which an iſſue is ſometimes attended; for here the diſcharge may with ſafety be ſtopped immediately.

When deafneſs occurs either from relaxation of the tympanum, or from any deficiency in the external parts of the ear, ſome aſſiſtance may be derived from our endeavouring to collect or concentrate ſound ſo as to make a ſtronger impreſſion on the organ of hearing. Various inſtruments have been invented for this purpoſe; but none of them anſwers ſo well as one nearly of the form of a common horn, ſuch as is repreſented in Plate LXIV. fig. 2. Figure 1. is a convoluted tube employed for the ſame purpoſe; and fig. 3. repreſents an inſtrument intended to be concealed beneath the hair or wig, and to be fixed to the head by the two ſtrings connected with it.

When, again, a deficiency of wax is ſuſpected to be the cauſe of deafneſs, dropping a little oil of almonds, or any other

mild oil into the ear, once or twice daily, proves ſometimes uſeful. In ſome caſes too I have known advantage derived from inſerting a little ſoft ſoap into the paſſage; which not only keeps it moiſt, but by acting as a ſtimulus to the lining membrane of the ear, tends thus to induce a return of the ſecretion of wax. With the ſame view too, I have ſometimes employed ſtrained galbanum made into a proper conſiſtence with oil, along with a ſmall proportion of the juice of an onion.

SECTION II.

Of perforating the Lobes *of the* Ears.

BY ſome medical writers of the laſt and preceding centuries, piercing the lobes of the ears is recommended as an operation that may prove uſeful in ſome diſorders, particularly in affections of the head. In thoſe times a ſmall ſeton was drawn through the opening, with a view to

to induce a diſcharge of matter, which in ſome caſes might prove uſeful. At preſent this operation is never employed but for the purpoſe of ornament.

This is perhaps the moſt ſimple of all operations; but as it is ſuppoſed to be of ſome importance by thoſe on whom it is practiſed, it is neceſſary to deſcribe it. As heavy ear-rings are apt to tear the parts, the opening ſhould be made as high on the lobe as with propriety it can be done; and the ſpot ſhould be previouſly marked with ink. The patient being ſeated, and the head ſecured by an aſſiſtant, the lobe of the ear ſhould be ſtretched upon a piece of cork placed beneath it. The ſurgeon is now to pierce it with the inſtrument, fig. 6. Plate LXIV. and having puſhed it ſo far through that the tubular part of it is freely out on the oppoſite ſide, the cork muſt be withdrawn with the perforator ſtuck into it. A ſmall piece of lead-wire is now to be inſerted into the tube remaining in the ear; and on being drawn

into the perforation, the lead muſt be left in it. By moving it daily, which may be done with little or no pain, if it be previouſly rubbed with oil, the paſſage will ſoon become callous, and thus the operation is completed.

Before concluding the chapter on the diſeaſes and operations upon the ears, it may be expected that we ſhould deſcribe the method of cauteriſing or burning behind the ears for the toothach. At one period this operation was much employed, and different inſtruments were propoſed for doing it. It is unneceſſary, however, to delineate any of them; for the practice is now, we perſume, very generally laid aſide: and at any rate it may be done with a red hot probe of any kind equally well as with the neateſt inſtrument. It was ſuppoſed to prove uſeful by burning or deſtroying the nerve producing the pain: but it would rather appear to act by inducing terror or ſurpriſe; and if this is the caſe, it is probable that the ſame operation

ration would prove effectual if practiſed in any other part. But as the pain attending it would by moſt people be conſidered as more ſevere even than the pulling of a tooth, it is not probable it will ever be revived.

CHAPTER XXXII.

Of the WRY NECK.

THE Neck is ſometimes conſiderably bent to one ſide: When this takes place to ſuch a degree as to be productive of much deformity, the aſſiſtance of ſurgery is in ſome inſtances employed for it.

The Wry Neck may be produced in various ways. It may depend upon an original mal-conformation of the bones of the neck—Upon a preternatural degree of contraction in the muſcles of one ſide of the neck, particularly of the ſterno-maſtoideus muſcle—Or, it may be induced merely by a contraction of the ſkin, in conſequence of extenſive ſores and burns.

When

When the vertebræ of the neck are diſtorted, it would be in vain to attempt any means of relief; but either of the other cauſes we have mentioned ſeem to admit of almoſt a certain removal.

In books of ſurgery the operation for the wry neck is very commonly deſcribed; and as this deformity has in general been imagined to proceed ſolely from a contraction of the ſterno-maſtoid muſcle, a diviſion of this muſcle is uſually recommended as the only method of cure that can be depended on. Even Mr Sharpe was of this opinion; and he delineates an inſtrument termed a Probe-razor for performing it*.

But were we even to admit that the diviſion of this muſcle was a neceſſary meaſure, the method of doing it by introducing the probe-razor beneath it and dividing it afterwards, as is recommended, appears to be exceptionable, as being attended with much riſk of wounding the

* Vide Sharpe's Surgery, Ch. XXXV.

contiguous blood-veſſels: it would ſurely be better to divide the muſcle by repeated ſtrokes of a ſcalpel, and to continue the inciſion in a gradual manner to ſuch a depth as may be neceſſary; by which even the large veins of the neck would be avoided. But although we allow that a wry neck may be ſometimes produced by a contraction of this muſcle, yet it appears to be a rare occurrence: I have met with different inſtances of this deformity, and in all of them the contraction ſeemed to be in the ſkin alone.

When the ſkin only is affected, the parts are more eaſily ſeparated and with leſs riſk than when any of the deep-ſeated muſcles are to be divided: but even this ſhould be ſlowly done, ſo as to avoid the external jugular veins; for although no great detriment might enſue from their being cut, we ſhould run no riſk of wounding them unneceſſarily. But whether the cauſe of contraction be ſeated in the ſterno-maſtoid muſcles or in the ſkin, the inciſion ſhould be carried ſo deep as to remove it effectually,

tually, otherwiſe little or no advantage will be gained by the operation.

We ought not, however, to conclude, that our object is accompliſhed by the mere diviſion of the contracted parts; for unleſs ſome method be employed to ſupport the head during the cure of the ſore, it will ſtill be apt to incline more to this ſide than to the other, by which the parts newly divided will readily unite, ſo that no advantage will be gained by the operation. By Mr Sharpe and others we are indeed adviſed to ſtuff the ſore with lint, ſo as to prevent this inconvenience with as much certainty as poſſible; but I know from experience that this does not ſucceed, and that nothing will anſwer but a firm ſupport being given to the head. For this purpoſe the inſtrument repreſented in Plate LXVI. fig. 1. will be found very uſeful: It was made for a caſe of this kind, in which it was uſed for ſeveral weeks, and with complete ſucceſs. It ſhould always be wore not only till the ſore is heal, but for ſome time thereafter;

after; and if properly fitted to the parts upon which it reſts, it is uſed without any uneaſineſs.

The ſkin beneath the chin is ſometimes ſo much contracted in conſequence of burns and other cauſes, as to draw the head conſiderably down upon the breaſt: The ſame method of cure muſt be practiſed for it that we have juſt recommended for the wry neck. The contracted ſkin muſt be freely divided with a ſcalpel, and the head muſt be properly ſupported from behind till the ſore is cicatriſed.

CHAP.

CHAPTER XXXIII.

Of DISEASES *of the* NIPPLES.

THE Nipples are in ſome caſes ſo deeply ſunk in the breaſt, that a child in attempting to ſuck, finds it difficult or even impoſſible to lay hold of them.

To remedy this inconvenience, different means are employed. If the prominent part of the breaſt can be preſſed ſo far back as to uncover even a ſmall part only of the nipple, it may commonly be drawn out by laying a ſtout child of ſix or eight months old to ſuck it; But as this cannot be

be always done, glaſſes of different kinds are employed for the ſame purpoſe. In Plate LXV. fig. 1. and 3. repreſent two forms of glaſſes with which the breaſt may either be ſucked by the patient herſelf or by an aſſiſtant; and fig. 2. is a glaſs cup mounted with a bag of elaſtic gum. In uſing this the air muſt be preſſed entirely out of the bag, when the cup being placed upon the breaſt ſo as to include the nipple, ſuch a degree of ſuction is produced as has a conſiderable effect in drawing it out. The bag, however, ſhould be much larger than it is commonly made; for when of the ordinary ſize, it does not act with ſufficient force. But whichever of theſe means is employed, it ought to be perſiſted in till the nipple is drawn fully out; and this ſhould be always done immediately before the child attempts to ſuck.

The nipples, like every other part of the body, are liable to ulcerations; but from their peculiar delicacy, any ſores with wihch they are attacked, are always productive

PLATE LXV.

FIG. 1.

FIG. 2.

FIG. 3.

ductive of much diſtreſs, while the ſucking of the child tends not only to render them worſe, but of much longer duration than they otherwiſe would be. Cracks or chops in the nipples have not a formidable appearance, but they are commonly much more painful than ulcers of the greateſt extent.

Various remedies are employed for theſe affections, but emollients are moſt frequently uſed: I have not found, however, that applications of this kind afford any permanent relief; for although they may give temporary eaſe, this ſeldom if ever proves of long duration. Mild aſtringents and drying applications are more to be depended on. As a waſh, lime-water proves often uſeful; and Port-wine and water, or brandy ſufficiently diluted, may be employed for the ſame purpoſe. After bathing the parts with one or other of theſe, the nipple ſhould be covered with a bit of ſoft lint ſpread with Unguentum Nutritum or Goulard's cerate; but of theſe the

firſt

firſt is the beſt: I have often uſed it with advantage, and I know of nothing that anſwers ſo well in chops or cracks whereever they are ſituated. I find too, that it is much employed by my friend Doctor Hamilton Profeſſor of Midwifery in this Univerſity; whoſe practice being very extenſive, his authority may be relied on. It is proper, however, to obſerve, that the nipple ſhould be entirely cleared of this application always before the child is allowed to ſuck; for as lead forms the baſis of it, miſchief might enſue from much of it being carried into the ſtomach.

Till the nipple is completely healed, the child ſhould not be allowed to ſuck oftener than is altogether neceſſary; and when one of the nipples only is ſore, this may be managed with little difficulty, as the child may be kept at the ſound breaſt while the other may be drawn from time to time with a glaſs, which does not injure the nipple. In Plate LXVI. figures 2. 3. and 4. ſome ſmall cups are repreſented for protecting

PLATE LXVI.

protecting the nipples during the cure. When properly fitted to the parts, they not only protect them from the friction of the cloaths, but allow the milk to run off as quickly as it falls from the breaſt.

CHAP.

CHAPTER XXXIV.

Of Issues.

ISSUES are ſmall artificial ulcers which we form in different parts of the body, for the purpoſe of procuring a diſcharge of purulent matter.

As I have elſewhere treated fully of the advantages that may be derived from iſſues, and of the manner in which they ſeem to act in the cure of diſeaſes, it is not at preſent neceſſary to enter minutely upon this part of the ſubject: I ſhall therefore only obſerve in general, that I am daily more and more convinced of the utility of iſſues in the cure of long continued

nued ſores, of whatever kind they may be; and that I am ſtill of the opinion that they act ſolely by diſcharging a certain quantity of the ſerous parts of the blood; and not that they ſerve merely as drains for the noxious humours in the blood, which till of late has been the prevailing idea upon this point *.

Among other errors in practice which this opinion gave riſe to, the choice of ſituation for iſſues was none of the leaſt remarkable. As it was imagined that ulcers as well as other local affections were produced by a determination of morbific humour to a particular ſpot, when iſſues were adviſed, it was conſidered as neceſſary to place them as contiguous to the affected part as poſſible, and always on the ſuperior part of the limb when the diſeaſe was ſeated on any of the extremities, in order to prevent the morbid matter from falling down to it. But as we now con-

* See a Treatiſe on the Theory and Management of Ulcers, Part II. Section I. where this ſubject is more fully conſidered.

clude that iſſues prove uſeful or otherwiſe merely by the quantity of matter which they afford, it appears to be of little importance where they are placed; and accordingly they may be inſerted wherever the patient thinks they will occaſion the leaſt inconvenience.

There are ſome general rules, however, which ſhould be attended to in the introduction of iſſues: They ſhould never be placed immediately above a bone thinly covered—nor directly above a tendon—nor very contiguous to a large blood-veſſel or nerve—nor upon the belly of a muſcle. The beſt ſituation for iſſues is that ſpace which lies between the tendons on the back part of the neck, where there is a conſiderable depth of cellular ſubſtance—the middle of the humerus, near to the inſertion of the deltoid muſcle—and a conſiderable hollow above the flexor tendon on the inſide of each knee. They may likewiſe be inſerted between two of the ribs, and on each ſide of the vertebræ of the back; or in ſhort wherever there is a ſufficient

ficient quantity of cellular ſubſtance for the protection of the parts beneath. It is proper, however, to remark, that the ſpot uſually fixed upon for iſſues is perhaps the moſt improper of any, I mean directly below the knee; where there is never much cellular ſubſtance; where the veins of the leg can ſcarcely be avoided; and where they are apt to hurt the contiguous tendons.

There are various ways of forming iſſues: By corroding or removing the ſkin with epiſpaſtic applications;—by making an inciſion with a ſcalpel or lancet;—by the application of cauſtic;—and by the introduction of a cord.

When an iſſue is to be opened by removing a portion of ſkin, a bliſter muſt be applied upon the ſpot exactly of the ſize of the intended ſore; and on the bliſter being removed, a diſcharge of matter may be kept up, by dreſſing the part daily with any of the common ointments in which there is mixed a ſmall proportion of cantharides in fine powder: Or, it ſome-

times proves ſufficient to uſe an irritating application of this kind, and a mild ointment of wax and oil alternately.

In forming an iſſue by an inciſion, or with cauſtic, an opening muſt be made of ſuch a ſize as appears to be ſufficient for affording a proper quantity of matter; and the opening muſt be preſerved by inſerting daily into it ſome extraneous body covered with any mild digeſtive ointment, ſuch as baſilicon or linimentum Arcæi, while the whole muſt be ſecured with a proper bandage. Peas are commonly employed for this purpoſe. Kidney-beans anſwer very well; and ſome make uſe of gentian root, and of aurantia Curaſſaventia, uſually termed Orange Peas, turned into a proper form. When the opening is made by an inciſion, the ſkin ſhould be ſupported on one ſide by an aſſiſtant, and on the other by the left hand of the ſurgeon; who ſhould now with a ſcalpel in the other make a cut of a ſufficient length and depth for receiving the number of peas intended to be put into it, and thus the operation is finiſhed:

But

But when it is to be done with cauſtic, more attention is requiſite. The common lapis infernalis of different Diſpenſatories anſwers beſt: many compoſitions of cauſtic paſte have been recommended; but I have met with none that for this purpoſe anſwers ſo well. It ſhould be firſt reduced to powder, and made into a paſte with a little water, or with ſoft ſoap, when as much of it ſhould be applied upon the ſpot where the iſſue is wanted as will make an opening of a proper ſize; but as it is apt to ſpread to the contiguous parts, ſome care is required to prevent it. For this purpoſe a piece of leather ſpread with Burgundy pitch or any adheſive plaſter, with a ſmall hole cut in the centre of it, ſhould be placed upon the part with the opening directly above where the cauſtic is meant to be applied. The ſmall ſpot which is thus left uncovered, muſt now be ſpread with ſome of the cauſtic paſte; and over the whole there ſhould be laid another piece of leather ſpread with the ſame kind of adheſive plaſter, ſo that there may be no chance of

any part of the cauſtic eſcaping. In the courſe of ten or twelve hours, the whole may be removed; for before this, if the cauſtic is good, it will have produced an eſchar of a ſufficient depth. In the ſpace of three or four days, the eſchar will ſeparate from the contiguous ſound parts, when the opening formed by it muſt be filled with peas or ſome other of the ſubſtances we have mentioned.

When it is an object to diſcharge a large quantity of matter by an iſſue, and eſpecially when we wiſh to have it from deep-ſeated parts, we do it by the introduction of a cord of cotton or ſilk, forming what is commonly termed a Seton. This remedy is often uſed with advantage in deep-ſeated pains, particularly in pains of the breaſt and ſides in caſes of phthiſis pulmonalis. In ſuch caſes it is commonly inſerted between two of the ribs; and it anſwers better in the direction of the ribs than when placed acroſs them, as is ſometimes done. A cord is a frequent remedy too in affections of the head, particularly

in

in ophthalmia and other diſeaſes of the eyes; and in ſuch caſes it is uſually placed in the back of the neck.

When we mean to introduce a cord, the parts at which it is to enter and paſs out ſhould be previouſly marked with ink; and the cotton or ſilk being put into the eye of the flat needle, Plate LXVI. fig. 5. and the parts being ſupported by an aſſiſtant, the needle ſhould now be puſhed in at one of the ſpots and carried out at the other, along with two or three inches of the cord, which ſhould be left hanging out. The irritation which the cord excites ſoon produces a plentiful diſcharge of matter, which may be increaſed or diminiſhed at pleaſure by covering the cord daily, before it is drawn, with a mild or an irritating ointment.

In former times, it was a frequent practice to form iſſues by burning the parts in which they were to be introduced with the actual cautery; and in ſome parts of Europe it is ſtill continued: But as it is much more terrifying than any of thoſe

we have mentioned, and as it does not appear to be attended with any particular advantage, it is now in general laid aſide.

In China, Japan, and ſome other eaſtern countries, it is a prevailing practice, in deep-ſeated pains, to burn the parts affected down to the bone with moxa. Moxa is a light, ſoft down, of a particular plant. A ſmall cone of it being wrapped up, the baſe of the cone is fixed upon the part with a little glue or mucilage; and fire being put to the oppoſite end of it, it is allowed to remain till the whole is conſumed; and if one application does not prove ſufficient, it is repeated once and again as long as it is neceſſary. The operation may be done equally well with fine flax; but altho' it has been ſometimes done in different parts of Europe, it is not probable that it will ever be generally practiſed. I have known it, however, remove the moſt obſtinate ſciatic pains, where every other remedy had failed.

CHAP.

CHAPTER XXXV.

Of the Inoculation of the SMALL-POX.

THERE is ground to imagine, that almoſt all eruptive diſeaſes, as well as ſome others, may be communicated by inoculation: the practice, however, is confined to ſuch as are not apt to return; for no advantage would ariſe from inducing diſeaſes to which the ſyſtem might afterwards be liable. The plague has been communicated by inoculation; but in this country the ſmall-pox is the only diſeaſe we are accuſtomed to inoculate. Some trials have indeed been made for inoculating

ting the meaſles; but as yet they have not ſucceeded.

From the reſult of ſome experiments, there is reaſon to think, that no diſeaſe can be communicated by inoculating with the blood of an infected perſon. This point, however, is not as yet preciſely determined; ſo that farther trials will be neceſſary to aſcertain it. In inoculating the ſmall-pox, we employ the matter contained in the puſtules which appear on the ſurface of the body.

The proper period for inoculating—the preparation of the patient—and the ſubſequent treatment of the diſeaſe, are points which more particularly fall to the conſideration of the phyſician. The mode of communicating the infection is our object at preſent.

In the more early practice of inoculation, it was cuſtomary to tie an infected thread round the arm or leg; to rub a little variolous matter upon any part of the body; or to inſert a piece of thread ſoaked in matter beneath the cuticle, with

a

a ſmall needle, and to allow it to remain till there was reaſon to think the infection had taken place. In any of theſe ways the ſmall-pox may be readily communicated: but as by ſome of theſe means there is reaſon to ſuſpect that a variolous atmoſphere may be produced, and that the diſeaſe may be thus induced in the ſame way as in the caſe of a common contagion, and conſequently that ſome of the advantages of inoculation may not be obtained, theſe modes of giving the ſmall-pox have therefore been long laid aſide.

Till of late, inoculation was commonly performed by making an inciſion of about half an inch in length through the ſkin to the depth of the cellular ſubſtance: a bit of thread impregnated with variolous matter was then inſerted, and retained for two or three days by means of a compreſs and bandage. To this practice, however, the great unneceſſary pain attending it, and the aptneſs of the wound to degenerate into a diſagreeable ulcer, are ſtrong objections.

The

The preſent mode of inſerting the matter appears to be in every reſpect more elegible. The point of a lancet, previouſly covered with variolous matter, is inſinuated through the cuticle ſo as to ſcratch or ſlightly injure the cutis vera. It might frequently indeed be ſufficient to paſs it through the cuticle only; but ſucceſs is more certain when a ſmall particle of blood follows the lancet. When the matter is recently taken in an early period of the diſeaſe, the lancet may be introduced without being moiſtened: But whenever the matter has become firm and hard, it ſhould be rendered perfectly ſoft with a drop of warm water, or by holding it in warm ſteam.

The operation may be done in any part of the body; but the arm is generally preferred. One ſcratch would for the moſt part prove ſufficient; but with a view to enſure ſucceſs, it is right to make two or even three at the diſtance of an inch from each other. It is to be obſerved, however, that when the matter takes effect in

all

all the ſcratches, the inflammation which enſues being communicated from one to the other, is often conſiderable, and gives much pain and uneaſineſs. This might be prevented by making the ſcratches at a ſtill greater diſtance, or even in diſtinct parts of the body. One being made upon each leg or thigh would obviate every inconvenience of this kind.

In this method of inoculating we never employ either bandage or compreſs; for the wound is ſo trifling that no kind of dreſſing is neceſſary: ſo that we readily ſee, at the end of the ſecond or third day, whether or not the infection will take place; for in general, by this time when the operation is to ſucceed, the ſcratches made with the lancet become red, ſwelled, and ſomewhat painful.

EXPLA-

EXPLANATION OF THE PLATES.

PLATE XXXIX.

[Oppoſite to page 21.]

Fig. 1. The knife which Mr Pellier commonly employs in extracting the cataract. It ſhould be highly poliſhed, and ſo very ſharp as to penetrate the eye with eaſe; at the ſame time that it ſhould be of a ſufficient ſtrength for dividing the cornea without yielding. This, as well as the other two knives in this plate, are made to fit the handle I repreſented in Plate XLI. fig. 2.

Fig. 2. A knife exactly of the ſame form and

and ſize with the other; only in this, that ſide which paſſes next the iris is round or convex, with a view to protect that membrane from being injured, which it is apt to be when the common flat knife is employed in eyes that are not prominent.

Fig. 3. A probe-pointed knife, which in ſome caſes may be employed with advantage for finiſhing the operation, when by any accident the aqueous humour eſcapes before the point of the other knife has pierced the oppoſite ſide of the cornea: But for a more particular account of the method of uſing it, we muſt refer to page 27.

Fig. 4. A pair of curved ſciſſars of a proper ſize for every operation on the eyes where ſciſſars are needed: Indeed every operator who practiſes much in this branch ſhould be provided with them.

Fig. 5. This is the only ſpeculum which Mr Pellier employs. It may be made of gold or ſilver wire, or of any other metal. It is here repreſented of the full ſize

both

both in length and in thickneſs of wire. In uſing it, one of the curves at *A* or *B* is placed upon the upper eye-lid directly behind the cartilaginous border; and being given to an aſſiſtant, a degree of force is applied with it ſufficient for fixing the eye; which is eaſily done, if the operator at the ſame time makes ſome reſiſtance by placing the index and middle fingers of one hand on the under edge of the orbit ſo as to compreſs the eye beneath.

All the inſtruments of this plate are repreſented of the full ſize.

PLATE XL.

[Oppoſite to page 39.]

Fig. 1. A curved needle fixed in a handle for the purpoſe of paſſing ligatures beneath the pterigium and other ſmall excreſcences, which now and then occur within the orbit, and even upon the eye itſelf. I have elſewhere ſhown that they may be removed without this precaution *: but

* Vide Chapter XXVII. Section VIII. Vol. III.

but as Mr Pellier is accuſtomed to employ a ligature, I think it right to deſcribe his method of inſerting it. Fig. 1. is intended for tumors on the right eye, and to be uſed with the left hand of the ſurgeon. Fig. 4. is for the left eye, and to be uſed with the right hand.

Figs. 2. and 3. An inſtrument which Mr Pellier names a Ciſtatome, from his uſing it in particular caſes for opening the capſule of the cryſtalline lens. It may be made of gold or any other metal. In uſing it, he holds it between the thumb and two fore-fingers of his right hand; taking care to place the thumb upon the button *A* or *C*, which is connected with a ſheath that covers the ſharp point *B*. The hand being ſupported upon the cheek by the ring-finger and little-finger, the point of the inſtrument covered with the ſheath muſt be cautiouſly paſſed through the pupil till it reaches the lens; when the button *C* being drawn back with the thumb, the point of the inſtrument will thus be ſet at liberty without the hand being

moved. This is an ingenious invention, and anſwers the purpoſe with eaſe and ſafety.

Theſe inſtruments are all repreſented of the full ſize.

Plate XLI.

[Oppoſite to page 50.]

Fig. 1. An inſtrument for depreſſing the under eye-lid. When an aſſiſtant cannot be procured, it may often prove uſeful. The two flat hooks at the upper end of it being fixed upon the cartilaginous edge of the eye-lid, the other end of it hanging over the cheek, by its weight draws it conſiderably down.

Fig. 2. A knife which Mr Pellier employs in ſome caſes for the operation of extracting the cataract. It is fixed in the handle at *B* by a male-ſcrew fitted to a female-ſcrew, which is turned by the nut *A*. This handle may be made to anſwer figures 4. and 5. as well as every knife employed in operations on the eyes.

Fig.

Fig. 3. An inſtrument for determining the quantity of ſkin to be removed in the operation for the Trichiaſis or Inverſion of the Eye-lids. When it is found neceſſary to remove a portion of ſkin from beneath the under eye-lid, or from the ſuperior part of the upper palpebra, it may be done with a common ſcalpel, while an aſſiſtant ſupports or elevates it from the parts beneath either with his fingers alone or with forceps made for the purpoſe; but this inſtrument anſwers better, as by means of it the quantity of parts to be removed can be aſcertained and cut off with more preciſion.

Fig. 4. A knife for opening ſmall collections of matter on any part of the eye-ball. Being blunt on the back and round on the end, it is uſed without any riſk of injuring the contiguous parts.

Fig. 5. A ſharp-pointed curved knife, for dividing the veſſels of the eye or of the palpebræ.

Theſe inſtruments are all delineated of the full ſize.

PLATE XLII.

[Oppoſite to page 57.]

Fig. 1. A ſmall ſcoop, which anſwers better than any other inſtrument for removing ſmall ſtones, peas, or any other ſubſtances from the noſtrils or ears.

Figs. 2. 3. 4. 5. and 6. Are inſtruments employed by Mr Pellier for the operation of the Fiſtula Lachrymalis. Fig. 2. is a perforator and conductor for clearing the paſſage through the os unguis into the noſe. Figs. 5. and 6. are tubes for leaving in the paſſage. Fig. 3. is a compreſſor for fixing them after they are inſerted; and the eaſieſt method of inſerting a tube is by putting it upon the conductor after it is paſſed through the compreſſor, as is repreſented in fig. 4. The conductor armed with the tube and the compreſſor being paſſed through the paſſage into the noſe, muſt be withdrawn; when, by means of the compreſſor, the tube may be firmly fixed.

Theſe inſtruments are all repreſented of the full ſize.

PLATE XLIII.

[Oppoſite to page 74.]

Fig. 1. Forceps of a convenient form for extracting ſmall bones or other ſubſtances from the throat.

Fig. 2. An inſtrument for preventing the noſtrils from collapſing after the operation deſcribed page 85. *A B*, Two moveable tubes for inſerting into the noſtrils, to be retained in their ſituation by a ribbon paſſed through the opening *C D*, and tied on the back part of the head.

Fig. 3. A ſide view of one of the tubes.

Theſe inſtruments are all repreſented of the full ſize. They as well as ſome others in this volume are taken from ſome elegant engravings publiſhed by Mr Bambrilla of Vienna.

PLATE XLIV.

[Oppoſite to page 109.]

Fig. 1. A double canula for the purpoſe of fixing ligatures upon polypous excreſcences either in the noſe, throat, ears, or vagina. The ligature paſſed through it may either be of catgut or pliable ſilver-wire.

Fig. 4. Is a canula for the ſame purpoſe, but of a different conſtruction. When the other is uſed, the ligature is tied round the handles of the inſtrument. In this the ligature paſſes through a moveable handle, and is eaſily turned to any degree of tightneſs.

Fig. 2. Is a canula of the ſame kind with the others; but being crooked, it is better calculated for removing polypi that are deeply ſeated in the throat. The method of uſing theſe inſtruments is deſcribed in different parts of Section V. Chapter XXVII.

Fig. 3. Is an inſtrument for paſſing a ligature over the uvula. A thread being paſſed through the tubular part of the handle with the probe *A*, a nooſe muſt be formed upon it; and being lodged in the groove on the inſide of the ring, the other end of the thread muſt be paſſed through the two ſmall holes on the outſides of the ring; and thus it is ready for uſe. It is commonly termed the Ring of Hildanus, from the name of its inventor. All

theſe

theſe inſtruments are repreſented of the full ſize.

PLATE XLV.

[Oppoſite to page 117.]

Fig. 1. A ſection of the bones of the head, repreſenting a polypus in the throat hanging down behind the velum pendulum palati, with a ligature paſſed over it and fixed at the root of it, with a double canula inſerted through one of the noſtrils.

Fig. 2. This figure is taken from Mr Cheſelden. It repreſents a polypus in the noſe, with part of it paſſing back into the throat, and the reſt into the noſtril, with a ligature inſerted from the noſtril into the throat, in ſuch a manner as to include the root of the excreſcence in its doubling. By afterwards twiſting the ends of it, a degree of compreſſion may be applied upon the root of the polypus ſufficient for removing it; but it would not anſwer in every caſe; and as the method with the canula is not only more eaſy but more effectual,

fectual, the other will never probably be uſed.

PLATE XLVI.

[Oppoſite to page 120.]

Fig. 1. A polypus of ſuch a ſize that it diſtended the noſtril completely. It was removed with a ligature as is here repreſented. *A*, The extremity of the polypus which appeared without the noſtril. *C*, A probe of ſilver or any other metal, ſplit at the end, in ſuch a manner as to retain a piece of catgut or ſilver-wire; the doubling of which being inſerted into it, ſhould be puſhed up to the root of the polypus on one ſide, while the tube *B* being paſſed upon the two ends of it, muſt be puſhed up to the root of it on the oppoſite ſide, when the ligature may be eaſily drawn to any neceſſary degree of tightneſs.

Fig. 3. A ſlit-curved probe, which may be uſed for the ſame purpoſe, viz. for applying a ligature to the root of a polypus in tumors ſeated in the throat. By this ſimple invent[illegible] ligature may be carried

to

to the root of every polypus that can occur, however much the noſtril may be diſtended by it.

PLATE XLVII.

[Oppoſite to page 122.]

Fig. 1. An inſtrument for the purpoſe of applying cauſtic to any part of the mouth or throat. It may be made of ſilver or any other metal. *A*, A moveable tube in which the cauſtic muſt be fixed, when by pulling the ring at the other end, it muſt be drawn ſo far into the ſurrounding canula as to be completely covered with it; when the end of the inſtrument being applied upon the part affected, the cauſtic muſt be again puſhed forward to a proper length, which may be always aſcertained with exactneſs by means of the ſmall pin tied by a thread to the ring at the oppoſite end of it. This, as well as the inſtruments of Plate XLVI. I am favoured with by Dr Monro, whoſe improvements in ſurgery are numerous and important.

Figs. 2. 3. and 4. Are different parts of an

an inſtrument mentioned in page 111. for the purpoſe of putting a ligature round a polypus in the throat.

Fig. 2. A waxed thread with a nooſe adapted to the ſize of the groove in the ring *CD*, fig. 3. *ED*, *EC*, Two tubular pieces of braſs two inches and a half long, ſupporting the ring which is placed horizontally upon them. At the upper ends of each they ſhould be made perfectly ſmooth and round, ſo as to allow the thread to ſlide more eaſily, and to prevent it from being cut by the edges of the tubes. *CD*, The apertures where the ends of the thread are inſerted. *E*, One of the openings at which they are brought out. The other opening cannot be ſeen in this view of the inſtrument. The handle of the inſtrument is of ſtrong braſs wire ſeven or eight inches long, and is bent a little that it may be the more eaſily introduced.

Fig. 4. An inſtrument for making a ſecond nooſe. *F*, Two braſs wheels fixed in a ſmall caſe of braſs. The two wheels

are

are five-eighths of an inch broad, and half an inch deep. After forming a ſecond nooſe, the ends of the thread ſhould be paſſed over the wheels in the manner here repreſented, when the handle of the inſtrument being puſhed upwards, a knot may be formed of any degree of tightneſs.

This inſtrument is evidently formed upon the ſame principle with the ring of Hildanus, Plate XLIV. fig. 3.

PLATE XLVIII.

[Oppoſite to page 126.]

Fig. 1. Curved forceps for extracting polypi from the throat, and from behind the velum pendulum palati.

Fig. 2. Straight forceps for extracting polypi from the noſtrils.

Fig. 3. Forceps for the ſame purpoſe with the laſt, but ſomewhat different in form. The method of uſing both theſe and the others is deſcribed in Chap. XXVIII. Sect. V.

Plate XLIX.

[Oppoſite to page 144.]

Figs. 1. 2. and 3. Different forms of curved ſciſſars, for extirpating tumors within the mouth, as well as for other purpoſes.

Fig. 4. An inſtrument nearly of the form of a fleme, which anſwers better than any other for ſcarifying the gums of children in dentition.

Plate L.

[Oppoſite to page 154.]

Fig. 1. A ſcarificator for ſeparating the gums from the roots of teeth intended to be extracted: It ſhould be very ſharp, but at the ſame time not ſo fine in the point or edge as to be hurt by being inſinuated between the gums and the teeth.

Fig. 2. A curved trocar for perforating the antrum maxillare.

Figs. 3. and 4. Two diſſecting hooks with two and three prongs, which anſwer better

better for many purpoſes than the ſingle pronged hook in common uſe.

Plate LI.

[Oppoſite to page 160.]

Fig. 1. An inſtrument for paſſing a ligature round the uvula or any other pendulous excreſcence in the throat; but although the propoſal is ingenious, it does not anſwer the purpoſe ſo well as the inſtruments delineated in Plate XLIV. figures 1. 2. 3. and 4.

Fig. 2. An inſtrument firſt propoſed by Mr Cheſelden for tying a knot upon ſcirrhous amygdalæ after paſſing a ligature through the baſis of the tumors, in the manner repreſented in fig. 3. The pin in fig. 2. is meant to repreſent a part upon which a knot is to be formed.

Plate LII.

[Oppoſite to page 164.]

Fig. 1. An inſtrument for removing the uvula by exciſion. That part of the uvula intended

intended to be removed being paſſed thro' the opening in the body of the inſtrument, the cutting ſlider, which ought to be very ſharp, muſt be preſſed forward with ſufficient firmneſs for dividing it from the parts above.

Fig. 3. A curved probe-pointed biſtoury for removing ſmall tumors in the throat or any part of the mouth: And fig. 2. forceps for laying hold of tumors intended to be removed in this manner.

PLATE LIII.

[Oppoſite to page 170.]

Figs. 1. and 2. Two ſcarificators of different forms for opening abſceſſes in the throat, and for ſcarifying the amygdalæ. The two wings with which the canula of fig. 1. is furniſhed, are intended for compreſſing the tongue, while the point of the inſtrument is paſſed more deeply into the throat.

Figs. 2. and 4. Mr Mudge's machine for conveying ſteams of warm water and other

other liquids to the throat and breaſt. Fig. 2. The inhaler as it appears when fitted for uſe, except that the grating *A*, which then ought to cover the hole, is now turned back, to ſhow the opening into the valve. Fig. 4. A ſection of the cover, in which is ſhown the conſtruction of the cork-valve *B*, and alſo the conical part *C*, into which the flexible tube *D* is fixed.

When the inhaler, which holds about a pint, after being three parts filled with hot water, is fixed at the arm-pit under the bed-cloaths, the end of the tube *E* is to be applied to the mouth; the air, in the act of inſpiration, then ruſhes into the apertures *F*, and paſſing through the hollow handle, and afterwards into a hole in the lower part, where it is ſoldered to the body and therefore cannot be repreſented, it riſes through the hot water, and is received into the lungs, impregnated with vapour. In exſpiration, the contents of the lungs are diſcharged upon the ſurface of the water; and inſtead of forcing the water back through the hollow handle, the air

air eſcapes by lifting the round light cork-valve *B*, ſo as to ſettle upon the ſurface of the body under the bed-cloaths.

Thus the whole act of reſpiration is performed, without removing the inſtrument from the mouth.

The flexible part of the tube *D* is about ſix inches long, fitted with a wooden mouth-piece *E* at one end, and a part *G* of the ſame materials at the other, to be received into the cone *C* on the cover. This flexible tube is made by winding a long ſlip of ſilk oil-ſkin over a ſpiral braſs-wire. This ſhould be then covered with one of the ſame ſize, of thin ſilk, and both be ſecured by ſtrong ſewing ſilk wound ſpirally round them. Some length and degree of flexibility is neceſſary to this tube, for the ſake of a convenient accommodation to the mouth when the head is laid on the pillow.

Care ſhould be taken by the workman, that the cover be made to fit very exactly; or, if it does not do ſo, the defect ſhould be remedied by winding a piece

piece of cotton wick, or ſome ſuch contrivance, round the rim underneath the cover, ſo as to make it air-tight. The cork, likewiſe, which forms the valve, ſhould, for the ſame reaſon, be made as round as poſſible. It is alſo neceſſary to remark, that the area of the holes on the upper part of the handle taken together; the ſize of the hole in the lower part of the handle which opens into the inhaler; the opening of the conical valve itſelf; and that in the mouth-piece; as well as the cavity or inſide of the flexible tube, ſhould be all equally large, and of ſuch dimenſions, as to equal the ſize of both noſtrils taken together: in ſhort, they ſhould be ſeverally ſo large, as not only not to obſtruct each other, but that reſpiration may be performed thro' them with no more labour than is exerted in ordinary breathing.

Plate LIV.

[Oppoſite to page 200.]

Fig. 1. A ſpeculum oris, which I propoſed a conſiderable time ago, and which in different caſes has been uſed with advantage. By occupying leſs ſpace in the mouth than the inſtruments in common uſe, it may be employed where they are inadmiſſible. *B*, The handle through which the ſcrew *A C* is paſſed, by which the plate of iron *D* may be more or leſs ſeparated from the fixed plate *E*, by turning the nut *A*. The plates *D E* ſhould be ſufficiently firm for reſiſting the preſſure of the jaws, and they ſhould be covered with leather or cloth to prevent the teeth from being injured.

Fig. 2. Another form of a ſpeculum for the mouth. *G H*, Two firm iron plates, which being inſerted between the teeth of the upper and under jaws, may be ſeparated to any neceſſary degree by turning the handle *F*. The farther extremity of the plate *G* is intended to compreſs the tongue,

tongue, an addition which may be eaſily made to fig. 1.

Fig. 3. The inſtrument in common uſe as a ſpeculum oris, but it is ſo defective that it can ſeldom be uſed with much advantage.

Plate LV.

[Oppoſite to page 208.]

Fig. 1. Forceps for laying hold of the lip in performing the operation for the hare-lip. It may be done with the fingers alone, but the parts cannot be ſo neatly cut in this manner as when the forceps are employed.

Fig. 2. A kind of cutting forceps, the invention of Dr John Aitken: They may be employed either in the hare-lip, or in the removal of cancerous affections of the lip: One blade of the forceps is a plane ſmooth ſurface, while the other is furniſhed with a ſharp cutting edge. In uſing this inſtrument the two blades muſt be preſſed againſt each other with one hand,

with a force ſufficient to divide the parts that are meant to be cut; while the other hand is employed in ſecuring the handles.

PLATE LVI.

[Oppoſite to page 224.]

Fig. 1. Sciſſars of a ſize and ſtrength ſufficient for dividing the parts in the operation for the hare-lip. It is not probable they will ever be generally employed, but I think it right to delineate a ſize of the inſtrument which by experience is found to anſwer.

Fig. 2. Cutting pliers for the purpoſe of removing ſmall ſplinters of bone wherever they are met with.

PLATE LVII.

[Oppoſite to page 236.]

As the treatment of the hare-lip is a point of much importance, I have judged it proper to delineate the appearance of the diſeaſe, together with that of the parts in which

which it is ſeated during the different ſtages of the operation and cure.

Fig. 1. A caſe of hare-lip in the upper lip. *A*, One of the inciſores appearing in the centre of the opening, which ought to be removed before the operation, as a tooth in this ſituation is very apt to interrupt the cure. *B B*, The unequal edges of the fiſſure with which this affection is very commonly attended.

Fig. 2. The appearance of the parts after the edges of the fiſſure have been removed and the pins introduced. *C C*, The edges of the cut, which ought to be ſmooth, equal, and exactly of the ſame length on each ſide, ſo that when drawn together no inequality may be perceptible. The firſt pin ſhould be inſerted near to the under part of the lip, and the upper pin near to the ſuperior point of the fiſſure. The pins repreſented in this figure are furniſhed with moveable ſteel points, ſo that the points may be taken away on the ligatures being applied, as is delineated in fig. 3.

which exhibits the appearance of a hare-lip immediately after the operation.

Fig. 4. A lip after the cure is completed: *D*, Repreſents the appearance of the cicatrix, which in general ſhould be nearly a ſtraight line.

Fig. 5. A flat pin for the operation of the hare-lip. The pin itſelf fig. 6. ſhould be of gold, and the point fig. 7. of ſteel.

PLATE LVIII.

[Oppoſite to page 242.]

Figs. 1. 2. 3. 4. and 5. Different forms of ſcaling inſtruments for removing tartar and other extraneous matter from the teeth.

Figs. 6. and 7. Inſtruments that may be employed either for burning the nerve of a tooth, or for ſtuffing a hollow tooth with gold or lead. Fig. 8. may likewſe be employed for the ſame purpoſe, but it is more frequently uſed for ſearching behind and between the teeth when there is any

any ſuſpicion of a latent caries that is not readily diſcovered.

Fig. 9. Another inſtrument for ſtuffing carious teeth. And,

Fig. 10. A handle to which all theſe inſtruments may be fitted.

PLATE LIX.

[Oppoſite to page 276.]

Fig. 1. The inſtrument commonly termed a key for extracting teeth. After a variety of alterations in the form of it, the one here delineated is the beſt I have ever uſed.

In fig. 2. the inſtrument in common uſe, the claw is fixed, and can only be moved by taking out the ſcrew by which it is connected with the inſtrument; but in this it may be moved from one ſide to another, merely by preſſing upon the nut *A*, by which the ſpring *B* is raiſed out of a nitch in a wheel which is thus rendered moveable, and in which the claw is fixed. *D*, The heel of the inſtrument, which is

here repreſented not only of a greater depth, but conſiderably longer than it is uſually made: Of this length it is applied to a conſiderably extent of gums, by which the jaw is not ſo apt to ſuffer as when it is much ſhorter; and of this depth it acts with more power than when of the uſual form. This part of the inſtrument ſhould not only be well poliſhed, but it ought to be quickly covered with ſeveral plies of ſoft old linen, in order to render the preſſure produced by it upon the gums as eaſy as poſſible. The handle *E* is ſometimes made of iron; but it anſwers better either of ivory or timber.

Fig. 3. A claw bent in ſuch a manner, that when the heel of the inſtrument *D* is placed upon any part of the gums, the ſecond or third tooth farther in the mouth may be pulled with it. This proves ſometimes uſeful, where the gums oppoſite to the affected tooth are particularly tender; and it ſhould always be employed when it is meant to pull either of the two fartheſt molares of the lower jaw outwards; for when

when the common inſtrument is uſed, the gums which cover the projecting part of the coronoid proceſs of the jaw are always much lacerated.

Fig. 4. and 5. Two claws of different ſizes of the ordinary form.

PLATE LX.

[Oppoſite to page 291.]

Figs. 1. and 3. Two inſtruments much employed in different parts of Europe for extracting teeth. They do not, however, poſſeſs any advantage over the key inſtrument; and they are liable to this objection, that they cannot be uſed where it is neceſſary to turn a tooth towards the inſide of the mouth.

Fig. 1. *A*, The fulcrum, which ought to be well covered with ſoft old linen. *B*, The claw fixed to the handle *E*, by a ſmall hole in the end of it, which receives a knob of a correſponding ſize at *C*, and it is retained in its ſituation by a moveable plate of poliſhed iron *D*. The handle ſhould

ſhould be wood, and all the reſt of the inſtrument of iron or ſteel. Fig. 2. A claw with a conſiderable degree of curvature, for extracting teeth at a greater depth in the mouth than the fulcrum can be placed at.

Fig. 3. *F*, The fulcrum. *E*, A ſtraight claw fixed to the inſtrument by a ſcrew at *H*. *I*, The handle, which ſhould be of wood.

PLATE LXI.

[Oppoſite to page 285.]

Figs. 1. 3. and 4. Different forms of forceps for extracting teeth. Fig. 3. is perhaps the moſt uſeful of any.

Fig. 2. Small diſſecting forceps employed in different operations in the mouth, as well as in other parts.

PLATE LXII.

[Oppoſite to page 293.]

Fig. 1. Teeth forceps with moveable claws. And,

Fig.

Fig. 2. A fulcrum to be uſed along with them, both deſcribed in page 293.

Fig. 3. An inſtrument for dividing the frenum linguæ, deſcribed page 338.

Plate LXIII.

[Oppoſite to page 300.]

Figs. 1. 2. and 3. Different forms of a punch or lever for extracting ſtumps of teeth. The method of uſing them is deſcribed page 300. Figs. 1. and 3. are the beſt. They conſiſt of two parallel plates of poliſhed iron, which may be ſeparated more or leſs by preſſing the moveable ſliders *A B* higher or lower.

Figs 4. 5. 6. and 7. Different forms of files for removing inequalities upon the teeth.

Plate LXIV.

[Oppoſite to page 361.]

Figs. 1. 2. and 3. Different forms of inſtruments employed for concentrating

found

found in cafes of deafneſs, deſcribed in page 361.

Fig. 4. A ſyringe of a proper ſize for waſhing the meatus auditorius externus.

Figs. 5. and 6. Inſtruments for perforating the lobes of the ear, deſcribed page 363.

PLATE LXV.

[Oppoſite to page 372.]

Figs. 1. 2. and 3. Different forms of glaſſes for drawing milk from the breaſts of women. With figs. 1. and 3. the breaſt may either be ſucked by the perſon herſelf, or by an aſſiſtant; and fig. 2. is a glaſs cup, mounted with a bag of elaſtic gum. *A*, The glaſs cup joined to the bag *C* by the intervention of a braſs tube *B*. They are more particularly mentioned in page 372.

PLATE

PLATE LXVI.

[Oppoſite to page 374.]

Fig. 1. An inſtrument mentioned in page 371, for ſupporting the head after the operation for the wry neck. *ABC*, A curved plate of iron fitted to the ſhoulder, and ſupporting another plate, to the top of which is connected the plate *DEF*, upon which the head is meant to reſt, and which therefore ſhould be covered with ſoft leather or cotton. *GHI*, A buckle and ſtrap for fixing the inſtrument round the neck.

Fig. 2. 3. and 4. Different kinds of cups, which may be either of ivory, lead, or ſilver, for covering the nipples and protecting them from the cloaths, when they are either chopped or otherwiſe diſeaſed. The holes in their brims are for receiving pieces of ſmall tape for fixing them round the body.

Fig. 5. A broad flat needle, of a lancet-form,

form for introducing cords or setons in different parts of the body.

FINIS.

DIRECTIONS TO THE BOOKBINDER.

Plate XXXIX.	to face page 21	Plate LIII.	to face page 170
XL.	39	LIV.	200
XLI.	50	LV.	208
XLII.	57	LVI.	224
XLIII.	74	LVII.	236
XLIV.	109	LVIII.	242
XLV.	117	LIX.	276
XLVI.	120	LX.	283
XLVII.	122	LXI.	285
XLVIII.	126	LXII.	293
XLIX.	144	LXIII.	300
L.	154	LXIV.	361
LI.	160	LXV.	372
LII.	164	LXVI.	374

A Syſtem of Anatomy and Phyſiology, from Monro, Winſlow, Innes, Hewſon, Haller, and the lateſt authors; arranged, as nearly as the nature of the work would admit, in the order of the lectures delivered by the profeſſor of anatomy in the univerſity of Edinburgh. By Mr Andrew Fife aſſiſtant to Dr Monro. The ſecond edition; to which is added, The Phyſiology and Comparative Anatomy, with 16 copperplates. In 3 vols 8vo, price 18 s in boards, and 1 l 1 s bound

A Syſtem of Surgery, by Benjamin Bell, Member of the Royal Colleges of Surgeons of Ireland and Edinburgh, illuſtrated with many copperplates, 6 vols 8vo, price 1 l 16 s and 6 d boards, and 2 l 2 s and 6 d bound.

Bell on the Theory and Management of Ulcers, with a Diſſertation on White Swellings of the Joints; to which is prefixed an Eſſay on the Chirurgical Treatment of Inflammation and its conſequences. A new edition, 8vo, price 6 s in boards.

Bergman on Elective Attractions, 8vo, price 6 s in boards.

Cullen's Firſt Lines of the Practice of Phyſic, a new edition, complete in 4 vols 8vo, price 1 l 4 s boards.

Cullen's Materia Medica, 2 vols 4to, price 2 l 2 s boards.

Dr Duncan's Medical Commentaries from 1773 to the 1785, incluſive, 10 vols 8vo, price 3 l in boards, and 3 l 10 s neatly bound in calf.

The ſame for 1781-2, 1783-4, 1785, 1786, 1787, and 1788, 6 vols. Any of theſe volumes ſeparate, at 6 s in boards.

N. B. This book will be regularly publiſhed in future on the firſt of January each year.

Dr Dobſon's Medical Commentary on fixed air, 8vo, 3 s boards.

Conſpectus Medicinæ Theoreticæ, ad uſum academicum. Auctore Jacobo Gregory, M. D. Med. Theoret. in Acad. Edin. Prof. &c. &c. Editio tertia, prioribus auctior et emendatior, in two volumes 8vo, price 13 s in boards.

Dr (Alex. of Edin.) Hamilton's Theory and Practice of Midwifery, a new edition, 8vo, 5 s boards.

——— Treatiſe of Midwifery; comprehending the management of female complaints, and the treatment of infant children, 8vo, a new edition in the Preſs enlarged and improved.—Either of the above two books may be had with Dr Smellie's forty tables and explanations, with additions and corrections by Dr Hamilton, at 6 s additional.

Dr Houlſton on Poiſons, and the uſe of Mercury in obſtinate Dyſenteries, 8vo, 1 s 6 d ſewed.

Dr Leigh's Experimental Inquiry into the Properties of Opium, and its Effects upon living ſubjects, 2 s 6 d ſewed.

Martin's Eſſays and Obſervations on the Conſtruction and Graduation of Thermometers, and on the Heating and Cooling of Bodies, 12mo, 3 s bound.

An Enquiry into the Nature, Cauſes, and Cure, of the Conſumption of the Lungs; with Obſervations on a late Publication on the ſame Subject. By Michael Ryan, M. D. in 8vo. Price 3 s. 6 d. ſewed.

Dr Swediaur's Practical Obſervations on Venereal Complaints, the third edition; to which is added, an Account of a new Venereal Diſeaſe which lately appeared at Canada, and a Pharmacopœia Syphilitica, and a Review of John Hunter, 8vo, 4 s ſewed.

In the Preſs and ſpeedily will be publiſhed, by C. Elliot *and* T. Kay, No. 332. *Strand, London, and* C. Elliot *at Edin.*

The Philoſophy of Natural Hiſtory. By William Smellie, Member of the Antiquarian and Royal Societies of Edinburgh, and Tranſlator of Count de Buffon's Natural Hiſtory, in one large volume in quarto.

Juſt publiſhed and ſold by C. Elliot *and* T. Kay, *London, and* C. Elliot, *Edinburgh,*

Vol. I. and II. and Part I. Vol. III. of Encyclopædia Britannica; or, A Dictionary of Arts, Sciences, Miſcellaneous Literature, Hiſtory, Biography, Chronology, Geography, &c. &c. On a plan entirely New. Illuſtrated with upwards of 300 Copperplates. ——It is computed this work will be compriſed in 300 Nos. at 1 s. each, or 15 vols. in Quarto, at 15 l. 15 s in boards. But for the convenience of purchaſers, a half volume will be publiſhed every 10 weeks, price 10s. 6 d in boards. So the public may be ſupplied in this way, in weekly numbers at 1 s. or in complete volumes every 20 weeks at a guinea in boards.

A Treatiſe on the Materia Medica. By William Cullen, M. D. Profeſſor of the practice of phyſic in the Univerſity of Edinburgh; firſt phyſician to his Majeſty for Scotland; Fellow of the Royal College of Phyſicians of Edinburgh, of the Royal Societies of London, of Edinburgh, &c. in 2 vols 4to, 2 l. 2 s in boards.

The Edinburgh New Diſpenſatory: Containing, *1ſt*, The Elements of Pharmaceutical Chemiſtry *2dly*, The Materia Medica; or, an account of the natural hiſtory, qualities, operations, and uſes, of the different ſubſtances employed in medicine. *3dly*, The Pharmaceutical Preparations and Medicinal Compoſitions of the new editions of the London (1788) and Edinburgh (1783) Pharmacopœias; with explanatory, critical, and practical obſervations on each: together with the addition of thoſe formulæ, from the beſt foreign Pharmacopœias which are held in higheſt eſteem in other parts of Europe. The whole interſperſed with practical cautions and obſervations, and enriched by the lateſt diſcoveries in natural hiſtory, chemiſtry, and medicine; with new tables of elective attractions, of antimony, of mercury, &c. and ſix copperplates of the moſt convenient furnaces, and principal pharmaceutical inſtruments. By Andrew Duncan, M. D. F. R. and A. S. Ed. Phyſician to his Royal Highneſs the Prince of Wales for Scotland, &c. &c. in one very large volume 8vo, 7 s. in boards, and 8 s. neatly bound. —A few copies on fine paper at 8 s. in boards, and 9 s. bound.