

Essays on medical subjects, originally printed separately; to which is now prefixed an introduction relating to the use of hemlock and corrosive sublimate; and to the application of caustic medicines in cancerous disorders / By Thomas Gataker.

Contributors

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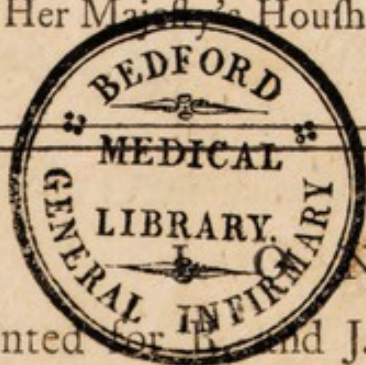
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J. Thackeray

E S S A Y S
O N
M E D I C A L S U B J E C T S,
Originally printed separately;
To which is now prefixed
A N I N T R O D U C T I O N
R E L A T I N G T O T H E U S E O F
H E M L O C K a n d C O R R O S I V E S U B L I M A T E;
A N D T O
T h e A p p l i c a t i o n o f C A U S T I C M E D I C I N E S
i n C A N C E R O U S D I S O R D E R S.

By T H O M A S G A T A K E R,
Surgeon-Extraordinary to His Majesty and Her Royal
Highness the Princess Dowager of Wales, and Surgeon
to Her Majesty's Household and St. George's Hospital.



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INTRO-

INTRODUCTION.

THE following Essays on the Nightshade, on Venereal Complaints, and on the Eye, which were originally published separately, being now printed in one volume, I have taken the opportunity to prefix some remarks not unapplicable to the same subjects.

In regard to the first of these, the account of the Solanum or Nightshade,—the particulars concerning the use of this medicine, that have appeared either favourable or unfavourable; the manner of administering it safely, and the imprudence of giving this or any other medicine of efficacy indiscriminately

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criminally and without due caution ; the circumstances which may reasonably induce a trial of the Nightshade, and the impropriety of continuing the use of it where it is found to disagree, being in general taken notice of in the following pages, it is unnecessary to dwell upon them here. I must, however, observe, that the opinion, which I published last of the Nightshade, has been further confirmed—that it may be always tried with perfect safety, agreeable to the directions there recommended ; and that in certain cases, especially in some obstinate and very painful sores attended with a thin acrimonious discharge, it is capable sometimes of giving relief in the most extraordinary manner, after every other method in general practice has proved ineffectual. What uses the physician may make of an herb, which often produces the most remarkable effects upon the common discharges of the body, by an infusion of so small a quantity as a quarter of a grain weight of its leaf, and which, perhaps, has some other, though yet undetermined, power belonging to it, may hereafter

after probably be thought worthy of attention [a]. Omitting to pursue this subject

[a] Those who are unacquainted with the use of the Nightshade, and are disposed to try its efficacy, at least in cases of surgery, may, it is presumed, administer it at first with more propriety by taking some notice of the common directions mentioned in page 72, as well as by observing the general reason for the trial of this medicine given at the latter part of the account of the Nightshade. To these directions may be added, that in ulcers where the Nightshade is given to procure a good digestion, the use of it should be either very much abated or intirely laid aside when the sore is brought into a healing state; in the same manner as other medicines, particularly of the evacuating kind, are regulated under the same circumstances. It may be further observed, that in cases where the Nightshade proves serviceable the good effects are commonly seen very soon. Perhaps the following case may serve in part to illustrate what is here said.

Mary Wilkinson, thirty-six years of age, and lately a patient in St. George's Hospital, had been troubled during the last two years with a very painful ulcer on the inside of one of her legs about three inches above the ankle. In the course of these two years she had been admitted twice into the hospital, and in the whole had been a patient there more than a year and half. The pain which the woman suffered, and the obstinacy of the disorder, occasioned every means in common use to be tried, both externally and internally. Nothing produced any considerable amendment from the beginning, so that at last she was left to the resource of opiates to procure temporary ease. The ulcer was about the size of a half

more particularly at present, I shall offer some reflections on the use of the Hemlock; the cases where this medicine has been tried,

crown, the surface of it had a foul, blackish, putrid appearance, and discharged only a watery humour. The parts near the ulcer were inflamed and hardened, but without much callosity of the edges, a symptom which, if considerable, is seldom removed by the Nightshade. In this situation she had been confined to her bed eighteen weeks. As I had a design at this time to make some further public trials of the Nightshade, the present subject happened to be the first to whom it was given. She took, going to bed, a quarter of a grain of the Garden Nightshade infused in water, which occasioned some degree of sickness in the night, purged her twice in the morning, and sweated her profusely several hours in the day. She repeated the same quantity of the medicine seven times at the distance of two or three days between the doses. Each of these doses purged her once, and produced a very plentiful sweat for some hours. After the second dose there was an appearance of digestion coming on, which was very soon followed by a large discharge of thick matter, and a separation of the putrid foulness that had covered the sore. Before the eighth dose was taken, the usual dressings being still applied, the sore began to heal, and the remaining part of it appearing clean, florid, and in a very good state, the medicine was left off, upon a supposition that a continuance of it was unnecessary, and that the evacuation which it produced might by a further repetition be rather improper than serviceable. The cure was, therefore, compleated by common means, and the woman, who remained well, went ten weeks afterwards into the country.

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like those in which the Nightshade was given, being of a mixed sort, so as to engage the attention of the surgeon as well as the physician, and the effects of the medicine being open of course to both.

We have now three accounts from Dr. Storck concerning the Hemlock. In the conclusion to the first essay that he published, he draws some general inferences; and in these he asserts, among other things, that the Hemlock cures indurations and scirrhuses, either by dissolving them or bringing them to a kindly suppuration, even after the most powerful discutients of other kinds have been tried in vain; that it cures cancers; heals ulcers and fistulas, which were incurable by every other means; and that it restores sight to those who have cataracts, if the disease has

The Nightshade affected the sight of this patient, as sometimes happens in others, during part of the time of its immediate operation, but as usual this symptom went intirely off as the medicine ceased to operate.

It is observable that though the Nightshade in this case worked chiefly by sweat, as is common for it to do, yet the same evacuation had been very often produced by the use of Dover's Sweating Powder without any apparent good effect.

not been of long continuance. In the second essay the doctor observes that he had succeeded in the cure of almost numberless patients afflicted with scrophulous complaints; and that he seldom failed in dispersing obstructions, indurations and tumors in different parts of the belly, and had often cured dropfies arising from indurations in these parts. It is likewise an observation of the doctor that the Hemlock promotes the generative powers; as a proof of which, among other arguments, he gives the following very remarkable account. “*Vir sexaginta sex annorum, paralyticus, cicutam jam in sextum mensem assumpsit, et quidem tanta copia, ut jam per novem septimanas quotidie drachmam unam cum dimidia deglutiat. Inter alios bonos effectus, quos inde habet, mihi sponte narravit, naturam jam per duodecim annos integrè dormivisse, evanuisse; nunc autem ex usu cicutæ eam evigilare, erigi, et eodem modo agere atque dum fuit vir triginta annorum.*”

In another place he says, “*Habui binas fœminas, quæ dirissimis symptomatibus afficiebantur semper circa tempus menstruum,*
et

et utebantur jam per plures annos marito, nunquam tamen potuerunt concipere. Sumpta cicuta non tantum ab his malis integrè liberabantur, sed et fiebant longe alacriores, et ambæ impregnatae sunt."

To which he subjoins this question.

"Quid jam amabilis fœmineus sexus ultra a cicuta petit?"

By the use of the Hemlock the doctor has also been generally successful in curing the confirmed gout, inveterate rheumatisms, the spina ventosa, the pox, deafness, the deepest melancholy, the itch, the scald-head, and the most troublesome tetters.

In his third essay, which he calls a supplement, he still meets with the same success, and discovers that the Hemlock is likewise capable of curing the rickets, the gutta serena, deafness, impediments of speech, consumptive and hectic fevers, the fluor albus, and obstinate gonorrhæas.

Thus far, though even this is not the whole, of the efficacy of the Hemlock, according to the doctor's account; an account which, in this collected view, must appear very extraordinary to have come from

a person in the distinguished situation of Doctor Storck, physician to the Empress Queen.

But without enlarging upon the improbability, or rather seeming impossibility, of what is asserted in the preceding account, the final determination must and ought to depend upon facts ; and if these had answered in any moderate degree, the Hemlock must have been regarded as a very valuable acquisition to physic.

The affair at present does not clearly appear in that light, as it is not easy to explain the difference between the doctor's account and the experience of others ; for, after enumerating all these virtues which are attributed by Dr. Storck to the Hemlock ; after considering this collection of extraordinary effects said to be produced by one medicine only, which, according to this account, is alone sufficient to cure almost every difficult or otherwise incurable distemper, how is it possible to explain satisfactorily the result of the experiments that have been made with the Hemlock in this kingdom ; where the use of this medicine does not plainly appear
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to have produced any remarkable advantage in any one disease? Yet there never probably was a medicine offered to the public which was more candidly as well as generally attended to, by the most eminent of the profession in private practice, and in all the hospitals in the kingdom. Every means to procure success has been regarded, and every objection which was thought capable of preventing a discovery of the good effects of the Hemlock, has been carefully obviated. The plant has been sent for from Dr. Storck to see whether it corresponded with that which is called the Hemlock in England, and even the prepared medicine has been procured and taken, without differing in effect from that which was in common use here. On the other hand, it may indeed be said that the ill effects or inconveniences attending the use of this medicine are in general very inconsiderable, the usual operations of it, where it produces any at all, appearing sometimes by a slight increase of urine or perspiration, especially in the beginning of the course,

course, and sometimes, though rarely, occasioning an evacuation by the bowels. When the Hemlock is given in large quantities, it sometimes affects the sight, and occasions giddiness, but these symptoms are temporary, and do not leave any lasting ill consequence. In general the Hemlock, as it has been given in this country, produces very little effect of any kind, at least for a continuance [b]. In vain, therefore, is it any longer to hope, amongst the variety of extraordinary virtues which this medicine was said to be endued

[b] Since the accounts given by Dr. Storck of the Hemlock, he has published observations upon some other plants that were reckoned of a poisonous nature. Very little attention has, however, been paid to these observations, in this country at least; a neglect which has been owing in a great measure probably to the disappointment attending the trials of the Hemlock, and in part, perhaps, to the manner in which the doctor introduces these new experiments. After observing it was a general opinion, that the thorn-apple, one of the plants which he mentions, would disorder the mind, and occasion madness, he proceeds to the trial of this plant for the cure of madness, founding his practice upon this supposition: If, the thorn-apple disorders the understanding, and occasions madness in persons who were well before they took it, may it not, by producing some different motion in the brain of those who are already mad, change the ideas, and restore them to their senses?

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with, that it possesses any power to destroy the peculiar humour occasioning cancerous complaints ; nor can the inefficacy of it in that respect particularly be too fully known, in order that neither the usual methods of palliating or relieving these complaints may be omitted, nor the future pursuits of a more effectual remedy for this afflicting distemper be suspended, by an attention to what has proved so unavailing as the Hemlock. Till this happy discovery can be made, which, from the history of some other extraordinary medicines, it is not unreasonable to hope for and expect, there never will be wanting, agreeable to the practice of former times, persons who will pretend to have such a secret in their possession. The remarkable advantages which such pretences, when conducted with art, produce to those who have hardiness enough to offer them to the public, will always supply the world with pretenders of this sort ; whilst the groundless apprehensions of some persons, and the real sufferings of others, will for ever furnish objects for the purposes of deception.

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In regard to the particular methods which may be proposed for the cure of cancers, it is difficult to give an opinion, when the cure is to be effected by the use of internal means. So little is known of the manner in which medicines act on the blood, that it is impossible to ascertain, till after proper trials, whether any medicine proposed to be given inwardly for this purpose, and whose properties are not commonly known, may or may not have the power which is ascribed to it. But where the work is to be performed by any external operation, there is not only an opportunity of judging of what is the object of fight, but a reasonable determination may be formed of the efficacy of the method before it is undertaken. Thus, if a tumor, or a sore on the breast, lips, face, &c. is found incurable by common means, and is attended with such circumstances as make the extirpation of it advisable, there is no doubt but the method of removing or extirpating it, by the common operation, will answer the purpose, provided the nature of the disorder is of that kind as to admit of being cured by any external operation. The same may

be done in some cases of this sort, by means of certain medicines which destroy the parts they are applied to. But if any one was to pretend that these medicines would not only destroy the tumour or sore which they are applied to, but would even eat or draw out the roots of those tumours or sores, it would at once appear impracticable to a person truly informed of the nature of these disorders, and for the best reason which could possibly be given---because he would know that there are not any such roots existing but in imagination. Even admitting the existence of such roots, it would be impossible to believe that, after this medicine had penetrated through the body of the tumour, it should strike, by a sort of intelligent power, into certain directions exactly corresponding with the course of these supposed roots, and eat or draw them out without injuring or affecting the sound flesh into which they must be supposed to be ingrafted, and with which they must be intimately connected. It may be said, indeed, that such roots are sometimes visible after the tumour has been

extirpated by these caustic applications. It is certainly true, that the appearances which are called roots are sometimes visible after a scirrhus or cancerous tumour has been extirpated by this method, and so they are after other glandular tumours have been extirpated by caustic applications. There are frequently portions of loose fibres, which will appear about the body of the tumour, especially if it is put into a liquid, and suspended there: nor is it always possible to confine the operation of a caustic medicine so exactly, but that after having penetrated through the body of the tumour, it may accidentally run into and destroy small portions of the sound flesh; which, when separated afterwards, by digestion, from the other sound parts, together with the tumour, may form those appearances that fancy has sometimes given chimerical names to, and which ignorance or artifice has adopted as realities. This doctrine of extirpating, or, what is called, curing cancers with applications, which are said not only to separate the body of the tumour, but to eat or draw out its roots, was one of the
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chief pretences of Mr. Plunket, who was the first that brought this method of practice to be taken much notice of in England: but, though he sometimes seemed to make an artful use of this circumstance, it is probable he might not be absolutely convinced that there were not in reality any such roots existing. The disease, it is well known, received its name originally, and with equal impropriety as many other odd names were given to other diseases, from a supposed resemblance which these tumours were sometimes thought to have to the cancer or crabfish; the veins, which, in some states of the disease, appear distended and spreading about the tumour, being imagined to have a similitude to the claws of this fish. Some carried the comparison still further; and when the disease became so bad as to be strongly adherent to the adjacent parts, a state of the disease in which neither Plunket's medicine, nor any other means of extirpation can be properly used, they represented to their imaginations this state of the disorder, as being like the
cancer

cancer or crabfish holding firmly with its claws the prey that it had grasped. It is not improbable, therefore, that Mr. Plunket might literally believe these whimsical stories, and of course might imagine the loose pieces or strings of fibres which sometimes hung about the tumours that had been extirpated by his medicine, and which he used to keep in spirits, and shew as the roots of the cancer, were really what he called them. He understood it seems little or nothing of surgery in general, and of course had not sufficient opportunity of being better informed. He practised no doubt from the traditionary directions of his name-fake, formerly an empiric in Ireland professing to cure cancers, and who left the receipt of his medicine with directions for its use to St. Stephen's hospital in Dublin; from whence it has since been copied and published in England, and by the effects as well as the history of the medicine it appears to be the same composition which Mr. Plunket practised with here. But from whatever source he might derive his opinion about the roots of cancers, whether it was
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the pure result of ignorance, or mixed with a design of imposition, it answered, together with other assertions of the same sort, a lucrative purpose to him for some time. Many instances, however, occurring afterwards wherein the application of his medicine had proved ineffectual, and sometimes very hurtful, the credit of this method of practice lessened considerably. But as the natural apprehension of an operation by the knife will always prevail more or less, especially if artfully managed, the method of using caustic applications was still continued, particularly by Mr. Guy, who professed to have purchased the supposed secret of Mr. Plunket. In the account which Mr. Guy afterwards gave of this medicine, he observes, that it had been known by the name of Plunket's Poul-tice, and had been used with advantage by Mr. Plunket and his ancestors in Great Britain and Ireland for more than a century past; a length of time, which it is reasonable to imagine, would for ever have established the character of the medicine, not only in Great Britain and Ireland, but over all the known

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world,

world, if it had possessed the power ascribed to it, of curing the most deplorable of distempers, the cancer. Mr. Guy, however, made, he says, a purchase of the receipt, and at the same time, it seems, adopted the opinion about the roots of the cancer, &c. a circumstance which may be thought extraordinary at first, but which will appear, perhaps, less so when the whole of this affair is considered. Undoubtedly it must be disagreeable to a man, supposed to understand the principles of his profession, and to be acquainted with the improved state of surgery, to be obliged publicly to adopt and support such an obsolete notion ; and yet in Mr. Guy's situation it might seem to be necessary. Whoever considers the influence which this opinion had with Mr. Plunket's patients will see the use that might be made of continuing it. It might appear necessary likewise to establish a belief, as well as the nature of the thing would permit, that the eating through and separating a tender swelling or fore by a caustic application, was not commonly attended

attended with much pain ; and in that respect also, as well as others, this method was preferable to the pain of extirpation by incision. To enforce this opinion still more upon the imagination of the distressed, it might be thought equally necessary to enlarge as often and as much as possible, upon the disagreeableness of the latter method ; and accordingly we find that Mr. Guy frequently endeavours, in the strongest terms, to represent and heighten the grievances of the operation by incision. The pain of this and every other operation is indeed to be lamented ; but as Mr. Guy could not be insensible that the pain excited by Plunket's medicine is, in some parts of its operation, not only as severe as almost any pain that can be suffered, but much aggravated, in comparison with the other method, by the tedious duration of it ; as he must be equally sensible that there are many cancerous cases, which, from their size, their situation, and other circumstances, cannot admit of having this medicine applied to them ; and as in other bad cases he has declined the ap-

plication of the medicine where they have afterwards been relieved or cured by the common operation, it should have seemed surely much more consistent with the feelings of real tenderness and humanity, not to have endeavoured to raise on these occasions imaginary terrors, nor to aggravate real evils, and by such methods to discourage the reasonable expectation of relief from the hands of others. As to the pretended merit of the medicine in performing its operation without loss of blood, it is the nature of all caustics to act in that respect in the same manner: on the other hand, the loss of blood in the common way is never dangerous, is seldom very great; and probably is rather serviceable in preventing any considerable heat or fever, and in contributing to the slight degree of pain which generally succeeds the operation. Amongst other things, nothing could appear more necessary in the management of this affair, than to support the credit of the method by facts, the last and best authority, if fairly represented, for the propriety of any theory that
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can be proposed. Mr. Guy has therefore endeavoured to supply this test, by giving such a collection of cases as might best appear to answer the purpose. This however has not been executed, by any means, with the exactness which the subject required; for even supposing these cases, selected as the most successful, to be fairly stated in regard to the nature of the complaints at first, and to some other interesting circumstances in the management of them, yet the real event of many of them afterwards has been so little made known, where candour and fidelity to the public justly demanded otherwise, as renders it difficult to form any certain or satisfactory judgment of the rest.

The assertions about the roots of cancers, and the slight degree of pain which the application of Plunket's medicine is in general said to occasion, have already been taken notice of; but it may be proper to add, that, besides the absurdity of the opinion about these roots, and notwithstanding the care that is taken to avoid applying the medicine in unfavourable cases, the frequent instances which occur

where it has been used, and with an apparent success for a time, but where in reality the patients have suffered under the most severe return of the disease, shew plainly, if it was otherwise doubtful, that there are no such parts existing as the roots of scirrhus and cancerous tumours, but that the return of the disorder is owing to a return of the humour; or else, if there are such parts as these roots are described to be, this medicine has not the power of extracting them. In respect to the pain attending this method, there is a peculiarity in some constitutions, which renders the pain of a caustic, a blister, or of incision very inconsiderable to what others feel on the same occasions. There may be instances therefore where the pain produced by the application of Plunket's caustic may be comparatively slight to what might have been expected; but, to speak in general, besides the improbability of a tumour, or sore of considerable size, and perhaps very tender too, being eat into and separated from the sound flesh without a great deal of pain, we find, agreeable to what was before intimated,

mated, that most of the patients who have had this medicine applied to them, where the disorder has been considerable, describe the pain attending the operation of it as extremely severe, and the severity of it to be much aggravated by the tediousness of the process, which commonly requires several days before the pain ceases.

Having animadverted on the most material circumstances mentioned in the account of Plunket's medicine, it remains to say what it may have a power to effect, as well as what appears to be improperly ascribed to it. This perhaps may be best done by considering together the two methods of extirpation. The method of extirpation by the common way, or by incision, is practicable upon every occasion that is within the reach of any external means; except where the diseased parts are so adherent to the sound, as to forbid the attempting any sort of extirpation; neither the size of the swelling nor its situation being in general sufficient objections to the operation in this way, when other symptoms allow of

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it. The pain which attends this operation, though in some instances considerable, is generally so very short, that, however alarming it may appear, experience teaches that a great number of those who suffer it, even when the diseased parts are large, bear it with a resolution which prevents their complaining much, if at all. By this method likewise the hardneſſes are certainly extirpated, and by the ſhort duration of the pain, there is little chance of any conſiderable fever being raiſed, or any humour being drawn to the ſore. There is another advantage, particularly when the diſtemper affects the lips, which is not an uncommon caſe, where the diſeaſed parts are taken out by incision, and the ſound parts brought afterwards cloſe together and healed in a few days, ſo as to leave hardly any viſible mark that an operation had been performed.

On the other hand, the method according to Plunket's receipt, or the method of extirpation by cauſtic, will answer in ſome caſes. Where the tumours or ſores are ſmall or of a middling ſize, and not improperly

improperly situated, the caustic may extirpate them; though where the diseased parts are large, the medicine will either not operate through such a substance, or the pain produced by it will be hardly bearable. And indeed it is to be further added, that though the size and situation of the diseased parts may allow the use of the caustic, the pain may not only be very severe from this first application, but from the use of corrosive medicines afterwards to the sore, a circumstance exceedingly complained of in some instances of this method of practice, as managed by the chief espouser of it; and owing no doubt to the extirpation being in such cases not compleated by the first application, or to fungous, putrid flesh rising at the bottom of the sore, from the flow of humour drawn there by the pain. Nor can it ever be said with certainty, that where the pain from the first application has been very severe, and corrosive medicines are often repeated to the sore, some ill effects may not be thereby communicated to the neighbouring parts, or, in weak or delicate constitutions, to the body in general.

There

There is, however, one circumstance, where the method of extirpation by caustic may, it should seem, properly demand consideration; and that is, where the fears of the patient, either naturally or artfully raised, are so great, as absolutely to prevent the operation by incision being consented to. In this situation, there may be sometimes no alternative, but to try the method of extirpation by caustic, or to suffer the disorder to become incurable by any method.

Thus far in general may be said, that in such cases as will properly admit of the application of a caustic, and where the patient chooses to undergo the pain and tediousness of this process rather than the easier and more speedy method by incision, the caustic made according to Plunket's receipt may be preferable, as it will generally penetrate deeper than the common caustics, provided the skin is ulcerated or previously destroyed. It is likewise more confined in its operation to the parts it is applied to than the common caustics, which by the dissolution of their salts are sometimes apt to spread too much. As to the usual event of extirpation,

it is found, when performed in the common way by incision, that cases, which have very strong appearances of real and confirmed cancers, will frequently heal after the operation without difficulty, and with the assistance of proper drains and internal means will sometimes remain intirely well, or for a long course of time at least. In other cases, where the cancerous humour is milder or less advanced in its progress, the prognostic is still more favourable; and if to these are added the many glandular swellings, which, whether distinguished by the names of scirrhuses or any other appellation, have no painful or particular symptom attending them, the extirpation would indeed be successful if performed upon all these occasions. In such cases as are proper for extirpation by caustic, success may be expected from thence likewise, if the fores or hardnesses are compleatly removed; the return of the complaint it is certain, in this method as well as the other, not depending in the least degree upon leaving the roots of the cancer, as is idly asserted, but upon the disorder being local or being general.

If

If a tumour or sore of a cancerous disposition, or supposed to be so, is extirpated, and the cause which produced it is local or confined to the parts apparently diseased, success may be expected by whatever method the extirpation is made; if the tumour or sore is owing to a constitutional cause, affecting more or less the fluids in general, the disorder may appear again after extirpation, and in a manner which other humours are apt to do, either near the place which was at first principally the seat of the humour, or in some other parts of the body as may happen.

Before the present subject is concluded, it may not be improper to observe, that whatever has been said here upon it, relates merely to those tumours or sores which are judged necessary to be extirpated, and to the manner in which the extirpation may be effected. As to the fulness and hardness which may remain in the breast or other glandular parts of the body after an inflammatory swelling or an imposthumation happening there, and as to the many other slight obstructions on these parts, which fear may sometimes magnify
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into objects of importance, and where ignorance or artifice may confirm the delusion; these by all fair and skilful practitioners are put out of the question, and treated in a manner proper to resolve and disperse them, or suffered to remain in their present easy state.

THE next article in the following pages relates to Venereal Complaints; a subject I was particularly led to consider many years ago, by having at that time the care of his Royal Highness the Duke of Cumberland's Hospital, to which a great number of soldiers affected with these complaints were sent for relief. It appeared to me then, that there were some errors in the theory of those complaints, which were by no means sufficiently banished from practice, and that some improper pretences prevailed among particular people, as well as many infamous deceptions among professed quacks, which, as far as was practicable, it would be right to explain and expose. Few particulars have since occurred upon the subject which deserve to be taken notice of: The two principal
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have been an account of the proper manner of administering the *farfaparilla* root, and the effects of giving a solution of corrosive sublimate. The former has been fully explained, but the uses of the latter appearing to be less universally understood, it may be judged no improper attempt to consider this subject as it now stands after a more extensive experience of the effects of this medicine. But before any determination is made in regard to a preference which there may be of any one preparation of mercury to another, it should be always premised, that the specific power of mercury in the cure of venereal complaints is so remarkable, that any of the preparations of it in common use will, if properly administered, frequently answer the purpose. It is necessary likewise to observe, that if a salivation has been gone thro' or even repeated, and without all the success that usually happens, mercury, given in a mild, or what is called an alterative, manner, and especially if accompanied with a decoction of the *farfaparilla* root, will in such cases almost infallibly compleat the cure. It is natural upon
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such occasions for persons, not much conversant in the use of this medicine, to attribute more to the particular preparation of mercury that was last given than it really deserves, the success being owing chiefly to the time and manner in which it was given; for as the same medicine, if it had been administered in the same manner before the salivation, would probably have had very little effect, so here it is not so much the particular preparation of mercury, as it is the manner of employing it, that is, by using it in the mild and alterative manner after a salivation, instead of repeating any more that stronger and generally more effectual method. Why it should happen that in some cases after a salivation has proved ineffectual, mercury given in a mild and alterative manner should answer so well, and yet before the salivation should comparatively have had very little effect, is a circumstance amongst many others, which, though difficult to explain in theory, is clearly ascertained in practice. These two preceding and oftentimes misguiding circumstances being properly attended to, the principal considerations remaining must be to determine
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what method or form of administering mercury will in general produce an effectual and lasting cure of the pox ; and how this may be best done in regard to the ease and convenience of the patient. To speak merely of the cure, the method which has been generally most relied on to obtain not only an apparent but a lasting cure, has been the use of mercury, either externally by way of unction, or internally by some of the common preparations of it, in such a manner or degree as the difference of the symptoms and the state of the constitution seemed to require. Thus where the infection seemed to be slight, the use of mercurials in a mild degree may be sufficient ; where the virulence is greater, it will probably be necessary to administer mercury in such a manner as to produce by it some effect upon the mouth ; where the disease is still more malignant or obstinate, it will be proper, as far as the operation of the medicine can be determined, to encrease the force of the mercury, so as to salivate in a greater or less degree, according to the exigency of the symptoms. But however desirable

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firable this method may be on account of its efficacy in curing this distemper, there are real objections to it, at least to that part of it, where the obstinacy or malignity of the symptoms require a direct or regular salivation. The patient in this case is to be confined, perhaps very inconveniently, and this confinement, during part of the time, is to be attended with a foreness of the mouth, and sometimes with other disagreeable circumstances. It is no wonder therefore that other methods of administering this medicine should be proposed, with a view to prevent these principal inconveniences. Accordingly we find a variety of schemes have been offered for this purpose. Some have proposed to use as much mercury or more than is commonly necessary to salivate; but in such quantities, and at such distances of time, that it should be introduced into the course of the circulation and destroy the venereal poison, without producing any disturbance in the constitution. Others have administered this medicine more freely, but have endeavoured to prevent its taking any effect upon the mouth, by en-

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creasing the common discharges of the body; imagining, according to this scheme, that the mercury would destroy the venereal poison by circulating with the general mass of fluids, and might afterwards be discharged from the body by the skin, bowels, or kidneys, instead of the mouth; and this way of reasoning introduced the different methods either of occasionally purging, sweating, or encreasing the quantity of urine during the mercurial course. Nor were any of these methods entirely destitute of success, nor in some particular cases void of propriety. The operation of mercury, it is well known, will sometimes be naturally determined to the bowels, skin, or kidneys; and when nature gives this direction, and the patient bears it well, a proper management for the continuance of its operation in this manner will frequently answer the purpose, without producing any disagreeable effect on the mouth; to which must be always added, as was before observed, that the specific power of mercury is so great in destroying the venereal poison, that almost any method of using it will in many cases succeed,

succeed, and even very malignant appearances be sometimes removed by means which will not answer in general. But even these seemingly improved methods, ingeniously proposed by some, and often artfully or ignorantly adopted by others, have likewise their inconveniences. [c] Administering mercury, and what is called, purging it off, is very apt to weaken the patient, to occasion painful complaints in the bowels, and sometimes to fix a more lasting injury on the digestive organs. Bathing or sweating at intervals, during the mercurial course, in order to determine the operation of the mercury to the skin, is likewise liable to weaken and enervate the patient, to occasion colds, and, thereby checking perspiration, obstruct the purpose aimed at; and in general cannot be repeated often with convenience and advantage, at least in this unsettled climate. By the use of diuretic medicines, and drinking plentifully of small liquors, it

[c] Some of these arguments are made use of in the article of Observations on venereal complaints, but are mentioned here likewise, in order to bring the whole into one view.

will be easy at any time, as well as during a mercurial course, to encrease the quantity of urine; but if medicines of this sort are continued long or repeated often, they are apt to offend the stomach, kidneys, or bladder; or, admitting that this should not be the case, there cannot be a sufficient reliance upon this method for determining the operation of the mercury to the kidneys, so as to prevent the common consequences of it when it is used in any considerable quantity. Nor in each of these methods must it be forgotten, that from some accidental cold or sudden effect of the mercury, it is not uncommon for a salivation to supervene, the very circumstance principally intended to be avoided; and to happen at a time probably when the inconvenience is greater, as it was not expected or provided for.

As to the use of mercury in small quantities and at considerable distances of time, in order that the mercury may act chiefly by its specific power on the blood, without considerably encreasing any of the common discharges, or without producing any disturbance in the constitution, it is a subject which, like
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the preceding methods, will admit of much plausible reasoning, and, like them too, will sometimes prove successful; but it is by no means powerful enough to become a general method, nor is it free from some of the accidents before mentioned. A principal argument in favour of this method is, that as a certain quantity of mercury, used so as to raise a salivation, will almost certainly cure the pox, the same or a greater quantity, administered in smaller portions and at greater distances of time, will in the general course of the circulation pervade every part of the body, and by its specific property will, as was before intimated, destroy the venereal poison as it passes, without creating any troublesome symptoms. Amongst other objections to this doctrine, is the great uncertainty in the operation of mercury. The effects of this medicine in different constitutions are so various, that it is impossible to judge, with any degree of certainty, of the quantity of mercury necessary for the cure in any way of using it, further than by observing how it acts in each particular case. A robust man with a coarse

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and harsh skin will sometimes be thrown into a profuse salivation by the use of a very small quantity of mercurial ointment, while a delicate woman with a relaxed skin, suited, as may be supposed, to admit the mercury very readily, will require an uncommon quantity of the medicine before any apparent effect is produced. But, besides the inconveniences peculiar to each of these methods, there are still others more general and of more importance. In fact, though these ways of administering mercury may answer in slight cases, and sometimes even where the symptoms are more virulent, yet in obstinate and more malignant cases they will oftentimes fail to procure even a temporary disappearance of the symptoms, or, if they answer so far, it is very probable that the symptoms will return again, and perhaps with additional severity. In the first of these situations the practitioner is obliged, after a great deal of time lost, and with some inconvenience to the patient, to proceed to a more effectual use of the medicine; in the other case, where the symptoms return, the

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patient is obliged to undergo a second discipline, at a time probably when his engagements in life make a confinement exceedingly inconvenient and improper, and, what is worse, after he may have unfortunately, tho' unknowingly, communicated the disorder where he most wished to avoid doing any thing hurtful or injurious.

Upon the whole, as far as the venereal poison can be judged of, it appears that the pox is a distemper of a peculiar kind; — that mercury, the common remedy for it, is remarkably and specifically suited to destroy the peculiar poison occasioning this distemper, as it very rarely fails to do when properly administered; --- that the operation of this medicine is sometimes by the common discharges of the skin, bowels, or kidneys; and now and then it produces its salutary effects with hardly any apparent alteration in the discharges of the body; but that its natural and most common as well as most powerful operation is upon the mouth, by encreasing the quantity of spittle; --- that where the symptoms of the disease are mild, the distemper may admit of a cure without the mouth being affected, or

at least considerably, especially where the operation of the medicine takes an easy and favourable turn to any of the common discharges before mentioned; but that where the symptoms are more obstinate and malignant, it is necessary, in order to remove them, and to secure against a return of them, to administer the mercury in such a manner as more or less to affect the mouth, or to salivate;---that the effect on the mouth or a salivation is not however necessary in itself, as an healthy or unhealthy person is equally liable to be salivated by the same medicine; but as it is the natural effect of mercury to produce this symptom in the mouth when it acts with most efficacy, so far a salivation in a greater or less degree is in some cases necessary, as it is a sign that the medicine has acted with that power which the malignity or obstinacy of the symptoms required.

Why mercury, when it acts with its full efficacy on the blood, should commonly produce this effect on the mouth, is as unnecessary and difficult to explain, as why opium should procure rest, why jalap should purge,
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or ipecacuanha vomit. It is sufficient to know, that when mercury has been given in a milder way and has proved ineffectual, it is necessary to administer it in this manner, which experience teaches will almost certainly answer the purpose.

As this opinion of the different operations or effects of mercury is founded upon facts which are incontestable, and which probably will ever remain the same, it may serve in some degree as a direction how to consider and judge of this medicine, in whatever form it may be recommended; and upon this principle it appears no difficult matter to account for the event of the various trials which have been made with the solution of corrosive sublimate. It may be unnecessary to observe that the solution of sublimate was given formerly for the cure of venereal complaints, and that the use of it was almost intirely laid aside till Van Swieten communicated an account of his success by giving it dissolved in spirits. It is sufficient to observe in general, that in consequence of this account, strengthened by the recommendation of a very eminent physician of this country,

country, the solution of corrosive sublimate soon began to be in common use for venereal complaints; and the effects of it at first appeared so favourable, as to induce some to believe that it would supersede the necessity of a salivation on all occasions.——The result of further and more general experience has however destroyed this hope. In obstinate cases, it will sometimes fail even to procure a temporary relief of the symptoms, and it is a general observation, and too well founded, that in many cases, where it seems to have answered remarkably well, there is not a sufficient reliance on the permanency of the cure, the symptoms being very apt to return. It is liable likewise in many patients to occasion sickness of the stomach, and pains in the bowels, and sometimes a salivation. But though the advantages of this medicine have not been by any means equal to what was imagined they would be, it is found to have properties which very well deserve attention. Where the symptoms are mild, this method of administering mercury may have the desired effect, as well as some of the methods already
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taken notice of; and it has the further advantage, that as one preparation of mercury, from an unaccountable peculiarity, will agree in some constitutions better than any other, the solution of sublimate may sometimes have a preference in that respect; and indeed whenever the use of it agrees with the stomach and bowels, it often occasions less disturbance in the body in general than some other of these preparations. It is reckoned likewise that none of the preparations of mercury answer more readily and easily, if so well, as the solution, in giving an occasional or temporary check to the symptoms; a circumstance which may be of great importance where more effectual means cannot be used immediately, as amongst the soldiers in camps, and in some other situations in private practice. It is also approved in the removal of venereal eruptions, and indeed very reasonably so, as it frequently operates more upon the skin than the other mercurial preparations, and consequently is more likely to remove those appearances from the skin. The solution of sublimate is given likewise to advantage, either alone or with a decoction of sarsaparilla,

sarsaparilla, when an alterative course of mercury is thought necessary after a salivation or on other occasions. Upon the whole, it should seem not to admit a doubt, that the use of corrosive sublimate, as it is directed at present, may be used with perfect safety, and is capable of producing many advantages; and that the late introduction of it into common practice has furnished a valuable addition to the other methods of administering mercury [*d*].

As a conclusion to the preceding remarks, I shall beg leave to add a few words relating to

[*d*] The corrosive sublimate may serve, among other instances, to shew how difficult it is to ascertain the real use of a medicine that is very efficacious, and of course capable of doing hurt as well as good, according as it is administered. The corrosive sublimate has been particularly recommended at different times, and prescribed in forms that do not vary much from those in present use. Yet till of late this medicine has been chiefly in the hands of quacks, whose injudicious practice with it, and the bad effects which always attend the use of it, when given in any considerable quantity, occasioned, it may be supposed, a very strong prejudice against it. From hence may have arisen the unfavourable opinion which the celebrated Astruc gives of the corrosive sublimate, who, in his remarks upon Wiseman, blames that author for not condemning in the severest terms the use of so deadly a medicine.

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the communication of supposed discoveries or improvements in the medical art in general. Many accounts of this kind, which are offered to the public, are attended with difficulties, or at least with circumstances not agreeable. Perhaps few of them, when first proposed, can be communicated in their full extent. The opportunities for experiments in private practice are not always sufficient, and are confined to the limits of one man's understanding and knowledge, as well as liable to the bias of partiality or interest. Experiments made in public, as in hospitals, though in general most useful, must, for a time at least, leave the event in suspense: in the mean while, either a premature account must be given, in order to assist the endeavours of others, or the trials which are made from still more imperfect information, instead of promoting the design, may produce either ineffectual or dangerous consequences.

But whatever embarrassments may attend these public communications, great advantages may be derived from them, if properly conducted; for as the whole attention of any
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one person's life, assisted merely by his own endeavours, is, we know, exceedingly inadequate to the understanding any of the sciences well, not only the advantage of immediate and practical observation is necessary, but the accumulated knowledge of successive ages and different nations, transmitted from time to time. Every body must be sensible of this in respect to the different branches of physic. It were to be wished, however, that the intelligence received from hence was less mixed with difficulties, or perplexed with uncertainty. Several things have contributed to these embarrassments, besides the reasons already assigned. Among others, a principal one is the imperfect state in which many accounts of supposed discoveries or improvements in practice have been communicated and left to the public. 'Twas observed above, it must often necessarily happen, that these accounts cannot at first be given in their full extent; but it is generally less difficult to supply afterwards what shall be necessary to ascertain the propriety of them. Perhaps, indeed, it may not be thought a pleasing task
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to relate a disappointment or acknowledge a mistake; and yet there should seem to be no great reluctance to this, where a sincerity of intention shall have preceded these concessions. But however that may be, it is certain whoever offers an imperfect or a mistaken account to the public, in which either life or health is concerned, has a strong tie upon his candour to supply any known and essential deficiency in such accounts; or undoubtedly at least to prevent, as much as possible, the judgment and conduct of others from being led into dangerous errors. It may be said that the general practice will determine this; and so it may in time and to a certain degree where experiments are tried in great cities, as a free communication is commonly made there of whatever occurs in these affairs; but how are practitioners at remote distances from these seats of intelligence to be undeceived? or how are students, who take most of their opinions upon trust, to distinguish between truth and error, when they see them blended together, and equally confirmed by the same authority? It were to be wished, therefore,

therefore, that hereafter, such writings as shall be of credit, and which of course will serve in some degree as guides to many of the profession, should be as unexceptionable in this respect as possible, and that, if further experience and an improved knowledge in certain articles contradict any former assertion or opinion, such alterations or additions may be occasionally made in subsequent publications as may prevent the continuance of errors—errors that may not probably be otherwise discovered than at the hazard of the patient's life or health, and the practitioner's character and satisfaction of mind.

As to the writers whose publications are designed to recommend some secret method of practice, it is not reasonable to expect from them any other than an unalterable perseverance in what they at first endeavoured to establish; a different conduct would probably destroy the basis upon which their whole credit is placed. Of these last performances, and indeed of most pretences of this kind, the public are much inclined to think favourably, not merely from a love of novelty, or fondness

ness for a nostrum, but also from an earnest disposition to promote what to them appears likely to preserve life or relieve the distress arising from pain and sickness [e]. On the other hand, it is equally true, that practitioners in physic are not disposed to think so well of these pretences; not from being uninfluenced by humanity or benevolence, but from seeing daily instances where these pretences serve only the purposes of deception and the most infamous practices. Is it not to be wished that this

[e] Though the laudable motive above mentioned undoubtedly influences many people on these occasions, there is not always that openness of behaviour afterwards where the pretence, as not uncommonly happens, is discovered to be an imposition. So much is sometimes said at first in favour of these schemes, as makes it disagreeable afterwards to contradict what was before so earnestly recommended; nor are people in general willing to allow, more than is absolutely necessary, that they have been led by delusive promises to suffer in their constitution and circumstances. It is probable, however, that this reserve would be less frequent, if it was duly considered that the injuries which others may receive from the same delusions might be often prevented, if deceptions of this sort were in any degree as readily acknowledged and exposed as the praises of them at first were liberally bestowed.

difference of opinion could be reconciled? and, as one means of accomplishing this, would it not be desirable that the regular part of the profession, I appeal to my own branch of it, would relax a little more than has been common in one point of form, and not refuse to meet any person, once at least, who practises upon a less open and less liberal plan than themselves? For however disagreeable it may be to a man of education and knowledge in his profession, to have any intercourse of this sort, it is to be considered, that the patient's having recourse to these people can proceed from no other motive than a desire of relief. If any probability of advantage to the patient could be derived from hence, it is fit it should be attended to: if not, and the promises of quackery prevail, the candid practitioner has the satisfaction, as well as justification, of having complied to the utmost extent with every thing which judgment could direct, or the most anxious mind could require: whereas by a contrary behaviour, the patient may not only be less satisfied

satisfied, but is left in the situation which every false pretender desires to find him, subject to the impositions which craft or delusion can propose, or that fear, credulity, or misery can yield to.

THE third and last article in the following pages contains an account of the structure of the Eye, with observations on some disorders of that organ. Upon this occasion the author was inclined to offer some additional remarks to those he had before published* on the operations for the cataract, the performance of some late operations in extracting the crystalline humour having renewed a particular attention to that subject. At present, however, such a design is not to be executed with the propriety which it may be hereafter: To determine with a degree of precision necessary for public satisfaction, not only whether the operation by depression or by extraction is the better method for general practice, but whether each of them in particular in-

* See the Account of the Eye, page 267.

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stances may not have a preference, must depend in some measure upon further experiments, and of course will be more properly the object of future consideration.

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O B S E R V A T I O N S

O N T H E

I N T E R N A L U S E

O F T H E

S O L A N U M,

O R

N I G H T S H A D E.

OBSERVATIONS

ON THE

INTERNAL USE

OF THE

SOLANUM

OR

NIGHTSHADE

18

OBSERVATIONS

On the internal use of the

SOLANUM

OR

NIGHTSHADE.

THE chief part of the following account relating to the internal use of the plant Nightshade, was lately read at a meeting of the Royal Society; and from the favourable reception which it then met with, I flatter'd myself it might deserve some notice in the next publication of their works. Finding however an opportunity of this kind will not occur in a considerable time, and receiving daily enquiries concerning the

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manner of administering the medicine, and the operations which usually result from it, I am induced to give the account in this manner to the public. Thus I shall hope at once to answer the enquiries abovementioned, and at the same time more effectually promote my original design of communicating these particulars. This, I presume, might serve as a sufficient reason for the present publication: But I must beg leave to mention a circumstance or two in regard to my general conduct in this affair; as it will not, I hope, appear unreasonable that a man should wish to avoid censure, where he renounces all pretensions to private interest and advantage.

As soon as I had discovered the common operations of this medicine, and found that, under certain regulations, it might be given with perfect safety, and, as I imagined, with great benefit to mankind, I made them known to my acquaintance; but as the extent of such a communication could not sufficiently diffuse the knowledge of these particulars, I gave an account of them to the Royal Society, as has been customary on like occasions.

In this account my design was to show, that the medicine might be used with great safety, and probably with great advantage—to point out the method of administering it, and to describe the operations which it usually had upon the human body. By this means I imagined that I should furnish the judicious practitioner with a very valuable acquisition, and, by the directions which I gave for its use, should not only facilitate his experiments, and enable him to use the medicine with propriety, but at the same time should prevent in some degree an injudicious, ineffectual, or perhaps dangerous application of it by persons of less skill and judgment.

As to all the uses which a medicine of such powers might be applied to, I did not pretend to determine them. I rather thought that the united experience of others would be the most ready and most candid method of pursuing such a design; and I chose neither to confine the virtues of the medicine to my own advantage, or opportunities of practice, nor to rely upon my own knowledge or judgment to ascertain them.

4 *Observations on the internal use of*

For these reasons I was less sollicitous about giving histories of particular cases. I mentioned indeed two of a cancerous nature, for reasons which are explained in the account, and I have now added some others, as well to serve as a specimen of the salutary effects which may be expected from the medicine, as to illustrate and confirm what I have advanced of its common methods of operating.

The cases which are now added are not selected from many others as particular cases, but are designed as an unreserved account of the state of those patients who are now under my inspection in the hospital, and are either taking the medicine, or, after having taken it with success, are ready to be discharged from thence. The event of some of these must at present be necessarily in doubt; but if, as will appear by the first of them, the medicine is capable of restoring use to the limbs of a person who had been bedrid several months—if it is capable of removing the anguish of constant and violent pains, which nothing else had relieved, and of giving
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rest, strength and appetite to one who had long been a stranger to all these enjoyments, it must be some satisfaction, and, I presume, of some use, to know what were the means that accomplish'd these desirable ends. Nor can it, I think, be reasonably objected to the receiving this information, that the fore upon the leg, which is one of the grievances this poor creature labour'd under, is not yet quite healed.

I must beg leave to add, that tho' I doubt not great services will accrue from the internal use of the Nightshade, yet, like other medicines of much efficacy, it will be productive of some inconveniencies, and liable to many disadvantages. It will probably be employed too promiscuously, either where there is not sufficient indication to direct its use, or where it is absolutely improper. It will sometimes disagree where the use of it seems reasonable, and in other instances it will prove ineffectual, not merely as it fails to cure, but even in its common operations; circumstances to which all medicines are liable from the peculiarity of different constitutions, or even from a temporary difference

in the same constitution. These however are such disadvantages as every medicine of much efficacy is subject to, and therefore I would imply no more by these observations, than that the infusion of Nightshade is not to be given indiscriminately by every person in every disease, but requires attention, judgment, and discretion in the management of it.

I shall conclude this introduction by hoping, that, however I may err in my judgment in this affair, I shall be justified in my intentions; and I must beg leave to acquaint those who may try the medicine with care and impartiality, that I shall esteem it as a favour to receive any useful intelligence relating to it.

The following is the Account, with some Additions, which was read at the Royal Society, May 26, 1757.

ABOUT half a year ago I read a memoir, published in the *Bibliothèque des beaux arts & des sciences*, in which an account is given of a disorder declared to have been cancerous,

cerous, and to have been cured by an infusion of Deadly Nightshade. I determined to make some experiments with this plant; but as the season of the year would not then permit me to procure any that was fresh, I was obliged to make use of some Nightshade that had been gathered and was dry'd. Soon after I had began to give it, with great care and caution, to three or four patients, it was discover'd to be the species of Nightshade called Garden Nightshade, and not that which is distinguished by the name of Deadly, and which is the sort recommended in the memoir above-mention'd. Finding however very remarkable effects from the former, and not being then able to procure any of the other kind, I pursued my experiments with the Garden Nightshade. The cases in which I first try'd the operation of this plant, beside the two cancerous cases hereafter to be related, were foul or painful ulcers, obstinate pains in particular parts of the body, scorbutic eruptions, and other common disorders: but as these were seldom attended with any very particular malignity, the same purposes might pos-

fibly have been answer'd by other medicines, tho' in some instances this succeeded where the common means had failed.

By these experiments however I became better acquainted with the common operations of the medicine, and with the proper manner of giving it. I found from repeated trials, made with great caution and safety to the patient, that so small a quantity as one grain-weight of the leaf, infused in about an ounce of boiling water, and the liquor afterwards strained from the leaf and taken at bed-time, would sometimes have a very considerable effect; but that two or three grains seldom failed either to vomit, sweat, or purge the patient moderately, or to increase the quantity of urine. It sometimes occasions a head-ach, giddiness, and, probably in consequence of these, a dimness; symptoms which are not constantly to be expected, and, when they happen, often cease or abate after the first or second dose: A drowsiness or disposition to sleep, particularly upon the first use of the Nightshade, is another circumstance which not unusually happens. In other respects, the most common effects that
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I have observ'd to ensue upon taking this medicine were a heat or warmth diffused in a few hours over the body, a plentiful sweat succeeded this heat, and sometimes a gentle purging the next day: if a sweat did not break out, an extraordinary discharge of urine was generally the consequence, and was sometimes followed likewise by a purging. One or more of the natural evacuations were almost always increased.

These are the general effects proceeding from the internal use of the Nightshade, and are such as I am persuaded will correspond with the experiments made by others; as much at least as can be expected from any medicine of efficacy given to persons of different constitutions and under different circumstances and states of health.

As to all the uses which this medicine may be applied to, time and much experience only can ascertain them. I have already try'd it in some disorders with advantage, as I took notice before; but as a circumstantial account of particular cases may be desired, I will relate the effects of the infusion in a few instances.

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I shall begin with two cases of a cancerous nature; not with a view to establish an opinion that this medicine is a specific for that complaint, nor indeed would these cases sufficiently authorise such an opinion; but as they were the first in which I try'd the medicine, as they were likewise the only ones that, till lately, I took a regular account of; and as the particular case which induced me to use the medicine at all is said to have been a cancer, and radically cured by an infusion of the Deadly Nightshade.

One of these was in a woman about 50 years of age, a patient in the Westminster hospital. She had a sore under her right-eye, which began by a slight accident upon the part about a year and half before she came under my care. The sore, which was as broad as a half-crown, consisted of several indigested, foul ulcerations, intermix'd with callous eminences, or hard knots rising in particular parts of it, and the whole was encircled by an unequal jagged edge. Below the sore the cheek was discolour'd by a deep red appearance, and was swelled. She had
suffered

suffered considerable and frequent pains in the part many months. The common methods were try'd for relief ineffectually. Amongst other things the solution of mercury, and other mercurials were used so as to produce a slight salivation. The sore however appeared in full as bad a state as has been just represented, when I began to give her the infusion of Garden Nightshade: In a month after taking it the pain intirely ceased, and in little more than another month the ulcerations were healed, and the callosities subsided, leaving only a slight soreness or tenderness of the skin, with two or three scurfy inequalities in the upper-part of it. No application was used to the sore except common softening dressings.

As the woman was quite free from pain, and saw very little appearance on the part more than was natural; and as she was very desirous to go into the country to her family, I could not prevail on her to stay, unnecessarily as she thought, any longer, in order to confirm the cure, and prevent a return of the symptoms.

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The medicine in this instance occasioned at first a sickness and giddiness, producing a plentiful sweat in the night, and a moderate purging in the morning, with some increase of urine. It continued to sweat her considerably as long as she took it, preserving also in general a lax state of her bowels, and acting sometimes as a diuretic. She never took more than an infusion of two grains at a time. I have not yet had any account of her since she left the hospital.

The other patient who suffered under this disease, was a woman above 70 years of age, and in the same hospital. She came there about five months ago with a very large and bad-looking sore on her left-breast, with callous edges surrounding the ulcer, and hardenings in other parts. This complaint began above a year before with a small hard knot, which increasing, broke into a sore, and for some months had gradually spread broader and corroded deeper. She began to take the infusion of Garden Nightshade, after a dose or two of purging physic, and in less than three months, using only common applications to
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the part, the sore was reduced to a very inconsiderable size, without any remaining hardnesses at the edges of it, and had the appearance of healing in a week or ten days. The hardnesses about the breast were likewise diminished. In this situation, she was attack'd with feverish complaints, a slight difficulty of breathing, and an inflammatory swelling on her left-hand. Upon these accounts it was judg'd necessary to suspend the use of the infusion; and during this interval the surface of the sore enlarged and grew foul again. Soon after, she lost her appetite, and was affected with a general weakness of body. All these circumstances, joined to her age, afforded no encouragement to try the medicine again, nor hopes of success from any other method (*a*).

When this woman began to take the infusion it made her giddy, and sweat her very considerably. It continued to sweat her moderately, but never affected her either by urine or stool, and some time before she left off taking the infusion, it produced no visible

(*a*) She is since dead.

alteration

14 *Observations on the internal use of*
alteration in any of the natural evacuations,
tho' the dose was increased to five grains.

As I neglected till lately to give a strict attention to the particulars of each case wherein this medicine has been used (except in the two preceding instances) I cannot properly enter into a detail of them: For this reason, as well as to avoid the imputation of giving partial accounts, I shall at present only mention such others as are now in the hospital, and were this day (June 21) examined there.

The first of these is a woman of 35 years of age. She was admitted into the hospital about seven months ago. She had then a very great inflammation and swelling of her foot, leg, and knee, attended with a fever, besides a very large sore on the lower part of the leg, which began two years before, and had gradually been growing worse. The sore had the most malignant appearance, discharged a great deal of a sharp thin humour, and was extremely painful. The swelling and inflammation were considerably abated after she had been in the hospital some time, but the sore continued in a very bad state, having
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extended itself from the lower part of the calf to the heel, and from one ankle backwards to the other. The fever was sometimes very intense, and violent purgings with other symptoms intervened, which reduced her strength and left very little hopes of her recovery. In this situation she was about a month ago, having been bed-ridden five months, unable to feed or help herself, and the last six weeks having never enjoyed one hour's sleep at a time, on account of violent pains which she felt in her head and limbs. She complained also of a great weight and heaviness in her head, and at times was not sensible. The first dose she took of the infusion of Garden Nightshade affected her in a manner, to use her own words, as if she had drank too much strong liquor. It then threw her into a plentiful sweat, and purged her twice. The second and third doses operated as the first, except that they occasioned no sensation of giddiness. After the third dose her pains were much lessened, and she was able to walk with a very little assistance. In eight days she was perfectly free from pain, could walk very well about the ward, had an exceeding good appetite,

appetite, and her strength was remarkably increased, as was soon evident; for on the twelfth day after she had made use of this medicine, she, without my leave, and imprudently in regard to her leg, walked near two miles. The sore however healed incredibly fast, and as it is at present quite easy, and continues mending, it probably will not be long before it is well. It is now a month and some days since she began the infusion, and except the remaining sore she has not had a complaint from the eighth day after she began the medicine. She has continued the use of the infusion though generally at the distance of a night or two from each dose. It still sweats her moderately, and sometimes purges her gently. It has always increased the quantity of her water, but particularly since the sweats have decreased. Another circumstance has likewise lately occurred in her favour which had not happened the five preceding months. She began with a grain of the leaf, and never increased the dose to above a grain and a half; the infusion still preserving in a great degree
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its powers, notwithstanding the long use of it (*b*).

The next patient is a man 68 years of age. About five months ago he received a violent bruise on his loins and hips, by falling from a height as he was carrying a great weight; under which he was pressed, while his body was bent double. In some time he recovered from this accident, except that it left a weakness, and sometimes a stiffness about those parts. Being afterwards seized with violent pains in his back and knees he was unable to stand upright, or to walk but with difficulty and not without the assistance of a stick: Nor could he attempt to bend his knees without occasioning great pain. He came out of the country, and was admitted into the hospital about

(*b*) *October 16.* In the last account it was observed that the ulcer had gradually lessened and was almost healed, tho' the large extent and unfavourable situation of the sore had made it very difficult to procure skin enough to cover it. I am now to observe, that when the ulcer was just healed and a perfect cure was expected, the sore remained unclosed. It is probable likewise that it will always continue so; serving as an issue which nature has formed on the part, and as a necessary drain for the discharge of some constitutional humour, which has now affected her leg near three years.

seven weeks ago, in the condition just represented. After having been there a fortnight without receiving any advantage, he took the infusion of Garden Nightshade. The first dose, a grain of the leaf, had no effect; but two grains the next night sweated him plentifully, made him a little giddy, and purged him three or four times in the morning. The third dose made him sick, which was the only time it did so, and operated in other respects as the preceding. He had little or no complaint after the fifth dose, but nevertheless he repeated the same twice or thrice at the distance of two or three days between each. These acted like the others, and they all occasioned some increase of water. He never took more than two grains for a dose. He has left off the infusion above a fortnight and continues well, except sometimes being sensible of the weakness or slight stiffness of his back, the consequences, as was before observed, of his bruise.

The third patient is a middle-aged man, who was received into the hospital, with a swelling and several painful sores on one of his legs. He has taken the infusion of
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Deadly Nightshade three weeks. It worked chiefly by urine, though sometimes it sweated him slightly. As he was generally constive, he took occasionally some purging medicine. The dose was increased from one grain to twelve, without producing any sickness, giddiness, or other effect than what has been just related, except that the last dose, twelve grains, sweated him plentifully several hours. His leg is well. This case may serve as much to shew the difference of the dose necessary in different constitutions as for any other purpose, since it is probable, that rest, proper applications, and other internal medicines, might have succeeded here equally well with the infusion.

The fourth patient is a girl, 16 years of age, and has been in the hospital a month. When she was admitted, she had a large scrophulous sore on one of her thighs, which had been troublesome to her several months, and another on the foot, with an enlargement of the bones of the foot. She has taken the infusion of Deadly Nightshade three weeks. It operated by urine considerably, and generally

C 2

purged

purged once or twice in the morning; and two or three nights it sweated her. The dose was increased to four grains. The sore on her thigh is well; that on the foot much the same as it was, and must necessarily continue so some time, as there is a piece of bone which must come away.

The fifth case is that of a young woman who came into the hospital four months ago, with a large sore on her leg, which had a tendency to mortify. She had another exceeding painful sore under her arm, and it was with great difficulty that either of them could be made to digest. After a considerable time the sores were brought into a better state. At last that under the arm healed, and the other on the leg was reduced into a narrow compass; but still there remained an obstinate small ulcer, which no application or medicine seemed to have any effect on. During the last two months, her body has been covered with a scorbutic eruption. The breaking out of this was probably the reason of the sores having grown better; but as it was constantly very troublesome to her, and appeared as bad as the most inveterate itch, 'twas

'twas necessary she should, if possible, be relieved. Most part of the time she has been troubled with a pain in her head and stomach, a lowness of spirits, and loss of appetite. Finding no advantage from any thing she took, though some of the medicines produced a gentle perspiration, she began the infusion of Deadly Nightshade. The first dose, one grain, had no effect; the second, two grains, purged her twice; the third, three grains, made her sick and giddy, and threw her into a profuse sweat. She has now taken six doses. The eruptions almost intirely disappear, except some few small ones about the arms and several upon the hands, where they form themselves into boils, with a great deal of well-digested matter in them like large pustules of the small-pox. The pain in her stomach is at present removed. She continues the medicine (c).

(c) She was directed likewise to have a blister to her back, and to be vomited on account of the pain in her head and some return of the pain in her stomach. She was soon afterwards well and discharged from the hospital. This young woman continued till lately free from the complaints which she had in the hospital, except that she has been sometimes subject to slight heats in her skin. The

The sixth, and the last patient which I shall mention at present, is a man who was brought into the hospital about a month ago, with several large wounds made on his leg by the bite of a leopard. The leg was very much inflamed and swelled, and a common symptomatic fever attended; but in ten or twelve days these symptoms went off, and the wounds were in a good state. In a few days after he was seized with a violent pain in the shoulder, arm, hand, thigh, leg, and foot, of the side opposite to the wounded side; so that he was quite unable to move those parts: Nor was he much more capable of motion in the other side, having a considerable pain in that shoulder, arm and hand. Having continued in this state four days with great heat and other feverish symptoms, he was bled (the blood very fizy) and took an infusion of one grain of the leaf of Deadly Nightshade at night, and the same the next morning. It threw him into

fore is now broke out again upon her leg, and will probably be attended with some difficulty in healing, or be liable to a return after it is healed, unless the obstructions peculiar to her sex, and with which she has been sometimes affected, can be removed.

a very

a very plentiful sweat, which continued more than two days, without taking any thing more than common diluting liquors. He was considerably easier, but his heat being still too much, and complaining of a tightness over his breast, he was bled again (the blood still very fizy) and not having had a stool he took an opening medicine. The fifth day he had no complaint but in his hands, which were both very painful, and the sweats having now ceased more than 24 hours, he took the same quantity of the infusion once again night and morning, which produced the same degree of perspiration as before for two days. He has taken only one dose since. This is the 10th day, and he is now free from any complaint, except in one wrist. The medicine never made him at all sick or giddy, nor occasioned much alteration in the quantity of his water (*d*).

Upon the whole, whether there is any specific property in this plant, either for the

(*d*) This man had a slight return of his pains, which were removed in a few days by a repetition of the same method, and he soon recovered his strength and was perfectly well.

cure or the alleviation of cancerous disorders, or whether its efficacy may be more useful in the removal of other diseases, cannot yet be determined. But from the effects which I have already seen of this plant; from considering the powers which this simple production of nature has on the common discharges of the body; and from reflecting how trifling a quantity of it, infused only, and the substance not taken, is capable of producing these great effects;—from all these considerations, I am led to imagine, that an extensive use may be made of this medicine, as a powerful promoter of most of the natural discharges of the body, exclusive of any specific properties, which by future observations may be found with certainty to reside in it.

We are now in a way to determine this; several gentlemen, induced by the trials which I have made, being desirous to prove the effects of the infusion by their own experience. In the mean time, as this celebrated society have thought the single case related in the *Bibliothèque des beaux Arts & des Sciences* to be worthy their attention, I have presumed
to

to offer the result of a more extensive use of this medicine; and thus far I can venture to assert at present, that it may be given with great safety in the manner which I have recommended for its use.

I shall only beg leave to add, that the circumstances which I have mentioned are designed to assist the endeavours of others; and if any one valuable purpose shall be answered by our enquiries, I hope I shall not want an apology for giving this early intelligence, without waiting for more facts to illustrate what has been said.

I observed in the beginning of the preceding account, that an infusion of one grain-weight of the leaf would sometimes have a very considerable effect, and that two or three grains seldom failed to increase some of the natural evacuations. As this medicine, however, like all others of great efficacy, acts very differently in different constitutions, it may not be amiss perhaps in some cases to begin with half a grain, and repeat the dose sooner, or increase the quantity of it occasionally, according as it operates and agrees, and according
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to the strength of the patient, and the nature or state of the disease. In general it should be taken at bed-time, and repeated every second or third night.

If the patient is hot and thirsty in the night, after taking the infusion, some small diluting liquor should be provided to be drank warm, in order to encourage a free discharge by perspiration or urine, and to relieve the stomach when there is a disposition to vomit.

If costiveness prevails, tho' the medicine frequently has the opposite effect, this circumstance must be particularly attended to.

In some full or sanguine constitutions, a purge and the loss of some blood may be thought necessary before the infusion is given: But as it is imagined, that no one will administer a medicine of this efficacy without some knowledge of physic, most directions of this kind will, it is presumed, be best supply'd occasionally.

As to the sort of Nightshade which should be made use of, I cannot discover any essential difference in the effects between the Garden and the Deadly Nightshade; nor do I believe

lieve it of much importance whether the leaf be fresh or dry. I have not yet tried the other species (the bitter sweet) sufficiently to speak of it with certainty, but am inclined to think, from the use I have hitherto made of it, that it partakes of the virtues of the other two. This similitude of effects in plants of very different appearances, is a circumstance as remarkable as the effects themselves are extraordinary.

To these observations I shall subjoin, as a subject of curiosity, an account of the various purposes for which the Nightshade has been formerly employed.

There are three different plants, natives of England, which are known by the name of Nightshade.

I. (1) Common, or Garden Nightshade.

This plant, tho' of late years it has fallen into neglect, was formerly used in medicine

(1) Solanum officinarum, C. B.

——— Vulgare, Park.

——— Hortense, Ger.

——— Hortense seu vulgare, J. Bauh.

——— Nigrum, Linn,

externally

externally for several diseases; (*a*) in poultices, both alone and compounded, for disorders of the eyes, head-achs, heart-burns and king's evil. Its expressed juice was also used for the same purposes, and for acrimonious defluxions and pains in the ear. In the same form it has been looked on as an excellent remedy for inflammations of the venereal kind, (*b*) and for ulcers (*c*). It has been applied to the wrists, and given in gargles, and, as it is said, with success in fevers. A liniment made of the same, compounded with houseleek and white of eggs, applied warm, has been thought of wonderful efficacy in cold tumors of the breast. The whole (*d*) plant, and a water distilled from it, is recommended in inflammations, scirrhuses, &c.

Some authors (*e*) disapprove the internal use of this plant, and Wepfer (*f*) gives an account of three children poisoned by it; yet

(*a*) Dioscor. lib. iv. c. 71.

(*b*) Raj. Hist. Plant. 673. Trag. Hist. Plant. 305.

(*c*) Cæsalpin. de Plant. 213.

(*d*) Linn. Mat. Med. sect. 94.

(*e*) Raj. loc. cit. Fuchf. Hist. Plant. 729.

(*f*) De Cicut. Aquat. 229.

Dioscorides mentions it as esculent, which seems impossible, if he meant the same plant that is now called the Garden Nightshade, as must be evident by the preceding history. Other botanical writers mention it also as used in food; but as they in general are mere transcribers from him, no stress could be laid on their testimony, if one of them (*g*), who lived in the sixteenth century, had not asserted the same thing, as it were, of his own knowledge. His words are, “A multis Nationibus estur in oleris”, and he cannot well be supposed to mistake the plant. The curious perhaps may think it worth while to enquire farther into this affair; but however this mistake, if it be a mistake, may have arisen, and however unfit this plant may be for food, yet it appears from an author (*h*) of great accuracy and knowledge in plants, that it was commonly made use of by physicians internally in many cases, as inflammations of the stomach and bowels, for heat of urine, and for the stone. The effect of it was sweating; a

(*g*) Ruellius de Nat. Stirp. lib. iii. c. 109.

(*h*) Cæsalpin. de Plant. 213.

water of it, but he does not say how obtained, being given with wormwood to the quantity of three ounces.

2. (2) Bitter Sweet, or woody Nightshade.

It does not appear that this plant is described either by Theophrastus or Dioscorides. In latter times it is frequently mentioned, and has been used externally by way of poultice to assuage pains in the breast, and to disperse tumors (*i*); internally for the dropfy, for the jaundice, for contusions and wounds, to dissolve coagulated blood, and to open obstructions in the liver and spleen. It is said to be diuretic and purgative, particularly of the bile. Linnæus, who, as he declares, has been very cautious in attributing virtues to medicines, of which he had not sufficient proof, either from his own experience, or that of credible witnesses, recommends (*k*) two oun-

(2) *Solanum scandens* seu *dulcamara*, C. B. Lin.

—— *Lignosum* seu *dulcamara*, Park.

—— *Amara dulcis*, Ger.

—— *Gycypicos* seu *amara dulcis*. Bauh.

(*i*) Raj. Hist. Plant. 671.

(*k*) Mat. Med. § 95.

ces of the stalks of it (but does not say whether by decoction or infusion) in contusions, rheumatisms, jaundice, pleurisy and asthma, as a most powerful remedy, though seldom used.

A late * Writer observes, that the efficacy of this plant in purifying the blood was unknown till Linnæus made use of the stalks: Before this time the leaves only were prescribed, and even now he says, few are acquainted with its virtues, as it is generally given in too small a dose.

3. (3) Deadly Nightshade, or Dwale. Ger.

Theophrastus describes certain plants under the name of Strychnos, one of which is supposed by some authors to be this Nightshade; but the description being very imperfect, and some of the notes not agreeing with it, it seems impossible to decide any thing about it

* J. G. Beyerstein, *Obstac. Medicin. Amænit. Academ.* vol. iii. pag. 70.

(3) *Solanum melanocerasus*, C. B.
Belladonna, Clus.
Atropa, Lin.

with certainty. The same perhaps may be said in relation to Dioscorides, and this difficulty has forced Cæsalpinus (*l*) to suppose that he has joined the description of two plants together. However, this is a point of very little consequence; since neither of those ancient authors attribute any medicinal virtues to the plant in question.

Later writers (*m*) make frequent mention of it, and give many instances of its poisonous effects; particularly upon children. Every part of this plant may be used externally, but the fresh leaves of it, bruised and applied to the breast, have been found very efficacious in cancerous humours, if we may believe the testimony of a very ingenious and candid writer (*n*) who first made the discovery. An infusion of its berries given internally operates by sweat, and has been used with great success in inflammations (*o*) and dysenteries (*p*).

(*l*) De Plantis, 213.

(*m*) Raj. Hist. Plant. 670. Bod. a Stapel. Comm. in Theophr. 1078. 2.

(*n*) Willoughby, apud Raj. Hist. Plant. 680.

(*o*) Tragus, Stirp. Hist. 305.

(*p*) Raj. Hist. Plant. Linn. Mat. Med. § 95.

Vinegar is said to be an antidote against its poisonous quality.

These extracts, which were inserted at the desire of my very valuable friend Mr. Stillingfleet, may serve to shew the character which the Nightshade had acquired formerly.

It will appear by them that many and great virtues have been attributed to this plant, though the uses of it, and its common operations upon the body, have been described with too little exactness or certainty to afford much instruction for practice.

I find likewise that the Nightshade has been recommended by other writers: (q) Juncker particularly speaks of two cases of cancers cured by it, and recommends the future use of it; but upon the whole we meet with very little satisfaction upon the subject. One notion seems to have prevailed in general, that there was some specific, or very powerful property, in Nightshade, for the cure or relief of cancerous disorders. But however strongly this notion has prevailed, it has by no means been properly determined. A modern writer,

(q) Conspect. Chirurg. pag. 314.

Dr. Lambergen, a professor of physic abroad, gave the history of a case some time ago serving to confirm this opinion. In the year 1754, he printed, as I am informed, at Groningen, an inaugural oration, to which was added an account of a cancer in a woman's breast that had been radically cured by the infusion of the Deadly Nightshade. In the *Bibliothèque des beaux arts & des sciences* for the months of January, February, and March, 1755, there is an abstract of this history. It was the latter of these which I read, and which determined me to try the effects of this plant. I shall not enter here into a detail of the particulars related by Dr. Lambergen. 'Tis sufficient to observe, that it was the united opinion of the doctor and three other Physicians, that the case related was a confirmed cancer. We are afterwards informed that the disorder was cured by an infusion of the Deadly Nightshade or *Belladonna*, and that the patient had remained perfectly free from the complaint eight years, when this account was originally printed. It is however a circumstance very extraordinary, that so
many

many years had elapsed without any other cure appearing to have been effected by the same person, and by the same medicine. It is hardly to be supposed that Dr. Lambergen had not made some other trials in an affair seemingly so important to his own reputation, as well as to the happiness of thousands. Yet there is great reason to imagine he had not. If he had repeated his experiments and they had failed, he never could have offered this case to the public afterwards; if he had succeeded again, he certainly would have confirmed his first account by the addition of other instances. It seems farther probable that he never did repeat the experiment, from his silence about the remarkable effects which the infusion is now generally found to have upon the natural evacuations of the body.

I have lately endeavoured to procure other intelligence concerning this affair, but have not yet met with any sufficiently satisfactory to be related. We shall soon however supply this want by the more certain testimony of our own experience. The medicine is now introduced into our hospitals, where its real

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uses will be publickly known; where prejudice or want of abilities will be less likely to mislead than the reliance upon any one man's judgment; and to speak of experiments in general where facts are not so liable to be misrepresented as in a more confined and private practice, for the enchancement of gain or the support of false pretensions.

I am far from being convinced that the infusion of Nightshade will cure a confirmed cancer, though it is probable that great advantages will be found from it in some cases that seem approaching to a cancerous state. Whatever be the power of the medicine in this respect, I have the satisfaction to think that success attends the use of it in some disorders, and that, in cases where it fails to cure, it will sometimes at least afford great ease and relief: nor has it been subject, as far as my practice has extended, to produce any lasting ill consequence.

P O S T S C R I P T.

THE author of the preceding observations takes this opportunity to remark, that as medicines of seemingly the same properties
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are sometimes found to act very differently in different constitutions, the same circumstances may happen in the use of the Garden and the Deadly Nightshade: One of them may in particular instances agree better and prove more effectual than the other. He desires likewise to observe, that tho' he cannot positively say there is any essential difference in the usual effects of these two plants, he is inclined to think that the Garden Nightshade may be milder in its operation than the other; at least he would in general recommend the trial of that first. Upon the whole, if neither, after a few trials of them, occasion any encrease of the natural evacuations, he would advise a discontinuance of them; as a perseverance with enlarged doses, under such circumstances, might in some constitutions probably irritate too much, and as he imagines that little good can be expected from this medicine, where it does not visibly promote some of the natural discharges of the body.

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S U P P L E M E N T
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O B S E R V A T I O N S

On the internal use of the

N I G H T S H A D E.

ALMOST four months having passed since the first publication of the preceding account of the Nightshade, it is reasonable to suppose that a more enlarged experience of its effects may have enabled me to judge with greater certainty of its uses. It might appear at least very inattentive or disingenuous intirely to pass over in silence any circumstances which may have since occurred, that relate essentially to the administration of this medicine. I shall endeavour therefore now to give such a farther account, as will I hope conduce to an advantageous use of it where there
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is a probability of success, and prevent its being employed to any injurious degree, where the disorder is not likely to be relieved by it, or where the symptoms may be aggravated by the attempt.

In the first account which I gave of the Nightshade, I endeavoured chiefly to establish the character of this medicine as a powerful promoter of most of the natural discharges of the body, leaving it to farther trials to determine, what at that time seemed doubtful, whether it had any specific property for the cure of any particular disease. I am now persuaded that there is very little reason to believe it has any specific property, that is, not any such peculiar and unaccountable power as is found to be in the bark for the cure of an ague, or in mercury for the cure of the venereal disease; but that, like many other medicines, it is to be considered chiefly as it operates in promoting the common discharges of the body: I say chiefly, because in several instances, and particularly upon the first use of the medicine, it is found to have in some degree the power of procuring sleep and easing pain. Allowing then that the

Nightshade is not endued with any distinguishable specific property, the future use of it may of course be directed with less difficulty and with more propriety; since there remain but two principal objects to be considered, namely, what its operations upon the discharges of the body are, and what complaints may indicate the giving of a medicine acting in such a manner. In the preceding account I have mentioned the effects which it commonly has upon the secretions—that a heat or warmth being diffused over the body is succeeded by a plentiful sweat, and sometimes by a gentle purging the next day—that, if a sweat does not break out, an extraordinary discharge of urine is generally the consequence, which is sometimes followed likewise by a purging—and that one or more of the natural evacuations are almost always increased by it. This account, I make no doubt, will correspond with the experiments of others as nearly as the effects of any medicine can be expected to do in different constitutions, and under different circumstances and states of health.

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Since therefore there is very little reason to believe that the Nightshade is endued with any specific property, and since it is not to be considered as relative only to one disease, but, to be regarded chiefly as it may affect the common discharges of the body; of course it is to be given discretionally like other medicines which operate by stool, perspiration, or urine, in such a manner and on such occasions as the prescriber shall judge proper. But as I have observed in my account, that in some instances this medicine had been found serviceable in particular disorders, and as I have given some cases relating to those disorders, I shall now add such other remarks as more experience and reflection have suggested to me, and which may serve more fully to determine what was there intimated.

The disorders which I have there mentioned were foul and painful ulcers, pains in particular parts of the body, and scorbutic eruptions; to which are added two cases of a cancerous nature.

In regard to the first of these, I would be understood to mean such kind of ulcers as
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been have of some continuance, and which are brought into a healing state with difficulty. If we enquire properly into the history of these cases, we shall find, that the ulcer is but one symptom of a general disorder—that the evil, the scurvy, the suppression of some natural discharge, a sudden check to, or the disappearance of, an eruption upon the skin—in short some constitutional humour in the blood, or some more recent and accidental disorder affecting the habit in general, has either preceded or attends the complaint we are speaking of. Agreeable to this observation, we find from experience, that different methods of cure are necessary to be undertaken in different constitutions: Thus, tho' we find that bleeding, moderate purging, regularity of diet, rest, and a due attention to the situation of the part disordered, will frequently have a very good effect, yet to heal the ulcer perfectly, and to keep it healed afterwards, recourse must be often had to means more appropriated to the peculiar disposition of the constitution, or to the prevailing humour in the blood at that time. But exclusive of the medicines which are directed by
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the physician on these occasions, many of which are reckoned of the alterative kind, we often observe, that some particular evacuation will not only be more useful than others, but is more agreeable to the constitutions of particular persons. Thus, where purging, vomiting, or bleeding cannot either be sufficiently repeated, or else prove ineffectual, the discharge by the skin is sometimes found beneficial; and in some instances the Nightshade has operated very favourably in this respect, even where other medicines given for the same purpose have not been of any service at all. The great quantity of urine which is sometimes discharged whilst the medicine operates profusely by sweat, may likewise be another useful circumstance towards clearing the blood of some offensive humours: Nor ought to be omitted as useless the other qualities of the medicine which it frequently has of procuring rest and easing pain, by which the digestion of some sores is greatly mended, as well as the patient relieved. But notwithstanding these repeated and uncommon evacuations may in some cases clear the blood from the less obstinate, and recent humours that affect

affect it, we find that where there is a constitutional disease, or where any habitual humour has long prevailed, the ulcer, though it may heal very readily with this medicine, will, as often happens after other methods of treatment for the like cases, be sometimes apt to break out again, or the disease to appear in some other form; since as there does not appear to be any specific virtue in the medicine, the original humour is not necessarily eradicated, because the symptoms disappear. For this reason, though the Night-shade had a very remarkable good effect in the woman's case related in the first account, by giving almost immediate ease to a very painful sore which spread over great part of the leg; though in a few days this medicine removed the pain in her head and limbs, which was so excessive as almost totally to deprive her of rest for six weeks together; though it restored the woman to the use of her limbs after she had been bedrid many months; and notwithstanding she has had a good share of health

health since; yet it now appears, that when the ulcer was just healed and a perfect cure expected, the sore remains unclosed; serving, it should seem, as an issue which nature has formed on the part, and as a necessary drain for the discharge of some constitutional humour.

Thus likewise the young woman mentioned as the fifth case, though she continued till lately free from the complaints which she had in the hospital, except that she has been sometimes subject to slight heats in her skin, has now a sore broke out upon her leg; and this probably, as was intimated in the preceding account, will be attended with difficulty in healing, or be liable to a return after it is healed, unless the obstructions peculiar to her sex, and with which she has been some time affected, can be removed.

From the frequent relapses of this sort, and from the account which I shall hereafter give of cancerous complaints, I should imagine that the woman's disorder in the cheek, is much more likely to become bad again,
than

than to remain in the state it was in when she left the hospital.

It may seem unnecessary after this, and after declaring that there does not appear to be any specific virtue in the Nightshade, to observe, that no lasting and considerable advantage can accrue from the use of it for so obstinate and so peculiar a humour as the evil.

Pains in particular parts of the body, which have been of long continuance, and are apt to return after they have been removed, do not very often admit of any other than a temporary relief from any medicine, being usually supposed owing to some general disorder in the blood, as the gout, a confirmed rheumatism, or an inveterate scurvy; but in cases less complicated, where the cause of the disease is more recent, and where repeated sweats have either been judged preferable to other evacuations, or proper to assist them, the Nightshade has proved very serviceable.

Scorbutic eruptions seem to have some resemblance with the preceding disorders, especially

pecially as they may arise from a constitutional cause, or may proceed likewise from a cause more recent and accidental. In some of these the Nightshade, which operated profusely by perspiration and urine, lessened the eruptions very much, and removed the pain in the limbs which accompanied the other complaint; and this it did after the warm bath and other means had failed: Sometimes the eruptions have quite disappeared, but they either appeared again afterwards, or some complaint of the stomach, head, &c. ensued, and the same consequence happened from the other methods that were tried in these cases. Where the disease has been of less standing, and the medicine operated readily by sweat, the benefit has been more lasting.

I shall next consider the effects which the Nightshade has had in cancerous disorders, or such as were apprehended to be of that nature; an article which I might perhaps with more propriety have begun with, as it has been the principal reason why I have hastened the publication of this second part of my account.

It

It is plain from the account which I have related of the uses to which the Nightshade has been formerly applied, that an opinion had long prevailed of this plant's being endued with some particular power for the cure of cancers. The assertions of many eminent writers leave no room to doubt of the prevalence of such a belief; yet, if the opinion had been well founded, one would have supposed that the medicine must have been brought into general practice, and the reputation of it have been established for the cure of a disease so destructive to the happiness and lives of many. But if we consider the fate of some other medicines which are now in constant use, and which are by much the most valuable of any in our possession — if we consider that mercury was in a great measure disused on account of the ill effects of it after it was first known in the cure of the venereal disease — that antimony which is now given by every body, and is supposed to be the basis of almost all our celebrated secret medicines, was forbid abroad to be used at all internally — that so excellent a medicine as the bark has met
with

with almost insuperable difficulties in being introduced into practice, is still disliked by many, and its virtues, at least till lately, very imperfectly known out of England — if we add to these considerations, the prejudice, or inattention, with which too many are apt to receive any discovery of this sort, it was not unreasonable to suspect that some virtue might be found in the plant, for the alleviation of the symptoms at least, if not for the cure, of cancers ; and in a disorder of this unhappy nature every possible means of relief demands the utmost attention. The account which Dr. Lambergen gave (authorized by the joint opinion of three other physicians) that he had radically cured a confirmed cancer in the breast, as it was the immediate occasion of my trying this medicine, was likewise a very reasonable inducement to make the experiment, though the relation of his case is not attended with every circumstance that could be desired.

The result of my experiments determined more in favour of the medicine, as an extraordinary promoter of the natural dis-

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charges

charges of the body, than as having any specific property for the cure of cancers; and therefore in my introduction to the two cancerous cases, in my observations upon Lambergen's account, and in the conclusion of the pamphlet, I have endeavoured to guard against the too hasty belief of so desirable an event; but as I have already mentioned the common operations of the medicine, and have before given my reasons for publishing an account of them, I shall proceed to give such a farther history of the effects of the Nightshade, particularly of such cases where there was an apprehension of a cancerous disposition, as will, I fear, leave little room to hope, that it has any specific property for the cure of this disease.

Elizabeth Prynne, a woman 65 years of age, living in Brick-street, near Piccadilly, was affected about eight months ago with a foreness in the back part of her throat, unattended with fever or any other complaint at that time. The foreness increased, and in three weeks was so troublesome as to occasion a difficulty of swallowing even liquids with-

out considerable pain. The pain became afterwards so acute, that the woman suffered extremely when she attempted to get down milk, broth, or any other mild and liquid nourishment: She continued in this state several weeks. She felt likewise darting pains which frequently struck up each side of her head with great violence; nor did she attempt to speak, unless urged to it by necessity, as the motion of the diseased parts on that occasion gave great pain. She had been blooded, purged, blistered, &c. and had used gargles to the throat, without finding the least advantage. When I first saw her about five months ago, she was not only in the condition just described in regard to her throat, but was so weakened by pain, want of rest and want of nourishment (being afraid to attempt swallowing often on account of the great pain it gave her) that she could not probably have lived much longer without relief.

Upon examining her throat, I discovered a very foul ulcer on the back-part of it, which extended up the side of each tonsil.

It was suspected to be venereal, and it had much the appearance of such a sore; but I was soon satisfied that this suspicion was groundless. Considering her age and weakness of body, as well as the nature of the disease, I expected little advantage would accrue from any assistance that might be offered her; but not to leave her destitute of hope, I gave her an infusion of the Garden Nightshade, which, as it had nothing sharp or disagreeable in the taste, and the dose being only a small quantity of a clear liquid, might be swallowed with less difficulty than many other medicines. She continued the use of the infusion ten or twelve days without finding the least amendment; but after that time she began to be a little easier, and in five weeks from the first use of the Nightshade, she could swallow solid food without difficulty. The sores on the tonsils healed, the ulcer on the back-part of her throat grew gradually better, and at last intirely disappeared. The pain which used to strike up each side of her head ceased as the sores in her throat grew easy, and when she
had

had recovered the power of swallowing freely, she was soon restored to her natural strength; finding in the very hot weather, when she took this medicine, little inconvenience from the use of it, though it generally sweated her plentifully every second or third night, and purged her once or twice the next day: It occasioned likewise a considerable increase of urine. The two or three first doses were attended with some sickness and giddiness; but these symptoms ceased after that time, and never disordered her again, except once or twice slightly, during the whole course. She began with an infusion of one grain of the Garden Nightshade, which she continued about three weeks at the distance before mentioned. The dose was afterwards increased to two grains, and with this quantity she went on about three months; the operation of the medicine being nearly the same all the time. About a fortnight after the sore in her throat was healed, she was seized with a violent pain in the back-part of her head, but by the use of common methods this complaint

was for a time removed, and she seemed remarkably well. Since then she had another attack of the same kind, which was removed by the same means. Except the medicines she took lately, on account of the pain in her head, she never made use of any other, either internally, or by way of application to the throat, during all the time of her taking the Nightshade. Her throat is quite clear from any visible foulness or sore at present, but she sometime feels a slight pain lower down. What the event will be, must be determined by time. If the sore returns again, it will probably be deemed a cancer: If not, and she enjoys her health as she does now, it will hardly be allowed that name (*r*).

Mrs. Symphon, at Mr. Stacy's in Rose-street, Covent-Garden, aged 62, about a year ago, without having received any hurt upon the part, felt a knob in her right breast. It was not at that time painful, but in a few

(*r*) She had a slight appearance of the complaint after this, but was soon cured, and has since been remarkably well.

months

months the swelling increased considerably, and was attended with with so much pain as to disturb her rest. When I first saw her, about four months ago, the swelling affected the whole breast, and extended to the arm-pit. In both places it was intensely hard and adhered firmly, and several ulcers appeared on the surface of the breast. She had dressed the sores with softening applications, and had sometimes been purged with salts, but without any relief. She took one grain of the Garden Nightshade infused, which put her into a moderate sweat that lasted six or seven hours: It occasioned likewise a considerable increase of urine, and purged her once the next day. She generally took the Nightshade afterwards every second or third night; the dose being increased at last to three grains. The operation of it was almost constantly the same. She never felt any head-ach, heat, giddiness, sickness, or drowsiness. Her appetite and spirits were better than they had been. She continued in this course about ten weeks without taking any other medicine: In most of this time she slept well and had

very little pain, except that now and then in the day she felt some shootings in the fores. A fullness in the parts surrounding the hardness was dispersed by this means; but the hardness itself and the fores appeared to be quite unaltered. About this time she caught cold, and had feverish complaints. She was blooded, and used other means common on such occasions; but leaving off the Nightshade, her pains returned, notwithstanding the evacuations which had been used for her fever. At her own request, she began to take the Nightshade again, which made her easier, and operated as before in moderate sweats and gentle purging; but she was soon afterwards seized with a very troublesome cough, and other bad symptoms, which proved fatal to her. She had the appearance of a mote flying sometimes before one of her eyes, but never felt any pain in either of them, nor found the least defect or alteration in her sight.

Mrs. Lang, a gentlewoman in Princes-street, near Gerrard-street, Leicester-fields, aged 57, has been afflicted with cancerous complaints in both breasts for some years.

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One of them has been long ulcerated and almost destroyed; and hardly any case can be worse than the condition of this unfortunate gentlewoman. As she had not received any alleviation of her complaints from the variety of means which had been tried for her relief, she desired to take the Nightshade. She took the Garden sort three months, a grain serving for a dose. It put her into a moderate sweat, which lasted some hours: It increased the quantity of her water, and it purged her once the day after taking it. The medicine hardly ever varied in its effects, and as it never occasioned the least inconvenience of head-ach, giddiness, sickness, or even faintness or drowsiness, or any one disagreeable consequence, she repeated it almost every night. She slept very little before she took the Nightshade, but by means of this she had good nights. This happy effect continued about nine weeks. The medicine then ceased to have any operation upon the natural evacuations. The dose was increased, but to no good purpose: It seemed rather to heat her, an effect which she never found from it before, but the leaving it off in time prevented an aggravation of
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the symptoms, if in her case that expression may be allowed. She began the use of the medicine again some time after, and found relief from it, but this good effect did not continue long.

A lady, 47 years of age, about a year and half ago, accidentally received a hurt on her left breast, and in a few days afterwards she felt a lump there of the bigness of a hen's egg; she was at that time not in a good state of health, having frequent attacks of feverish disorders. She was blooded, purged, and made use of softening applications to the part, but the swelling, attended with considerable pain, soon increased, and, not long after, appeared to be a confirmed and ulcerated cancer; the tumour being very large, the sores spreading, and the pain increasing. The other breast likewise swelled very much, became very hard and painful, and sometimes she was affected with severe pains in different parts of the body. She desired to take the Nightshade. She began with half a grain of the Garden Nightshade, which had no effect. She increased the dose gradually and carefully to seven grains; but as it failed to
increase

increase any of the natural discharges, at least having but a very slight effect that way, and as the patient was naturally costive, tho' this circumstance was as much guarded against as possible, she thought that the medicine began to heat her, and, at my request, immediately desisted from any further use of it.

A lady in the country, who had long had a cancer in one of her breasts, which had been ulcerated a considerable time, and which had sometimes been subject to bleed, resolving to try the Nightshade, applied to me four months ago for directions about taking it. She took the Deadly Nightshade near three months. Having heard but once from her during this time, I desired to know the effects of the medicine; and am informed by her, that she took it almost every night—that it generally sweated her moderately in the morning, increasing her urine slightly, and purging her two or three times every day—that her spirits were low, and her appetite grew worse—that she did not find it occasioned any giddiness; that it affected her eyes, but seldom made her sick. She increased the dose to five grains. She found

found no considerable alteration in her breast for some time after taking the Nightshade, but at last imagined the sores grew larger, the pain rather more acute, and the bleedings more frequent. I immediately desired her to desist, which I should have done much sooner, as well as have prevented her taking the medicine so often, if I had been sufficiently apprized of the circumstances just related.

About the same time I was desired, by another lady in the country, to give her directions for the use of this medicine. This lady had been troubled about two years with a very large and painful cancerous swelling in one of her breasts, which extended towards the arm-pit, and was adherent. She began with one grain of the Deadly Nightshade; but the medicine had little effect till she had taken three grains for a dose. It then operated considerably by sweat, and, as she informed me, without lowering her spirits. She was obliged afterwards to increase the dose, which generally operated more or less in the same way, though sometimes it failed. It sometimes affected her with a giddiness. She drank occasionally some Cheltenham water,

ter, which she had used before to keep her open. She continued the medicine between two and three months, except for about a fortnight, when she had a fit of the gout in her foot. The account which I received a month ago gave me no room to expect any service from this medicine, but as she was desirous to continue it, I recommended her to take it only once in 3 or 4 days, and to use the Garden Nightshade instead of the other. I am now informed, that she has sometimes since taken one sort, and sometimes the other—that she thinks the Garden Nightshade agrees best with her, but that she cannot positively say, she has received any considerable service from either.

A young woman, belonging to a gentlewoman, who lodges at Mr. Price's a tobacconist in Sherrard-street, Golden-square, had a swelling in her right breast, which she attributed to a blow that she received accidentally upon the part some months before. At the time of the accident she felt a great deal of pain, but it soon ceased, and she did not perceive any swelling till a month afterwards. She then felt a considerable fulness and hardness in the breast.

breast. When I first saw her, which was about four months ago, she had a tumour in the middle of her breast, which was almost as big as a hen's egg, and, according to her own and her friends representation, had been of that size about ten weeks. The swelling was not so intensely hard as a confirmed schirrus, but was attended with so much pain as frequently to interrupt her rest many hours in the night. The month before I saw her she had been blooded and frequently purged, but without finding the least advantage. I was desired to give her the Nightshade. She took an infusion of a grain of the Garden Nightshade, which heated her for some little time, and made her breast more painful than usual; but she soon fell into a profuse sweat, which continued several hours. It occasioned likewise a great increase of urine. She repeated the same dose two nights after, which had nearly the same effect. She felt very little pain after the second dose, and the swelling soon afterwards began to decrease. She took the Nightshade every second, third, or fourth night, about five weeks, in which time the tumour gradually lessened, and was at length perfectly

perfectly dispersed, being probably no other than a simple obstruction from the blow or bruise before mentioned, as the Nightshade did not in other cases, which might be thought similar, prove of any considerable use. She never took more than a grain and a half at a dose, and after two or three doses, felt no inconvenience whilst it operated, except that it twice made her a little sick and giddy. She remains perfectly well.

Esther Williams, aged 30, a servant living with a lady in Dean-street, Soho, about a year ago felt a lump towards the upper part of her left breast, without having received any hurt that could occasion it. It was then of the size of a large walnut, and free from pain. Ten weeks ago she applied to me. The tumour was at that time some what enlarged, and was sometimes attended with shooting pains in it, but not acute. She had been blooded and frequently purged, but found no advantage from any means that were employed for her. She took half a grain of the Garden Nightshade, which made her sick and giddy a few minutes, then threw her into a moderate sweat, increased the quantity of her water, and purged her three times the next day. The next dose
having

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having much less effect, she took a whole grain, and the dose was afterwards increased to a grain and a half. She took the medicine six weeks, generally every second or third day. In this time it sweated her three or four times slightly, but its common effects were an increase of urine, and a purging two or three times after each dose. She had generally a watering in her eyes the morning after taking the medicine, which ceased in half an hour, and never left the least inconvenience. She had not any return of the sickness or giddiness after the first dose, but she sometimes found herself drowsy an hour or two the day after taking the medicine, though at other times she was well and hearty, and felt little or no pain in her breast. Finding however that no progress was made in dissolving the hardness, I advised her to leave off the medicine; and if the pain increases, she proposes to have the tumour extirpated.

A lady about 30 years of age, having a frequent tendency to an eruption on her skin, a great difficulty of breathing upon catching the slightest cold, and being in general of a tender constitution, advised with me, three months ago,

ago, about a tumour in one of her breasts, which complaint had been preceded by considerable pain. She had taken mercurial medicines on this occasion, which had aggravated the disorder; but by pursuing a milder course, the symptoms were soon after moderated. When I saw her first she had an unequal and very hard tumour in the breast, about the size of a large walnut, attended with some pain. The lady having tried other methods without any considerable advantage, was desirous to take the Nightshade. She began with half a grain of the Garden Nightshade, but found very little effect till she had increased the dose to three grains; and even this quantity operated so imperfectly, that she increased the dose to five grains. This sweated her plentifully, and did not in the least disagree with her in other respects; but having accidentally caught cold, she was affected with her usual difficulty of breathing on such occasions, though it did not continue long. The lady went then into the country, with a determination to pursue the use of the Nightshade; but at first not meeting with any but the Deadly Nightshade, she began with that, encreasing the dose from two

grains to five ; the effects of which, as I was afterwards informed, were, drowsiness, giddiness, dryness in her throat, a heat and pain in her breast, and a general heat and restlessness ; it likewise swelled and affected her eyes so that she could not read, and at last brought on pretty strong convulsive motions, but her head kept clear, and the next day she found herself hardly at all weakened by the violence of this operation. The medicine seldom failed to sweat, and it sometimes purged a little. She had afterwards recourse to the Garden Nightshade, which was not attended with any ill effects. She increased the dose from two grains to six. The operation of the medicine varied, especially at the latter part of the course. It sometimes operated plentifully by perspiration or urine, and sometimes by both ; at other times it had no apparent effect. As it seldom purged, some opening waters were taken occasionally. From the time of beginning with the Garden Nightshade, the heat, head-ach, dryness in the throat, giddiness, and other disagreeable symptoms ceased. She continued the medicine, seemed in perfect good health in general, slept well, and felt
very

very little pain in her breast. After taking the Garden Nightshade about five weeks, she again caught cold, and was attacked with her old disorder of difficulty in breathing, attended with a fever and a violent cough. These complaints continued several days. She afterwards took the Nightshade again for about a fortnight, which did not operate quite so much as before. She was however in good health and spirits, scarcely ever felt any uneasiness from her breast, and slept well; but as the hardness in her breast was not visibly lessened, I advised a disuse of the medicine. She now does not feel any uneasiness in her breast, and is in other respects well.

Mrs. Dowding, at Mr. Laight's, in Market-street, St. James's Market, four years ago, felt, without any preceding accident, a knot about the bigness of a pea in her left breast, which was loose and not painful. In a year after it was a little increased, and attended with a slight pain. It gradually grew larger and rather more painful: but the pain was not very considerable till about a year ago. At that time the swelling possessed the whole breast, and often disturbed her rest. The

tumour was very hard and of an unequal form, but did not adhere. She had taken manna occasionally, and had been bled once a month for some time, but without finding any alteration. About three months ago she began to take the Garden Nightshade, beginning with half a grain, and increasing the dose to a grain. She took it fourteen times at the distance of two or three days between each dose. She had a slight giddiness for a few minutes with six of the doses, and was twice sick; but the common effects of the medicine were a heat which broke out into a profuse sweat, a considerable increase of urine, and a moderate purging the second day after taking it. The sweat which ran off from her in drops, generally continued 8 or 9 hours; but though at the time she took the Nightshade the weather was remarkably hot, she found her strength very little affected the day that the medicine was working, and her spirits remarkably good in the intermediate days. She observed that during the operation of the first three doses, the disordered breast did not sweat at all; but afterwards the medicine

dicine operated there as profusely as in the rest of the body. She found herself considerably easier whilst she used this medicine, but as I could not observe any visible alteration in the breast, I advised her to let me take it off, which she consented to, and appears now perfectly well.

These are all the cases that I have seen, where the Nightshade has been given in disorders of this kind, except two which I casually saw, and had no particular account of; and likewise two others who were patients in the hospital.

These last were not immediatly under my direction, but the principal circumstances that relate to them are as follow :

One of them William Hunter, 56 years of age, had a large and hard tumour on the lower lip, attended with a painful sore yielding an ichorous discharge. He begun with one grain of the Deadly Nightshade, which was increased afterwards to six grains. The medicine operated sometimes moderately by urine, very little by sweat, and sometimes it had no apparent effect at all. It occasioned a head-

ach and drowfiness, and two or three times it affected him with a dimness, so as to make it difficult for him to read. This symptom soon went off after the operation of the medicine was over. The fore was judged to look rather better, tho', I think, the amendment was very inconsiderable. After taking the medicine about a month, he was seized with a fit of the gout, a disorder he was subject to. During this illness the disease in his lip grew much worse; and he being weak, and wanting a better air, was for a time discharged from the hospital. He is lately returned much better in regard to his strength, but worse in respect to his lip. Being at this admission into the hospital under my care, I gave him two doses of the Garden Nightshade, but finding that the pain was not at all relieved by it, and having no hopes of alleviating the complaint when the medicine, as I found in the present case, did not considerably promote some of the natural discharges, I immediately desisted from giving the Nightshade any more, for fear of aggravating those symptoms which were already very bad,

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The other patient, John Musgrave, was about sixty years of age. He had a cancerous ulcer likewise on his lower lip, but it was much larger and more malignant than the other, affecting the greatest part of his lip, near a third of which it had destroyed, spreading likewise into his mouth, and under his chin, and yielding a fœtid discharge. This disorder began about a year before he came to the hospital, and lately increased very fast with great hardness, and considerable pains.

He took an infusion of Deadly Nightshade, beginning with one grain, and increasing it to seven. The medicine had not much effect upon the natural evacuations. Sometimes indeed it increased the quantity of his urine, but seldom very considerably. It occasioned a giddiness, and affected him several times with violent head-achs, and pain in his loins. In general, it heated and disordered him; and, as of course the complaint in his lip must under such circumstances be aggravated, the medicine was left off.

From the preceding cases and from others which I have heard of, where sometimes a

good effect in the beginning led into a too flattering hope of an happy event, it is, I think, evident, there is not that specific property in the Nightshade for the cure of confirmed cancers as it was hoped might have been discovered in this plant: To which must be added, that if it is not given with attention and caution, and especially if the use of it is pursued where it is found to disagree, it may aggravate the symptoms which it was designed to relieve.

In order to make the use of the medicine as advantageous as possible in cases where there is a probability of success, and to prevent any injury arising from the experiment, I shall beg leave to offer such farther remarks and directions as my own experience and the practice of others have suggested to me. Previous to these directions I must observe, that as the species of this plant, called Deadly Nightshade, has been found to be attended with troublesome symptoms, I shall enforce what I have before recommended, the use of the Garden Nightshade.

Bleeding, a purge, or a vomit, either one or all, should generally precede the use of this medicine.

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The infusion of one grain is as much as ever should be given for the first dose; and as a quarter of a grain is sometimes found to produce a very considerable effect it may be quite as well to begin in general with that quantity. The exactness of the quantity may be easily ascertained by infusing one grain of the Nightshade in four ounces of water, and dividing it afterwards into smaller doses.

The medicine should be generally given at night, as the necessary confinement in bed during the height of the perspiration and the drowsiness which sometimes ensues may be disagreeable in the day.

It seldom happens that more than one dose is proper in 24 hours; nor should in general the dose be repeated oftener than every second or third night.

If it does not operate by stool, some other medicine should be given either with the Nightshade, or in a reasonable time after it, that the body may never be costive. And this circumstance is particularly to be attended to.

No good effect, as far as I have observed, can be expected from this medicine, unless it operates

rates by perspiration, urine, or stool. If, after trying enlarged doses, the quantity of 5 or 6 grains does not produce a very considerable increase of some of these discharges, a further use of the medicine is not advisable; for tho' a larger dose might possibly have that effect, the operation of the medicine will not, I imagine, be regular enough afterwards to be serviceable.

If the symptoms seem to be aggravated after the second or third dose, a continuance of the medicine will be generally improper.

If giddiness, head-ach, or sickness continue very troublesome after the second or third dose, a perseverance in the use of the Nightshade will seldom be adviseable; tho' in some instances where this has happened the medicine has operated afterwards without any considerable inconvenience.

If the patient is hot or thirsty in the night after taking the infusion, he should drink some warm diluting liquor, in order to encourage a free discharge by perspiration and
urine,

urine, and to relieve the stomach where there is a disposition to vomit.

I must now beg leave to obviate some objections which have been made to the use of this medicine, and to mention two or three other circumstances that relate to it.

In the last edition of my account, printed six weeks after the first, I took the opportunity of making some additions which I then imagined necessary. Amongst those, in the detail of the symptoms ensuing upon the use of the Nightshade, I took notice of the head-ach, drowsiness, and the dimness of sight which affected some patients. The last of these only, at present, deserves particular consideration. This effect of the Nightshade did not occur to my observation from the first experiments, nor till some time after the publication of my account. Probably the patients who were affected by it, regarded this symptom only as a consequence of their giddiness and sickness, especially as it ceases generally with the operation of the medicine, and therefore they did not mention it to me; or if they did mention it, it was so slightly as not to make it an object of my attention.

attention. As soon as I was apprized of this effect, I took the first opportunity of making it known; and as it is a circumstance which may reasonably be thought of consequence, it undoubtedly deserves to be considered. According to my observation, this symptom has occurred much more frequently from the use of the Deadly than of the Garden Nightshade. Sometimes the patient feels only a weight and an aching pain about the eye-balls; at other times there is a watering of the eyes: Some have found a dimness, or have perceived the appearance of a cloud before their eyes, not unlike what commonly happens to people that are giddy, or ready to faint. This symptom seldom affects the patient after some repetitions of the medicine, or if it continues to do so, it is probably in a less degree; except the doses are repeated so quick after each other, that the operation of one dose is not finished before another is given, a circumstance always to be attended to. In this case it may affect the sight so as to render the patient unable to read a small print, or to do any fine work. This symptom however ceases
after

after the medicine is intirely disused; and in no one instance that I have seen or known, has it occasioned any lasting weakness in the sight. But admitting the possibility of such an accident, the argument could only hold against the continuance of the medicine where this symptom was very troublesome, in the same manner as it might be urged against the use of blisters, which often have the same effect, especially when they are made perpetual.

Another circumstance I thought necessary to mention in the last account was, the preference which I imagined the Garden Nightshade ought to have to that species of this plant called the Deadly Nightshade. In my first account I observed, as a very singular circumstance, the similarity of effects in these. I thought myself justified in the observation from the resemblance which there really is in the effects produced by them, and by some trials which I had made, attended by the apothecary of the hospital, with each sort, not only in different persons, but by alternate doses in the same person. I had reason however afterwards to think, and am now convinced

vinced, that the Garden Nightshade possesses the virtues of the other, and is milder in its operation. Being earnestly desirous that this should be known, though in contradiction to a former observation, I added a postscript to the edition just mentioned, declaring this alteration in my opinion: At the same time finding that the Nightshade was often given as an alterative, and not considered as a medicine whose uses must probably arise from its effects upon the natural discharges, at least the cases where I had seen it serviceable were attended with some effect on the discharges, I took occasion to mention, that unless, after a few trials, there was a visible increase of some of the natural evacuations, the medicine should be discontinued, as little good could be expected from it where this effect upon the secretions was not produced; and that a perseverance in it, under such circumstances, might, I imagined, sometimes irritate too much and do hurt.

It has been said that paralytic complaints have been occasioned by the use of the Nightshade, and have continued some days. It is

possible that such accidents may happen, as we see they sometimes occur in the use of other strong medicines, and as we find by several of the symptoms, especially where the Deadly Nightshade is given, that this medicine acts very powerfully upon the nerves of some people. For my own part, tho' I doubt not the information of others, I have never seen an instance of such an accident. Perhaps this may have been, in a good measure, owing to my having chiefly used the Garden, instead of the Deadly, Nightshade. I have once seen the Nightshade given in a paralytic case, where the use of it seemed to be very serviceable. A patient in the hospital (Elizabeth Wright, forty-five years of age) about three months ago was seized with a palsy which intirely deprived her of all sensation and motion on one side of her body. She had been blooded, blistered on the back, arms and legs, and had several internal medicines given her near three weeks without any considerable advantage, when she was directed to take the Nightshade. In twelve days this person was restored to her natural sensation, except at the
ends

ends of her fingers, where she felt a slight numbness; and she had a good motion of her limbs, tho' she could not exert them with so much strength as before her illness. One grain of the Garden Nightshade sweated her very plentifully, and increased the quantity of her water, without occasioning any giddiness, head-ach, or the least inconvenience. She was taken out of bed, and with some assistance walked several yards, but found a weakness in her limbs, which affected her equally on both sides. It was reasonably supposed, that the medicine had done all it was capable of, by removing the obstructions which had probably been the cause of this loss of sensation and motion, and a perseverance in the use of it might, by the great increase of perspiration, weaken and enervate her more. She therefore took medicines intended to strengthen her. She pursued this method some days, and was getting better, when she was thrown into a fever, attended with a vomiting and purging, by eating a large quantity of fruit. A fortnight after, when she was relieved from this accident, she felt a numbness

numbness in her elbow and fingers, which still continues. She has been blistered in the arm for this complaint, but without any advantage. She now walks without any assistance, has her natural feeling except a numbness at the elbow and at the ends of the fingers, and tho' she cannot yet exert much force, she has strength enough to dress herself. It was remarkable that the medicine sweated her only in the diseased side of the body, and brought a rash out which covered almost every part of that side, but did not spread at all to the other till ten or twelve days afterwards; and then it appeared there very slightly and in particular places only.

From the remarkable increase of urine and perspiration, which frequently attend the use of this medicine, it is probable that it may be sometimes employed with advantage in dropical complaints. I am the more induced to think so from its success in two of the following cases, which are all that I have known where the Nightshade has been tried in this disease.

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William

William Wood, 31 years of age, was admitted into the hospital about three months ago, for a dropfy in his belly. Two months before his admission he had made but little water, and his belly had been gradually distending. When he came into the hospital he was very much swelled, and there was a plain fluctuation of a fluid in the cavity. He was troubled likewise with a cough, a great difficulty of breathing, was emaciated in his limbs, had a very unhealthy look, and was subject to costiveness. He had taken several doses of strong purging physic before he came to the hospital, which lessened in some measure the distension of his belly for a few days after each dose, but the swelling soon returned. He was directed to take the infusion of Garden Nightshade, which he generally repeated every second or third night. One grain of the leaf had no effect, but two grains sweated him moderately, purged him twice, and occasioned him to discharge near a gallon of water the day after he took the Nightshade, and a considerable quantity in the intermediate days. His symptoms soon abated ;
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and in about a month after his admission, thinking himself quite well, though there was then a greater fullness of his belly than was natural, and being desirous of pursuing his business, which was that of a porter at a distant part of the city, he was discharged from the hospital at his own request. He came twice afterwards for some of the infusion, which he took at home. I heard nothing of him till lately, when he was admitted into the hospital for a fever, of which he afterwards died. The reason he gave for not coming to the hospital before was, that he found himself quite free from his former complaints, and had made water very freely ever since.

Elizabeth Cartwright, a woman about forty years of age, who had been tapped seventeen times in five years, was directed to take the Deadly Nightshade. She took a few doses which sweated her, and occasioned some increase of water; but the medicine disagreeing with her, and the case admitting very little expectation of advantage, she ceased taking it.

Another woman, who had been tapped three times, took the Nightshade at her own request. She took five doses of the Garden fort, either one or two grains of the leaf in each dose. It made her sweat very much, and occasioned a great discharge of urine. It occasioned likewise some degree of giddiness, and faintness. She left the hospital after this on account of some affairs which required her to go away.

I have hitherto avoided giving account of any case that was not either in some measure under my direction, or subject to my observation; but the following being in the neighbourhood of the hospital, and the Nightshade being supplied from thence, I shall add it to the others.

David Jones, a soldier in the first regiment of guards, had been troubled some time with anasarcaous swellings attended with great difficulty in breathing. He had made but little water for some time past, and at last became so bloated and swelled, that being incapable of doing his duty he was put into the regimental hospital in Petty France. After other

means had proved ineffectual for three weeks, the Garden Nightshade was given. He took seven doses of it. The first, a grain of the leaf infused, occasioned an agreeable heat all over the body, which was succeeded by a profuse sweat, a great discharge of urine, and watry stools. His breath was a little relieved the next day. At night he repeated the dose, slept well, sweated considerably and discharged a great quantity of water. The third night the effects were not so considerable, but the swelling in general was much abated. The fourth night he took two grains, and the fifth night four grains, which operated but slightly; and therefore on the sixth night he took six grains, which produced a very plentiful sweat and a great discharge of urine. As the medicine did not occasion any troublesome symptoms, he was directed on the seventh night to take eight grains. This last dose operated very plentifully by sweat and urine. He kept open all the time, but the medicine never purged him except when he had watry stools after the first dose. He was so little weakened by these evacuations, that

he generally came down stairs with the other men to be examined. He was discharged from the hospital ten days afterwards cured, and has since been remarkably hearty and well.

Thus I have endeavoured to give a faithful account, as far as has appeared to me, of the most essential circumstances relating to the use of the Nightshade.

In regard to the little success which this medicine is said to have had in general, it may be observed, that where any medicine is given in cases that common methods fail to relieve, and is administered in diseases of a different nature, in order to ascertain its uses; where the powers and operations of the medicine are but imperfectly known, and the efficacy of it is attributed to a specific quality, fewer instances of success can be expected, and more inconveniencies will probably occur than might otherwise have happened.

It may be observed likewise, that though a medicine, which is not in common use, may be employed with great propriety by many, yet the best directions for the management of it will not always be pursued: They will
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sometimes be misapplied by the negligent, and disregarded by the bold.

I must acknowledge however, that my own expectations have not been fully answered. I have already observed, that the event of some cases has disappointed my first hopes, either by the cure's proving incomplete or only temporary: I have found likewise from further experience, that the operation of the medicine is irregular, and that the use of it in some instances, if persevered in, is attended with troublesome symptoms. I should imagine therefore that though the Nightshade may with care, be tried with great safety; yet from the preceding considerations, it seems to be a medicine not so much calculated for general use, as for particular cases, where the common remedies have failed, and where this proves upon trial to be free from the principal inconveniencies which sometimes attend the use of it.

When I first offered my thoughts to the public on the Nightshade, it appeared to me to have an uncommon influence upon the natural discharges of the body: I imagined some

useful purposes might be answered by a medicine acting in such a manner; and I had seen instances of its efficacy, which encouraged me to hope for future success. I proposed these particulars to the impartial consideration and the experience of others, without presuming to ascertain its uses, or to determine, what at that time was thought doubtful, whether there was any specific property in this plant for the cure or alleviation of cancerous complaints. At the same time I proposed such directions as might, I imagined, contribute to the safe and advantageous use of this medicine, adding a caution, which has since proved not unnecessary, that the infusion of the Nightshade ought not to be given indiscriminately in every disease, but required judgment and attention in the management of it. If there was any remarkable merit in the medicine, this, I conceived was the most ready means to discover its good effects, and make the utility of it sooner and more generally known: If from experience a contrary event should happen, its ill effects would undoubtedly be as readily communicated. Upon
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the whole, I flattered myself that some salutary purposes might be answered by it; and from the account which I have given, I do not imagine the expectation was unreasonable, or that it has been intirely disappointed. The directions which I have taken the liberty to mention for the future use of the Nightshade, will not, I hope, be thought improper for the consideration of those who are not much acquainted with its operations; and I particularly wish, agreeable to what has been already recommended, that the Garden Nightshade might be preferred to the Deadly. If by a careful and judicious application of this medicine any particular disease may be removed which does not yield to common means, or if any painful complaint may occasionally be alleviated where other methods have proved ineffectual, the enquiry into the properties of the Nightshade will not have been intirely useless. At present I take this opportunity to declare, that as I have very seldom, except in the first trials of it, given the Nightshade in disorders where other means were likely to answer, so I have always forborn to persevere in the use of it where
any

any symptoms, which it occasioned, continued to be very troublesome. By this means I have sometimes been enabled to afford considerable relief, and have not in any instance, as far as my own practice has extended, produced a lasting ill consequence.



OBSERVATIONS

ON

VENEREAL COMPLAINTS:

INTENDED

To explain some Errors in the Theory
of those Disorders,

AND

To expose the false Pretences and injurious
Deceptions sometimes used in the Treat-
ment of them.

In TWO LETTERS to a SURGEON.

G 6

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ON

VENEREAL COMPLICATIONS

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To explain some Errors in the Theory

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To expose the false Notions and Misapprehensions

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of Boerhaave.

In Two Letters to a Surgeon.

G A

A
L E T T E R
T O A
S U R G E O N.

S I R,

YOU desire me to communicate to you any observations on the venereal disease which I think may be useful. I will endeavour to comply with your request, and with what I send you may be worth your perusal and attention.

It will be unnecessary to say any thing of the origin and progress of this distemper, as they are circumstances chiefly of curiosity; nor shall I methodise what I have to offer, by the distinction of sections for particular symptoms; but shall give you my thoughts freely without much order or studied regularity.

You

You observe that, having had few opportunities of practice in this disease, you have been led into errors and perplexities by relying, as you imagine, too much upon the directions of authors. I do not at all wonder at this: 'tis the misfortune of those who have the most occasion for the assistance of physical books, to be least capable of receiving benefit from them; for after reading various opinions upon the same subject, and many of them perhaps plausibly written, a good deal of experience is still necessary to determine which may be pursued with the most advantage. I imagine therefore that I may properly enough answer the purpose of your request, by making some cursory remarks upon the writers of this class. In doing this, I shall attempt only to obviate the mischiefs which may arise from what, I presume, are their principal errors; leaving the rest of their works for your consideration in the course of your practice. As to what you mention of my recommending to you particular books on this subject, I shall only propose to you one general rule: read any of them, but read with caution, without relying farther on the
opinions

opinions of others than as they strictly correspond with appearances, and your own observation of facts.

It would be tedious as well as useless to take a view of the multitude of authors who have written on the venereal disease. I shall fix therefore, if you please, upon two, whose books have been generally considered as stand-ard performances on this distemper. The two writers I mean, are our countryman Turner, and the celebrated Astruc of Paris.

I shall begin with Turner's account of a gonorrhœa; and in order to save your time as well as my own, shall, as I hinted before, remark only the particular parts which I think essentially wrong. I shall enter very early upon this task, as I presume the doctor is in an error at his setting out, I mean in his definition of a gonorrhœa. If you will consult his Syphilis you will find it is his opinion, that the discharge in a clap proceeds from ulcers in the urethra. To some it may seem of little importance to know whether the discharge is a real pus or matter flowing from ulcers in the passage, or whether it is an increased

creased quantity of the natural mucus issuing from the glands of the urethra in men, and of the urethra and vagina in women, arising from an irritation excited by the venereal taint. For my own part, I think the settling this point a very necessary circumstance to the cure; and as I look upon the latter opinion to be true, I shall endeavour to prove, that ulcers in the passage are not produced in a gonorrhœa. With this view give me leave first to mention an instance or two of some appearances that occur in other disorders, and which, on some accounts, may be deemed analogous to the discharge in a clap.

We daily see instances of persons, who from a cold have a running at the nose, which for some time is equal in quantity to what usually happens in claps. Here, however, we have no suspicions of an ulcer in the nose, whose internal surface is not unlike that of the urethra. The same may be observed from humours settling on the internal membrane of the eye-lids, from whence tho' a watry humour generally flows, yet in many instances the discharge appears purulent and
very

very considerable in quantity. Do ulcers furnish this? Upon examination you find the internal membrane of the eye-lids distended and inflamed, but no appearance of ulceration. Here then there is a considerable discharge, attended likewise with pain, another symptom of the gonorrhœa, and yet no ulceration. Several instances of this kind might be produced. What a quantity of yellow or green-coloured discharge proceeds from the lungs of many persons who never had either imposthumations or ulcers there? But to come to the parts which are principally affected in a gonorrhœa. Instances now and then happen where the venereal taint seems to have injured only the outside of the glans and the inner surface of the foreskin. You sometimes see a very large discharge from these parts, and this discharge may prove infectious to a woman who has commerce with such a person. This disorder is undoubtedly a clap, and is described as such by Astruc under the name of *Gonorrhœa spuria*. Here then the disease being situated externally, the effects of the venereal taint are plainly visible. What is the

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result

result of examination? Not any discovery of ulcers; but the discharge seems to be an increased and morbid secretion from the odoriferous glands and the neighbouring parts,

Another very convincing proof may be collected from what happens in a venereal swelling and inflammation of the testicles. This accident not unusually comes on at the height or worst state of the disease; consequently the ulcers, if there are any, must then be as bad as they can be at any time. In this state, however, we sometimes find the discharge is intirely stopped in a few hours, and instead of it the patient has a very painful swelling and inflammation of one or both testicles. Immediately upon this suppression of the discharge, the pain in making water, which was before very violent, generally ceases. What is become then of the supposed ulcers? are they healed instantaneously? or is the urine, the passage of which gave great pain before, become suddenly so mild and inoffensive as not to cause now the least disturbance? It is impossible this should be the case, since the urine in the mildest state would
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be apt to give some pain in passing over parts that are ulcerated ; and it is natural to suppose that the inflammation, which often upon these occasions affects the blood in general, should rather increase than lessen the heat and sharpness of the urine. What follows will serve to explain this affair.

The patient is blooded for this swelling and inflammation of the testicles, and cooling means being used internally as well as emollients outwardly, these symptoms are abated ; and generally, tho' not always indeed, the running appears in some degree again, attended with pain in making water. The evacuations have probably very much lessened this last complaint ; but still, as the running comes on, the pain in making water is oftentimes increased considerably, with a return of the chordee, another symptom which vanished likewise upon the late suppression of the discharge. Is it not plain from hence that there is no ulceration in these cases, and that the pain in the passage is occasioned by the flowing of the discharge, the peculiar acrimony of which irritates the parts, and produces painful sensations ?

It is surprising that this opinion of ulcers being formed in the passage should have been so long taught and believed, when there are so many apparent reasons to the contrary. It may seem needless perhaps to offer any other arguments to prove the fallacy of it; but as it has been the received opinion, and productive I imagine of many bad consequences in practice, I cannot omit two or three others to corroborate what has been already said.

There is a disease, you know, very common to women, which is sometimes reckoned difficult to be distinguished from a clap, I mean the whites, a term not always applicable to the disease; since you will frequently find in these cases not only a very large and seemingly purulent discharge, but it appears of as bad a colour and consistence as the most virulent running. Notwithstanding this, you do not upon examination find any ulcers in the vagina. Why then must there be ulcers there when a discharge directly similar in its quantity, colour, and consistence, arises from a venereal cause?

The use of bougies furnishes us with another very good reason to disbelieve the existence of
ulcers

ulcers in a gonorrhœa; at least it serves as a negative proof, by shewing that matter, or an appearance of matter, may be procured by introducing a bougie into the passage, and letting it lie there a certain time. Upon removing the bougie you generally find parts of it smeared over with a substance like matter, and (which will seem extraordinary to persons unacquainted with their use and application) this appearance will be produced in a sound as well as a diseased body. In short, whatever irritates the glands of the urethra, and makes them yield an increased quantity of their mucus, which is constantly separating to keep the passage soft and smooth and to defend it from being irritated and inflamed by the heat and salts of the urine, will most probably occasion this appearance of matter. I shall end what I have to say upon the supposed ulcers, by mentioning one circumstance more.

A great number of bodies have been opened that have died whilst they were affected with this disorder. The state of the parts, thus diseased, has been carefully examined, and the

result of such inquiries, has in general contradicted the received opinion of ulcers.

Having shown how little reason there is to suppose ulcers are formed in the urethra, 'tis unnecessary to mention all the errors into which such an opinion leads. I shall just make some remarks, however, upon the influence which it seems to have had upon the practice of doctor Turner. His general method of curing a gonorrhœa was by giving large doses of calomel mixed with some of the strong purgatives, as the pil. coch. min. or pil. ex duobus, 15 or 20 grains of the calomel to $\mathfrak{Dj}$ $\mathfrak{Zss}$ or $\mathfrak{Dij}$ of one of these pills. This dose was to be given every other day, or every day if the patient could bear it; tho' it is to be presumed that such a dose repeated every other day only would be sufficient to weaken and injure most constitutions of a moderate degree of strength. These, he says, were the purges commonly used by the surgeons of the town. 'Tis true he observes that different purges may upon some occasions be preferable; as in bilious or hectic habits he advises those of the cooler sort; but
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here he thinks it may be sometimes necessary to give xij or xv grains of calomel at night. He afterwards recommends an opiate to be taken in the evenings of the purging days, to dispose the patient to rest after the tumult raised in the blood by the preceding medicines. The necessity of an opiate for this purpose implies in some measure the impropriety of the dose, for violent purging can hardly ever be proper in a gonorrhœa, especially in the beginning; and whatever purge is strong enough to raise this commotion, is surely much better omitted. In short, tho' the doctor does not forget to give some directions relating to the urgency of some of the complaints, yet without sufficiently moderating the inflammatory symptoms caused by the acrimony of the discharge, or endeavouring to regulate the running, so that it be not too hastily forced on or too suddenly check'd; without proceeding in the cure according to the different stages of the disease, immediate recourse is had in general to large quantities of mercury, in order to destroy the venereal poison, and bring the supposed ulcers into a

state of healing. On the contrary, how often by this means may the painful symptoms be aggravated, the strength impaired, and the patient perhaps hurried into an unnecessary salivation? It appears, I believe, from what has been already said, that the doctor as well as his cotemporaries had but an imperfect idea of a gonorrhœa; and this will be seen still more if we consider the method in which he treats the swelling and inflammation of the testicles. This complaint you are sensible generally arises from a sudden suppression of the running, and is a symptom so dependant upon the management of it, that a person who treats the one improperly will not probably remove the other more judiciously.

The immediate cause of this swelling of the testicles, as has been observed, is generally attributed to a too sudden suppression of the running; but the circumstances which bring on the suppression are various and necessary to be attended to.

Strong purges, particularly of the mercurial kind, are very apt to produce this complaint: they heat and disorder the body in general,

and by their irritation force the humours too precipitately upon the urinry passage.

A full habit of body, heated by intemperance or strong exercise, disposes the constitution very much to this disorder; and in such a state the addition of a common cold may give rise to this complaint.

In short, whatever will throw a great fluxion of humours on the uretha and its secretory glands which are already inflamed, will occasion a proportionable increase of inflammation, pain, and tension; and any parts in such a state, we know, will yield but very little discharge: hence the running being in a great measure stopped or totally suppressed, the humours are probably determined to the testicles.

I must not omit another and a very common cause of this disorder, namely, balsamic and restringent medicines improperly administered either internally or by way of injection.

The symptoms of this complaint are a heat, pain, and swelling of one or both testicles, an inflammation of the scrotum, attended often with the usual symptoms of inflammatory fevers,

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It is to be supposed in such a case, that, besides the common emollient applications to soften and relax the distended, painful parts, together with a truss or some other bandage to support the weight of the swelling, immediate recourse should be had to the general methods for removing inflammatory swellings; preferring probably such particular evacuation as, according to the nature of the case, shall seem best calculated to lessen the fluxion, and derive the humours from the disordered parts.

What is it doctor Turner proposes for the removal of these symptoms? A very strong, heating purge, of pil. ex duobus and calomel: the dose to be repeated for some days, when, if the running appears again, the same is to be given at proper intervals to purge off this running. And why is this violence thought necessary? The running, it seems, is stopped, and must be forced on again. It is certainly a very rational intention to endeavour at procuring a fresh running; but this may be done by gentler means, and such as will more effectually answer the end proposed without hazarding,

hazarding, what may otherwise probably happen, an aggravation of the symptoms rather than a removal of them. It appears by the doctor's own account that this method was not always successful, tho', he says, it usually dispersed the swelling; for he immediately adds, If, notwithstanding this method of purging, the pain and fluxion still increase with inflammation threatening an abscess, you must vomit the patient with turpeth. mineral. repeated at due intervals 'till the tumour subsides, and then purge off the running. Abscesses are very uncommon terminations of these swellings when they are properly treated; tho' there is no doubt the doctor had seen such accidents, as the heating, violent purges, which he directs, would naturally enough produce a suppuration by increasing the inflammatory symptoms. As to vomits, which he proposes if the purges fail, there can be no objection to this method of evacuation in most instances; but why must they be mercurial vomits? Others will have an equal good effect, and the turpeth. mineral. which he recommends, is very apt to work roughly and uncertainly. Besides, if the mercurial particles enter

enter the course of the circulation, they may bring on a spitting, especially when mercurial purges have preceded; or, at least, they will heat and inflame the blood, which should be by every means avoided as contrary to any rational intention of cure.

You will not hesitate to own the unfitness of these directions, which are plainly founded upon wrong principles, and are almost intirely exploded now by practitioners of the best credit: indeed the doctor himself, in his comments upon Astruc, has shown a disapprobation of this as a general method, tho' he has substituted a very exceptionable one in the place of it, as will be more particularly observed hereafter.

The next article which our author mentions is the bubo; but as this complaint is much oftener owing to the more malignant species of the venereal disease than to a gonorrhœa, it will be more properly taken notice of with the symptoms of that sort.

We come then, lastly, to the disorder termed a caruncle; a complaint, which 'till within a few years seems to have been very imperfectly understood by the generality of surgeons; and, from mistaken notions of its causes, practitioners

tioners were formerly led into such attempts to cure it as generally proved unsuccessful, always painful, and sometimes fatal to the patient.

In order to give an account of this disorder, which you particularly desire, I must deviate from my first intention of examining only the opinions of Turner and Astruc; for tho' the complaint is treated of by both those writers, yet we may, I imagine, form a better idea of the disease by taking a short view of the history of it.

It was originally the opinion that the stoppages in the urethra arose from fleshy substances growing there; conformable to which idea they termed the disorder a caruncle or carnosity. I shall go no further back than to our countryman Wiseman, who gives as full an account of the complaint as any preceding writer (*a*). He describes caruncles to be little grains of loose flesh, arising in the urethra from the erosion of the venereal matter; that they gradually increase in size, unless properly treated; and not only increase, but become callous,

(*a*) 550. Folio edit,

as in time, he says, does the whole passage; and then the disorder takes the name of a carnosity.

The cure he ingenuously owns to be no easy task. He mentions two methods of extirpating these substances; by medicines to consume them, or by mere force with wax candles, probes of lead, or steel, to tear and break the fleshy substances in pieces.

If the caruncle is recent, he proposes to (b) crush it to pieces by the common wax candle; but if this method fails he then advises the use of medicated candles. Amongst the ingredients of which these are composed, are alum, red precipitate, and calcined vitriol. The end or medicated part of this candle is to be placed upon the caruncle in order to consume it; but if it cannot be passed beyond the caruncle, you are then to convey a piece of caustic thro' a canula to the caruncle, and destroy it by that means. Should it happen that the caruncle is situated far up the urethra, and you can neither pass the candle beyond it, nor introduce

the canula to reach it, you are to attempt with a leaden probe to prefs upon it, and break or tear it off.

One cannot upon this occasion help reflecting on the uncertainty of hypotheses, and how cautious a man ought to be in taking any opinion upon trust; especially where such violences, as have been just recited, are to be the consequences of the doctrine proposed. In the present case, the theory, however disagreeable in practice, appears plausible. 'Twas the settled opinion, that the running of a clap proceeded from ulcers in the urethra: it was imagined, reasonably enough upon this supposition, that loose spungy flesh might sometimes arise from these ulcers; and as these substances became larger, they in a proportionable degree might hinder the free current of the urine. The method which was pursued for relief, tho' painful and dangerous, was agreeable to the theory; that is, to break thro' and separate these fleshy substances from the internal surface of the urethra; or, if that method failed, to destroy them by corrosive medicines.

Many

Many reasons might prevent a better knowledge of this distemper formerly. The gonorrhœa was less frequent than in latter times, consequently fewer instances were likely to occur of the ill effects of it; caruncles, as they were called, were often mistaken for the stone; and as the operation for that disorder was less practised at that time, the true cause of the patient's complaint was probably never known; and what contributed much to the ignorance of practitioners in this respect, was the neglect of opening diseased bodies. Time however made a good deal of alteration in these particulars, and the complaint became more the subject of enquiry.

Dionis was, I believe, the first who published a different account of the cause of this disorder. He tells us (*c*), that the existence of excrescences in the urethra was an opinion so firmly established by his predecessors that no one presumed to dispute it; and yet, he says, upon carefully examining bodies that were said to have had this disease when they died, he could never discover any excrescence; nor ever met with a surgeon, whose authority

(*c*) 187. Operat.

might be relied on, that asserted he had seen any. The way that Dionis accounts for the obstructions is, by attributing them to the urethra having been corroded and ulcerated by the venereal matter; that the scars or cicatrices which were left after healing the ulcers, being hard and of a callous disposition, lessen the diameter of the urethra, hinder consequently the free passage of the urine, and obstruct the introduction of an instrument or a bougie, which obstruction was thought to be owing to a carnosity. There is no manner of reason to doubt the truth of Dionis's account, that, upon examination, he could not find any excrescence or caruncle: nor is it to be disputed on the other hand that he might sometimes discover hardnesses in the passage; and as it was generally imagined that the matter of a clap ulcerated the parts, it is not at all surprising these hardnesses should be imputed to the scars of former ulcers. Dionis found very little advantage, as he himself acknowledges, to result from his enquiries, the method which he proposes for the cure being nearly the same as was recommended by his predecessors. This notion of scars,

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however, became the prevailing opinion, and is still one of the many causes said by some to produce the complaint. But whatever reason inclined him, as well as several succeeding practitioners, to attribute the stoppages to this cause, the method which they took to remove them had a palpable inconsistency in the attempt. They tell you that the complaint is owing to the passage having been corroded with ulcers, and that the hard cicatrices or scars of these ulcers do in a greater or less degree stop the canal. How do they propose to remedy this evil? By destroying these hardenings with corrosive applications, which, if they really effect what is designed by them, must necessarily produce ulcers of at least as great an extent as the former were supposed to be, and of course the scars or cicatrices of these fresh ulcers must leave the parts in full as bad a state or worse than they were before.

It will be needless to mention every writer who took notice, after Dionis, of this disorder. The opinion of its cause, at least the method of cure, proceeded for a considerable

derable time in that kind of regular succession of error, which in physical matters has not unfrequently happened in other instances.

I shall pass therefore to Astruc, who distinguishes these obstacles into various kinds (*d*) ; as ulcers, caruncles, cicatrices, &c. and gives an account of several methods which had been brought into practice for the cure of them ; as by corrosive medicines ; by making an incision into the urethra to lay the obstacles in view, and after removing them by different applications, suitable to their different states, to heal up the incision ; likewise by dilating the narrow or contracted part of the urethra with tents, which, while they lay in the passage, became larger by the moisture of the parts, and opened the canal in proportion.

All these methods he disapproves, and prefers the use of rods or probes made of ductile lead. One of these, of a small size, is to be passed to the obstacle, and, if it cannot at first be introduced into the bladder, is to be put as far into the passage as you can without

(*d*) P. 309. vol. I.

giving much pain. It is to remain a few hours every day in the urethra till it can be passed freely and easily into the bladder; and then others of larger size are to be used till the passage is sufficiently dilated and opened, and the urine has a free discharge.

Le Dran, in his excellent account of the fistula in perinæo (*e*), which complaint, as he has observed, generally owes its origin to some disorder in the urethra, proposes to soften the callosities, promote a suppuration, and enlarge the canal by the following method. He directs that a piece of cat-gut be passed as far as you can into the urethra, and, being left there a certain time, it will swell by the moisture which it imbibes, and will in some degree open the passage. When cat-gut of different sizes can be readily passed into the bladder, you are then to use linen that has been dipped in melted wax and afterwards rolled upon the cat-gut in the form of a bougie; which he thinks will yield less than the simple cat-gut to the inequalities of the urethra, and therefore widen the diameter of it more effectually. To pre-

(*e*) P. 353. Operat.

vent a relapse, which he has known to happen three years after the cure seemed to be compleated, he advises that the bougie be sometimes used after the obstacles are removed.

Col de Vilars (*f*), another writer of eminence and credit, gives directions for making bougies, which will gradually and easily distend the urethra at the same time that they soften and relax the parts: with these, he says, you may cure the most obstinate or inveterate case; but observes, that, as the urethra has a disposition to contract, it would be adviseable, by way of precaution or prevention, that the bougie be used once a month after the cure.

I must now recur to our own countrymen, by whom very little was published since Wiseman, at least very little materially different from what he had observed. Turner's account is taken chiefly from Wiseman. But tho' very little was published on the disorder, yet our best practitioners were not idle in their attempts to cure it. The methods

(*f*) Vol. IV. p. 223.

which I have just related were the subjects of their experiments : The method particularly of Col de Vilars was capable of procuring remarkable advantages ; and yet the general practice was not so much benefited by it, as might have been expected. The reason of this seems deducible from the false or imperfect notions which were held concerning the causes of the obstructions. Some, imagining them owing to excrescences or caruncles, used his plain and well-formed bougie only to break through or repress these ; some attributed them to the hard scars of former ulcers, and contented themselves with overcoming and getting beyond the resistances which these were thought to occasion, without leaving the bougie long enough in the passage to soften and distend it : others however, who have long been as eminently distinguished for their knowledge and integrity as rank in their profession, discovering upon examinations of the parts neither excrescences nor cicatrices of former ulcers, but a contraction of the diameter of the canal, and sometimes hardnesses, formed their
bougies

bougies of such a consistence as to be passed along the urethra, yet pliable enough to yield to the course of the passage; and tho' sufficiently firm to distend gently and gradually, yet soft enough to continue in the urethra without creating much pain or uneasiness; procuring hereby every appearance which Daran (whom I shall speak of next) claims to be the peculiar property of his bougies, and likewise the same advantages in every respect, as general experience now abundantly testifies.

Thus had continued the state of this affair some years before Daran published his Preliminary Discourse, wherein he undertakes to give an account of this disorder. I shall, agreeable to your request, send you my opinion upon that performance, and shall examine what advantages may have arisen from it to the publick.

Many opinions you see were entertained in different times about the causes of the obstructions, nor were the real causes publickly determined when Daran wrote his book.

Some embraced one opinion, some another, and others acknowledged all the imputed causes. In this uncertainty, the clearing up of which seemed a circumstance of importance, it was to be hoped some one, after a diligent and extensive enquiry into cases of this kind, would, in a public manner, discuss the point candidly and uninfluenced by common opinions. What person, according to his own account, should seem better qualified for this task than Daran? who, as he tells the world (*g*), has always made venereal complaints, and particularly those of the urethra, his chief study. His boasted experience of (*b*) twenty years must, one would imagine, have enabled him to give this satisfaction to the public, and to have rejected with certainty and authority the methods which were recommended from mistaken notions. Abundant opportunities seem to have offered. Some patients might not apply to him till it was too late to assist them: age or accidental illness might prove fatal to others before the cure of the obstructions could be compleated; nay he acquaints

(*g*) 177. Disc. Prelimin.(*b*) P. 3.

us (i) that 200 of his patients failed of cure by their disease being complicated with some other disorder. Is it not strange that he should want curiosity to examine the real state of the parts diseased, in order to settle a point which he labours to do afterwards, chiefly from the authority of other people's opinions? The opening of dead bodies is readily enough allowed amongst the French; and, when a single part only was to be the subject of inspection, the doing it could be attended with little difficulty or trouble. We might have expected therefore, as he attributes the disorder to (k) many causes, that he would have had instances of each kind of obstruction. Thus some should have shown caruncles of different sizes and forms; others ulcers; others cicatrices; and so of the rest. Such a collection, as it would have been very satisfactory to the curious, would have been likewise a strong enforcement and confirmation of his own doctrine. On the contrary, Daran adopts at once the whole list of causes mentioned by Astruc and others.

(i) 179.

(k) 4.

It would exceed the bounds of my present design to comment upon every part of this performance ; I shall therefore only offer some specimens of this author's manner of reasoning, and make some remarks upon a few of the most interesting of his assertions.

Daran is a great advocate for the (*l*) existence of caruncles or excrescences, the reality of which he undertakes to determine. He acknowledges (*m*) that Dionis and Palfyn, two very celebrated surgeons and anatomists, declare, that, upon frequent examination of bodies who died with obstructions in the urethra, they never could discover any excrescences ; and Palfyn, he says, seems to have given this opinion after due reflection (*n*). *Monf. Petit* is mentioned upon the same occasion ; who, according to *Daran* (*o*), had more opportunities than any other man in Europe to inform himself, by dissection, of the nature of venereal complaints. *Monf. Petit* declares, that he had opened several persons in whom excrescences or cicatrices were expected to be found ; but that, on the contrary, the internal surface of the urethra

(*l*) 15. (*m*) 19. (*n*) 17. (*o*) 22.

was

was free from any such appearances. De la Faye (*p*), another very eminent surgeon, made the same examination on a great number of bodies, and with the same remark. In answer to these facts, Daran insinuates that the accounts are not true (*q*). It is possible, he says, tho' it appears very extraordinary, that in the number of bodies examined by these anatomists, there should be none who had carnosities. But, as impeaching the integrity and candour of these celebrated men might be insufficient to destroy their authority, he endeavours to invalidate their testimony by the following very extraordinary observation; viz. that as the number of those bodies which have not been examined is infinitely greater than those which have, the negative argument of the latter proves nothing.

He afterwards mentions two or three more circumstances to favour this opinion, which are as little conclusive as his other arguments; and endeavours, by the most strained construction, to make (*r*) Dionis prove the existence of caruncles, notwithstanding he had

(*p*) 19.

(*q*) 23.

(*r*) 24.

just

just before quoted him as absolutely denying them. He likewise takes notice (*f*) of one case, which, tho' he did not see it, yet he seems to rely much upon; where an excrescence shot out so far from the orifice of the urethra, that the patient was sometimes obliged to cut off part of it with his scissars. I will not deny the reality of this case; but, being at least an unusual appearance, it does not properly serve to prove a general doctrine.

Daran seems tacitly to allow, that caruncles are not often the objects of Sight, and chuses to rely chiefly on the sense of Feeling; for after bringing testimonies of authors in favour, as he imagines, of caruncles, he disclaims their assistance, and offers to prove the reality of caruncles by the Touch. Why, says he (*t*), should I call in the assistance of the dead, when the living can speak for me? I am ready to convince the most incredulous by making them feel the carnosities, so as not to leave the least doubt of their existence. I will demonstrate to them, as far as it is possible, that excrescences, quite different from

(*f*) 32.

(*t*) 30.

strictures

strictures caused by cicatrices, are formed in the urethra. You will observe here, that he first says he will convince the most incredulous so as not to leave the least doubt; yet immediately adds, that he will demonstrate to them, as far as it is possible, that there are real excrescences.

This author, tho' he imagines that (*u*) caruncles or callosities are the most frequent causes of the obstructions, yet insists that the original ulcers of the gonorrhœa, from whence these obstructions are supposed to be produced, do still remain; that the caruncles and callosities are only (*w*) incrustations which hide venereal ulcers, and that these crusts or scabs formed upon the ulcers (*x*) confine a purulent matter.

Daran as well as other authors allow, that the obstruction is not, in many instances, perceived 'till several years after its supposed cause, the gonorrhœa, has, in all appearance, been perfectly cured.

It seems very extraordinary, that ulcers should lie dormant for 10, 20, or 30 years, which he allows they do (*y*), in a part so

(*u*) 182. (*w*) 137. (*x*) 53. (*y*) 60.
extremely

extremely delicate and sensible as the urethra. That they should not grow worse all this time, or occasion an alteration in the stream of urine by lessening in some measure the diameter of the canal — that the urine should be daily passing over them without at all affecting them by its heat or sharpness — that these ulcers should be continued and maintained by venereal matter, which, in all other cases, we find very apt to spread its influence sooner, are circumstances very surprising and unaccountable, and require the strongest evidences to prove their reality.

In the beginning of my letter, I have endeavoured to prove from analogy, from an attention to the symptoms, and from the result of examining the parts after death, that ulcers in the passage are not produced in a gonorrhœa: but I will, at present, yield to the common opinion, and, supposing the urethra to be ulcerated in that distemper, let us see how this writer proves that the ulcers remain many years after the cure of the gonorrhœa has been thought perfect, without occasioning the least interruption to the current

rent of urine, or any particular sensibility in the part different from what is common.

After asserting (z) that caruncles and callosities arise from ulcers which lie concealed, he adds, (a) that they plainly exist, because in four hours, and sometimes less, his medicines bring the incrustations to a suppuration, and make the old ulcers discharge in the same manner as when the gonorrhœa was fresh contracted. Here then rests the proof of these long-dormant ulcers. He puts his bougie into the urethra, and, by keeping it there a certain time, it brings on a running like a gonorrhœa fresh contracted. The same argument might be brought to prove that almost every man has ulcers in that part; since there is hardly any bougie, if passed into the urethra and suffered to lie there the time he mentions, but will generally produce the same effect in a person never disordered with venereal or any other complaints. That this is a common symptom where the bougies have been used for stoppages in the passage, is a very known observation. Wiseman mentions (b) a flowing of matter upon the use of the

(z) 132.

(a) 133.

(b) 533. fol. edit.

candles.

candles. Le Dran, likewise, in his account of the fistula in perinæo, has the following paragraph. (c) The use of bougies often occasions a suppuration in the urethra almost like that of a gonorrhœa, which suppuration is frequently very beneficial in dissolving the callosities, and continues no longer than whilst the bougies are used.

Daran carries this affair still farther; for he not only pretends that his bougies, by their specific property, (d) actuate and put in motion the venereal poison, which has long remained inactive in the concealed ulcers; but (tho' he denies them to have any intelligent power) they will not, he says, affect any part of the urethra except it is diseased: (e) that if one of them is suffered to lie in the urethra of a person perfectly free from any complaint, there will not be the least appearance of matter upon drawing out the bougie; and yet the same bougie, put immediately into a diseased urethra, shall, when removed, be loaded with matter on those particular parts of it, which were in contract with the parts diseased. Indeed he informs the reader (f), that the

(c) 362. Operat (d) 35. (e) 35. 55. (f) 36.

trouble

trouble of making the first part of the experiment (the letting the bougies lie in the urethra of a person quite free from complaint, and expecting to see it drawn out without the least appearance of matter) is unnecessary; it being sufficient, it seems, that those parts of the bougie which were supposed to lie in contact with the obstructions, are marked particularly with matter. The truth of the affair is this: Any emplastic substance made into the form of a bougie, and suffered to lie in the urethra some hours, will irritate the glands of that part; and bringing on an increased secretion of the natural mucus, as well as an afflux of other humours, will produce a discharge or running in almost every person whether diseased or not. The quantity of the discharge is frequently different in different habits, independent of any venereal taint; and the same differences are observable in respect to the colour and consistence of the discharge. Where the bougies are used to cure obstructions in the urethra, we not only see them sometimes covered with matter, but little pieces of it are collected on particular parts of the bougie; and

generally about those parts which lay near the obstructions: the diameter of the canal being lessened in these places, and the regular course of the urethra being by that means interrupted, some of the mucus probably lodges or stagnates there. Not that this circumstance is always necessary to produce these appearances, for we sometimes find pieces of matter stick on several parts of the bougie which were not near the obstruction: and even where the bougies have been applied in a urethra perfectly free from any disorder, the same may be produced; a larger secretion being accidentally furnished in some places than in others, or those parts of the bougies lying probably in contact with some of the larger lacunæ. Yet these Daran calls the (g) suppurations of preternatural substances, which obstructed, or in part filled the urethra; and which his bougies, by their specific power, have brought away, laying open the concealed ulcers, &c. He does not stop here; for he not only tells the reader that his bougies have brought the ulcers to run, and have set at liberty the poison which lay long concealed

(g) 36.

there;

there ; but to confirm what he has advanced, he undertakes to demonstrate, that the running, thus brought on by the use of his bougies, is (*b*) malignant, or infectious. He proposes to prove this from the colour of the matter, and from the communication of the taint.

The colour of the matter, as well as the running produced by the bougies, is a circumstance which admits of great deception on the mind of the patient, but can have little influence on the judgment of those who are conversant with the venereal disease. The discharge, he says, puts on its original colour, becoming yellow or green. Daran cannot surely have given much attention to the appearances in a gonorrhœa, or have reflected on the discharges from other parts of the body upon various occasions, if he can suppose the yellow or green colour of matter to be certain indications of infection.

It was observed before, that in the disease of women, commonly termed the whites, the colour of the discharge is sometimes yellow or green. Appearances of the same

(*b*) 62.

kind we sometimes see in men, where there never was any infection.

I took notice also of the yellow or green-coloured discharge from the lungs of many persons who never had either imposthumations or ulcers in those parts.

The same is often observable in the matter let out of abscesses.

But to come to the experiment of the bougies. The discharge brought on by these in a sound person is sometimes of the same colour as is seen in claps. This proof of infection therefore does not carry any weight with it; and I believe the other, when considered, will be found as inconclusive.

He asserts, (*i*) that if a patient, who has a running brought on by the bougies, should be concerned with a woman, he will communicate infection to her; and that married men, whom he has advised to forbear commerce with their wives during this discharge, have been concerned with other women, and have infected them. How could this intelligence be procured? Was it from the man or the woman? I should suspect the evidence of

(*i*) 62.

either.

either. The man could not judge of this but from the information of the woman ; and if a man, believing himself infected, scrupulously avoids commerce with his wife, to what other woman has he recourse ? In all probability to one devoted to a promiscuous intercourse with men ; and I should think it much more likely that such a one should give a real infection to him. But whatever reasons might induce Daran to advance this, he must excuse the general belief of it till the certainty of the accident is better established ; because, at present, we find by experience that the fact appears otherwise. I must observe to you a circumstance or two more relating to this author.

A man that pretends to a secret or particular method of curing a disease, seldom allows any other man to understand it ; and generally sets up his own knowledge in this respect as infallible. All authors, (*k*) says Daran, look upon the obstructions in the urethra as incurable ; yet he gives you a quotation from Col de Vilars (*l*) where that author proposes a very rational and plain method, and tells you that it will

(*k*) 187.

(*l*) vol. 4. p. 155.

cure the most obstinate or inveterate case. Col de Vilars observes, indeed, that the urethra has a disposition to contract; and therefore advises the use of the bougie once a month, to prevent such an accident, a precaution which Daran himself, at least sometimes, thinks necessary; since (*m*) whenever the disorder is situated near the veru-montanum, which it very frequently is, he always advises a continuance of his bougies, because of the disposition which he says those parts have to contract; and yet this is very inconsistent with his general pretensions. He allows (*n*) that Col de Vilar's bougies will relax the fibres of the urethra and gradually dilate the passage, and if mercurial plaister enters their composition he allows them likewise a dissolving power, but these he denies to be all the intentions of cure: no, his bougies, by a specific (*o*) antivenereal and deterfive quality, open the concealed ulcers, cleanse and heal them; and cure the disease (*p*) radically. How happens it then, if the disease is cured by medicines specifically adapted to a peculiar poison, and cured radically,

(*m*) Obs. 6. 3^{me} partie p. 137. (*n*) 158. (*o*) 136. (*p*) 23.

that

that the parts are liable to a contraction, which will renew the symptoms of the disease, especially as the veru-montanum lies sufficiently open to the application of the bougies? Either his remedy has no specific power, or is less effectual than he would allow it to be.

In the same manner Daran intimates his own infallibility. (*q*) He talks of the infallible success of his remedy, (*r*) and that all sorts of gonorrhœas and their ill consequences are cured by him. Yet he allows (*s*) that two hundred of his patients missed their cure, by their disorder being complicated with some other disease. We should have been informed particularly what those diseases were. It is plain they were not of the venereal kind; because, (*t*) whenever he finds the cure protracted longer than ordinary, without some apparent cause, he has immediate recourse to a salivation, and a cure is effected. Are the following some of the complicated disorders which prevented the usual success? for he acquaints the reader, that ulcers in the bladder, (*u*) in the prostate gland, and seminary vesicles, will receive no advantage from his me-

(*q*) 52. (*r*) 186. (*s*) 189. (*t*) 182. (*u*) 185.

thod ; folikewife ulcers which have been of long ftanding, or of fo virulent a nature as to have caufed a great lofs of fubftance, admit of no cure.

Here at leaft then the infallibility ceafes.

In the conclufion of his Preliminary difcourfe, he declares no patient of his ever had a relapfe unlefs he laboured under a complication of difeafes : but how is it to be determined when the diforder was complicated or not? for tho' we fhould admit that his incurable cafes fail'd of fuccefs by the complication of difeafes, we can never fuppofe, if the diforders in the urethra have been radically cured, that other difeafes will renew the obftructions there. Nay, he adds immediately, that he cannot (*w*) fay the difeafe never returns, becaufe fome of his patients get frefh claps, which, he complains, they (*x*) attribute to a return of the former diforder, — chufing to facrifice his character as well as their own veracity, rather than acknowledge their incontinence. It muft rely then upon the credit of the patient and his furgeon to determine whofe account is right ; tho' the patient feems to

(*w*) 189. (*x*) 134.

have

have one circumstance strongly in his favour, and that is, the improbability of a fresh clap producing these obstructions. If the patient has had, according to Daran, excrescences or cicatrices in his urethra from claps ill treated, and if, by a specific remedy adapted to the nature of these complaints, they have been radically and absolutely cured, will the accident of a fresh clap necessarily produce fresh excrescences or cicatrices in the urethra? No more, one should imagine, than a common clap properly treated would produce the same obstructions in any indifferent person.

As to the censure some people he says pass upon him (y), that the disorders in the urethra, which he has had the treatment of, always return, it is certainly very unjust; for tho' he is erroneous in some particulars, and we know by experience that he is very far from being infallible, yet, as the bougies which he uses are of a good consistence, and probably free from corrosive ingredients, I make no doubt but, by a careful application of them, he will have the same success that other people have. After all, it must be allowed that

(y) 189.

Daran has been of service to the public ; for tho' in his book he advances wrong notions about the nature of the disorder and the requisites for the cure, yet his extraordinary pretensions to a specific remedy and his boasted infallibility, engaged the general attention ; and the boldness of his assertions becoming the object of enquiry and consideration to the profession, a method of treating these cases properly, which was before known but to a few, became in a little time universally practised.

When Daran's Preliminary discourse first appeared, many thought that there really was some powerful medical virtue in the composition of his bougies. In consequence of this opinion a variety of things, particularly mercurials, were tried to answer the same purposes which his bougies were said to do. It appeared from these experiments, that all those which were of a good form and consistence, which were free from painful and irritating ingredients, and were properly used, produced the same appearances in regard to the discharge, as well as every advantage in respect to the cure. Many, therefore, for a little time,

time, imagined themselves possessed of the specific secret; but the knowledge of the disorder and its cure becoming more general, these kind of notions soon lost their credit: and now we see the same cases cured by bougies of different compositions, the ingredients of which claim no extraordinary or secret medical virtues adapted to the supposed poison, &c.

Having given the remarks which I had to make on Turner's opinion and treatment of a gonorrhœa, and having made, I fear, too long a digression on the subject of obstructions in the urethra and Daran's discourse upon them, I shall resume my original design, and take the liberty of offering a few observations on Astruc.

No one can read this author without admiring his learning and ingenuity. His history of the venereal disease, with his account of the nature, cause and cure of it, and his abridgment of the several discourses which have been published upon the subject, contain a great deal of curious and instructive knowledge. It is however much to be lamented that

that Astruc sometimes treats the subject too systematically, and in a manner too diffusive.

In books relating to particular sciences, it should, I presume, be the author's chief endeavour to give such a plain account of his opinion, that students of the science or profession of which he treats may clearly understand, and by that means improve from his instructions. If a great many additional circumstances are thrown in which are either unnecessary or uncertain, and yet to the unexperienced are made to appear of equal importance with the most essential, the consequence must often be perplexity and confusion.

In the account which Astruc gives of the several authors who have written on the venereal disease, he condemns Turner for want of order or method in his manner of writing (z). I shall not take upon me to deny the justness of the criticism, but cannot help observing that Astruc seems to have erred by a redundancy of method, having divided and subdivided his definitions and def-

(z) P. 1052. vol. 2. edit. 2.

criptions of disorders in such a manner, as makes them sometimes appear to a practitioner rather the offspring of imagination than the result of practical observation. This is seen remarkably in his account of the confirmed pox, where he mixes so many other complaints with the venereal symptoms, that it is difficult to say when a man is not poxed: and yet I believe there are few diseases more plainly to be distinguished in general than venereal disorders are, nor hardly any one to which the body is liable that admits of a more certain cure. In this instance therefore, making the symptoms so numerous and uncertain not only confounds the unexperienced, but may encourage the groundless fears of the timorous, as well as be made subservient to the schemes of designing men, who readily improve the apprehensions of the patient to their own private interest. At present I shall more particularly consider what relates to the gonorrhœa.

In his account of a gonorrhœa Astruc makes (a) four distinct species of it in men with respect to its situation. He describes

(a) 247.

(b) 250.

likewise

likewise (*b*) three distinct species of it with respect to the cause; as proceeding from a simple inflammation — from a more violent inflammation — or depending upon the ulceration and suppuration of the parts diseased. He then adds, that as the inflammation of any part may be of four kinds, according to the species of tumour with which it is joined (agreeable to the antient division of tumours into phlegmon, erysipelas, &c.) so the same may be said of the inflammation that is the cause of a gonorrhœa; and therefore, admitting the same number of distinctions in this case, he reckons four different kinds of disease with respect to the species of (*c*) inflammation; making thus several sorts of gonorrhœas which depend upon the different seat, cause, and species of cause; and observing still farther, that each distinct kind may have different degrees with various symptoms peculiar to itself, and be capable by a mixture of these to produce many (*d*) more.

These distinctions he endeavours to support by reasoning from analogy on the inflammatory disorders of the lungs and intestines. He

(*c*) *Id.*

(*d*) *Ibid.*

after -

afterwards mentions the signs by which you are to distinguish the different causes of the gonorrhœa. Amongst these he relies chiefly upon the colour of the matter, from which a certain judgment may, (*e*) he says, be formed. Thus a clear, white, and ash-coloured running is made to denote only a simple inflammation. The same running being of a saffron-colour, yellow, or discoloured with drops of blood, shews an inflammation accompanied with an extravasation of blood. A yellowish-green, or a dark green running, mixed with matter, argues the inflammation to be attended with ulcers or a suppuration.

So likewise you are to form a conjecture of the (*f*) species of inflammation, amongst other signs, from the quantity, consistence, and acrimony of the matter: thus he describes it to be of the œdematous kind of inflammation, if the discharge is plentiful, thin and very sharp; and so of the rest, as you may see more particularly by consulting the author (*g*).

The event also of the disorder and the method of cure, are made to depend much upon these differences and distinctions(*h*).

(*e*) 259. (*f*) Id. (*g*) 259. (*h*) 261.

I am

I am far from thinking that every clap is to be cured by the same means, an impropriety in the management of these complaints which has been perhaps too common. The age, strength, and constitution of the patient, the state of disease, and other occasional circumstances, ought no doubt to be attended to; but the numerous distinctions made by Astruc must certainly in some instances rather perplex than inform.

Suppose, for example, a person not much conversant with practice relies on the great credit of Astruc, and takes him for his guide. According to this author's instructions, he will consider the colour of the running as indicative of the state of the inflammation. If the running is white, clear, or ash-coloured, he supposes there is only a simple inflammation; and thus proceeds to form his judgment of the different state of the disease from the different colours of the matter as before described.

In reality these indications are far from being certain, for you will often see a bad-coloured running with mild symptoms, and the contrary when the symptoms are troublesome.

Again,

Again, if he considers the consistence, quantity and sharpness of the running, in order to know what species of inflammation the gonorrhœa partakes of, he will find himself full as much or more at a loss than he was about the colour. Thus while he is attentive to discover and distinguish symptoms which cannot be relied on with any degree of certainty, he perplexes his mind with real trifles, tho' of seeming importance, and neglects probably the observation of obvious and plain appearances, which would have been useful indications to direct his practice.

What I have already observed of ulcers, caruncles and cicatrices, has anticipated any farther consideration of these in respect to Astruc, who is very circumstantial in his account of the nature and differences of them. I shall here therefore take my leave of this author for the present, after acknowledging, that however he may have deviated into these systematical refinements, which will be apt in some instances to mislead the unexperienced; yet it will, I imagine, be but barely doing justice to Dr. Astruc to say, that his treatise on the venereal disease contains by far a more

general knowledge of the distemper than any other work that has ever been written on the subject. I will give you no farther trouble, by adding any thing more concerning the gonorrhœa, except what relates to some particular methods of treating it.

From the accounts we have of the particular or uncommon methods recommended for the cure of a gonorrhœa, we find them in general calculated to stop the running soon after its first appearance. Among the remedies employed for this purpose have been rough preparations of mercury given internally, or certain liquors injected into the passage.

The first of these making a strong revulsion, or derivation of the humours from the parts affected, gave sometimes such a sudden check to the discharge as intirely stopped it; but the violent operations, which they frequently produced, were too much for most constitutions to bear. A salivation was another common consequence of their use, which, with their general inefficacy and uncertainty, destroyed the credit of these medicines.

Injection

Injections came hence probably more into credit, and indeed the best or what was called the regular practice in curing a clap, was till of late years so extremely disagreeable as well as hurtful to the constitution, that it is no wonder men were induced to try almost any other means rather than submit to such kind of discipline. On the contrary, the cure by injections was said to be both easy and expeditious, reasons that carried with them a very strong recommendation, and such as could not, it was natural to imagine, have failed to establish the propriety of the method. How happened it then that the boasted remedies of this sort, for there were several which were much celebrated at different times, after having gained a certain degree of reputation, should successively lose their credit? Remedies that were said to save so much time and trouble, and to give so very little interruption to men's pleasures, could hardly be abandoned from mere caprice. It should seem rather that the neglect of these particular compositions was owing to their inefficacy or to their being productive of some considerable inconveniences, circumstances which could not be

well known till they came into common use, and by that means the frequent disappointments or accidents arising from them were more the objects of general notice. In fact this was the case, and ever must be the case, where, as in the present instance, medicines are used too promiscuously and without a sufficient knowledge of or due attention to their common operations. Perhaps few remedies have in general been employed with less judgment than injections, or spoke of with less impartiality. Some people finding that discharges, which appeared to be of a bad kind, have been effectually and safely cured by injections, after other means had failed, have imputed this success to a specific power in the injected liquor, and have been induced from hence to imagine, or at least to pretend, that the cure of all claps, and in almost all states of the distemper, were to be attempted by the same method. On the contrary, others having observed frequent instances either of inefficacy, or ill effects of injections, have been disposed to reject the use of them almost intirely. Both these opinions are erroneous, and seem to have arisen not only from

from imperfect or wrong ideas concerning the nature of the disorder, but in a great measure from the want of considering the common properties of the injected liquors. In reality all injections that restrain or stop the running appear to have very little essential difference from one another than in their degree of restridency; and the advantages or disadvantages that may proceed from the use of injections seem to depend chiefly upon employing them at the time and in the state of the disease, when the running may with propriety be restrained or stopped, and in taking care that the degree of restridency in the injection be such, as will answer the purpose gradually and without any painful irritation. Amongst the several injections which have been in use those which have had mercury in their composition have been much recommended. It has been imagined probably the disease was so far local, that an application, of what was deemed the general specific, to the immediate seat of the distemper, would have a more speedy and as certain an effect as by giving mercury in the common way, and

making it pass the course of the circulation before it reached the parts diseased. But admitting that mercury, in some form or other, was necessary in the cure of claps, which is far from being in general the case, how little of its specific virtue is likely to be communicated to the parts affected by this slight manner of using it, and how easily are the effects of these injections accounted for upon the common principle of other injections, the power of restringency. The mercurials that have been recommended for this purpose are composed of quicksilver and an acid formed into different preparations by different processes. When any of these are added to a liquid in order to make the injection that is to be syringed up the passage, the nature of the fluid is altered by the acid, and that which was before a simple plain liquor, is now become a restringent one. Thus what was spoke of as a secret for these complaints, and was supposed to work its effects by a specific property to subdue the venereal taint, is in reality a common restringent, acting as such in a greater or less degree according to the quantity of mercurial preparation added to the liquor.

quor. The truth of this observation is farther confirmed by the variety of other injections, which are in use and which correspond in their effects with those of the mercurial kind: The principal ingredients in the composition of these, you will observe to be of the restraining class, such as vitriol, allum, verdigrease, bole, lapis calaminaris, &c. From this common property of restringency you will readily account for the uses that injections may serve as well as the mischiefs they may occasion; and it is found by experience, that the same advantages and the same ill consequences have, on different occasions, been produced by all of them; for as there are none of these but may be prejudicial, if employed at improper times, so any of them may often be used with safety, as well as success, when the discharge is in a condition to be stopped.

What has been said here of mercurial injections in particular is not, you will perceive, with a view to discard but to direct the use of them by obviating a mistaken notion in regard to the manner of their operation. Further, as we find in many in-

stances that medicines, seemingly of the same properties, will have a different effect, in different constitutions, so the same thing may happen in the use of injections: on this account therefore mercurial injections may be sometimes preferable to others, as occasionally others may be preferable to these; and in general, mercurial injections may at least be equally proper as they act, like the rest, by a restraining power, and may be made stronger and weaker in that respect as shall be judged necessary.

Monf. Daran, because he found with other practitioners, that restraining injections used improperly would sometimes occasion contractions or obstructions in the urethra, rejects the use of (*i*) astringents intirely. He denies (*k*) that a gleet is owing to a relaxation of the parts, and insists that the discharge is supplied by an ulcer which remains unhealed. Thus making no distinction between a gleet attended with obstructions in the passage, in which cases restraining injections would certainly be pernicious, and a gleet furnished by a fluxion of humours to the glands of the ure-

(*i*) P. vii.

(*k*) P. 41.

thra, he very injudiciously employs the same method of cure for both. Remedies of this kind, however, will certainly preserve a considerable degree of credit; for tho' the promiscuous use and misapplication of them will be productive of bad consequences and discredit particular forms or secret compositions, yet in a great many cases, where the running is in a condition to be stopped, injections, if carefully employed, will answer the purpose safely and much sooner than any other means; and in some instances, particularly where there has been a long continued fluxion of humours to the urethra, it is very difficult and almost impracticable to stop the discharge without the use of injections.

Besides the real uses of injections, there are other circumstances which not unfrequently, tho' undeservedly, add to the credit of them.

The slightest discharge, from whatever cause, is sometimes mistaken for or miscalled a venereal complaint. Thus men, who have rode long or hasty journeys, or have used violent exercises of any kind—others who have been guilty of excess in drinking, or too free an indulgence with women, will frequently

quently have a running appear which is sometimes of a bad colour, and very considerable in quantity; and if the body has been much heated, the patient may feel some kind of sensation upon making water, different from what is common. This appearance of matter, whether there is a drop only or a large quantity, is often supposed to be a clap, especially if it has been preceded by commerce with women; and as any method will generally cure these complaints very easily, injections share the credit of such performances.

I have now finished the examination which I proposed to make, as far as relates to the gonorrhœa.

In speaking of Turner, I have considered the prevailing opinion of ulcers being formed in the urethra by the venereal matter; a subject which has been disputed by others, but never, I think, sufficiently attended to. I have endeavoured likewise to explode the use of strong purges with large quantities of calomel, which were recommended by this author in his Dissertation on the venereal disease. Indeed the Doctor himself, as was before observed, has in his comments published afterwards

wards on Astruc, shown a disapprobation of this as a general method ; tho' even there he continues to advise his former manner of treating the inflammatory swelling of the testicles, in opposition to very plain and rational directions given by the writer whom he criticises. In the same comment he proposes, for the cure of a gonorrhœa, a composition of quick-silver, gum-guaiacum and pil. coch. ; a method liable to great exceptions, and which upon the whole may be said to be only less bad than the other. The operation of these pills will be found very uncertain : in many instances they will produce a spitting, and still more frequently will heat the constitution, and of course increase the inflammatory symptoms. Instead of entering thus immediately upon the use of mercurials in almost all cases, and all states of the disease alike, the cooling method usually employed in most inflammatory and painful disorders would undoubtedly be much more easy and serviceable ; and if mercury is afterwards judged necessary, it may be given then with greater advantage and fewer inconveniences.

I have next given a history of the obstructions in the urethra, and the chief methods
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which have been practised for the cure of them. From this account you will be naturally led to observe, that if the true nature of a gonorrhœa had been understood, the violence used in forcing off excrescences with wax candles, or the attempts to destroy either them or cicatrices by caustic applications, would probably never have been thought of.

Upon this subject I could not omit to mention Daran's performance, and to observe the errors which he advances concerning the causes of the obstructions, as well as the requisites to the cure and the appearances usually brought on by the use of bougies.

What I have added of injections, in order to explain the manner of their operation or wherein their power consists, will, I hope, be acceptable: the more so, as authors, who have mentioned these remedies, have contented themselves chiefly with giving positive determinations of their being useful or prejudicial, without attempting any rational account of their nature or use.

I have been equally desirous to remove the prejudices concerning the specific power of
particular

particular injections, as I was to confute the same notion about particular bougies. Indeed all such pretences, however they may serve private purposes, are hindrances to the advancement of true knowledge, by taking off men's attention from the observation of real truths, and directing their views to false objects.

The pursuit of this subject might lead into a general enquiry of false pretences to extraordinary ways of curing venereal complaints. Numerous instances would readily occur, as the venereal disease is one of the principal resources of quackery and physical imposition. The apprehensions with which most men are affected on the slightest occasions of this kind; the secrecy which is usually observed in the management of these disorders, and of course the many scenes of ignorance and deceit which pass unnoticed to the world for fear of exposing the injured party, are circumstances very favourable to that extensive branch of physic. I shall have occasion to speak of these more particularly in the prosecution of my subject, intending next to examine the methods

methods recommended for the cure of this disease in its more malignant state, the pox. At present, however, I must decline the undertaking till some other opportunity occurs; observing only, that, as you professed yourself but little acquainted with practice in this disease, I may perhaps on that account have sometimes address'd myself to you in a manner which I should not otherwise have taken the liberty to do.

I am

Yours, &c.

A SECOND
L E T T E R
T O A
S U R G E O N.

S I R,

I Shall now, agreeable to your desire, consider some circumstances relating to the treatment of the more malignant species of the venereal disease: and having here no occasion to enter into any enquiry about the nature of the distemper, I shall confine myself chiefly to some remarks immediately relative to practice. I propose, however, to proceed in some measure upon the same plan as before, by examining the opinions of Turner and Astruc.

The former of these authors sometimes confounds the symptoms of the pox with
those

those of the gonorrhœa, which makes it impracticable to treat the subject with propriety in the order he has placed it: I shall therefore consider some few particulars mention'd by him, without regarding exactly the method in which he has ranged them; and, to reduce the subject into as short a compass as possible, I will occasionally speak of Astruc under the same articles with Turner.

I shall begin with the original symptom of almost all poxes, the chancre. In the cure of this Dr. Turner recommends, for external use, some of the strongest preparations of mercury, caustic remedies, or a fumigation with cinnabar. If the two first are judged proper, they should at least be used with caution, as they may not only give a great deal of unnecessary pain, but in some constitution may probably bring on such an inflammation and such a fluxion of humours on the foreskin, as will much overbalance the benefit that can arise from their use. The pure quicksilver divided in its particles with lard is as good an application as any; nor should the efficacy of externals ever be rely'd upon in real chan-
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crous sores so as to lessen our attention to the internal remedies.

Astruc's (*l*) account of externals is not much different from Turner's, except that he makes no mention under this article of fumigations, tho' in another place (*m*) he disapproves their use in general. Fumigations however, which Turner very much extols, may now and then be used with some advantage to give a check to very virulent ulcerations, as well as dispose others to heal which are obstinate and not well situated for the application of common topics.

The internals recommended by Turner are the mercurial purges and vomits. But whatever pretence there may be for adding purging medicines to the mercury in the cure of a gonorrhœa, where evacuations are allow'd to be proper, it does not in the present case seem to be either necessary or proper. What is the design here of giving mercury? It is to introduce it into the blood, that it may pass, in the course of the circulation, to the diseased parts, and destroy the venereal poison. If the body is so open as to prevent the patient's being heated

(*l*) P. 358. v. 1. (*m*) P. 207.

by this very active medicine, 'tis generally sufficient; and this effect, if not] produced by the mercury alone, may be occasionally procured by the use of some of the mild and cooling purges. Whereas in the other method, instead of admitting the mercury readily into the course of the circulation and mixing it with the general mass to destroy the venereal poison, it is conveyed into the body together with a purge to carry it out again; preventing thus, to a certain degree at least, the purpose intended, by confining in a great measure the action of the medicine to the stomach and bowels. By this means the use of the mercury is rendered extreamly uncertain, if not ineffectual, at the same time that the patient suffers an unnecessary course of purging, which disorders and enervates him for the present, and perhaps leaves a weakness on his constitution more difficult to get rid of than the original disease. What is observed here of the cure of chancres, relates to the method recommended by Turner, when he hopes to effect it without a salivation, for both he and Astruc agree in recommending a salivation when the case proves obstinate

obstinate, or is attended with other venereal complaints.

The next symptom to be consider'd is the bubo or swelling in the groin, which often appears in a confirm'd pox, but is more frequently the immediate consequence of a chancre; being generally attended with those kind of ulcers, or happening soon after they have been seemingly, tho' imperfectly, cured.

There are two ways proposed both by Turner and Astruc for the cure of the bubo, viz. by dispersion or suppuration. In the first, mercurials are to be given in such a manner as not to salivate, unless the bubo be attended with symptoms of a confirm'd pox, and then a salivation is to be enter'd upon immediately. In the other method, when the tumour is suppurated the matter is to be discharged, the parts are to be treated with proper topics, and mercurials are to be then administer'd.

For the dispersion of the tumour, Turner, as usual, has recourse to mercurial purges and vomits: Astruc prefers some of the preparations of mercury or rather mercurial frictions, and some of the milder purges occasionally

when the mouth becomes affected. But however preferable the remedies of Astruc may be to those of Turner, his opinion is certainly to be followed with caution in the discouragement which he gives to the supuration of almost every swelling of this kind: Turner is very careful in this respect, but it is equally safe, according to Astruc's account, (*n*) to suppress these critical determinations of nature, unless the maturation is so far advanced as to render the dispersion impracticable.

The dispersion of these swellings may undoubtedly be oftentimes undertaken in slight cases, and large tumours of this kind, when matter is not formed in them, may dissolve in the course of a salivation; but from the same experience it is found that the certainty and safety can by no means be so well warranted, when the swelling is considerable and the tumour is made to subside by an alternate course of mercury and purging. Astruc (*o*) says indeed, there is no danger that the venereal infection, which is by this means mixed again with the blood, should

(*n*) P. 330.

(*o*) P. 332.

produce a pox; for tho' the venereal poison should not be corrected by the mercury given in this manner, it will not, he asserts, remain long enough in the blood to infect it, being carry'd off by purging medicines as it is sent into the blood.

This account may appear very fair in theory, and would be equally consistent with good practice, if we were possess'd of such a purging medicine as, instead of working merely upon the stomach and bowels, could be conveyed into the blood, and by a peculiar power occasionally draw from the general mass certain poisonous particles, as fast they as were introduced into it. This however not being the case, and as we find that purging does not in the least subdue the venereal poison, nor can have any other use, but as it may either prevent or moderate certain inconveniencies sometimes arising from the mercury, we must look upon the account rather as a plausible than a practical doctrine.

Swellings in the groin which occur in venereal cases, if they are considerably large, are undoubtedly efforts of nature to throw out the

poison from the constitution. So other humours are expelled by various critical swellings in several parts of the body, and the event in most cases is not unlike in proportion to the malignity of the humour to be discharged. Common swellings which form matter and admit a discharge, serve generally to throw off some offensive humour from the blood: If through a weakness in the constitution this tendency to suppuration is insufficient, or by an imprudent use of large evacuations it is destroyed, even fatal symptoms sometimes ensue, or a chronical illness is brought upon the constitution that is with difficulty removed. Thus in the venereal swellings of the groin, which are at all considerable, if they are allowed to suppurate and are treated with common care, how favourably do they generally terminate? On the other hand, when they are become considerable, and are not suffered to mature nor are dissolved by a salivation, but the cure is attempted by the alternate use of mercury and purging, how often do these tumours either return after a short disappearance? Or, what is worse, how frequently

quently, by the venereal poison being thus absorbed into the circulation, does the infection show itself in some other symptoms of still more consequence?

The phimosis and paraphimosis, in regard to their internal treatment, depend so much upon what has been already said, and are so well considered by those who speak of them as operations, that I shall not offer to trouble you on these particulars, but shall pass to the last resource for most of the bad venereal complaints, a salivation.

Turner, you find, gives an account of the method of salivating by internal means, as well as externally by the use of the mercurial ointment. The first of these he himself disapproves; and that way of raising a regular salivation is now, you are sensible, very much laid aside. Indeed the mercury given internally will in some instances serve to quicken the effects of the other, but in general the disposition it has, when given in considerable quantities, to pass through the bowels without entering properly into the course of the circulation; the griping pains and the weak-

ness it frequently occasions, and the imperfect manner in which oftentimes the blood is this way impregnated with the mercurial particles, are sufficient reasons to determine which method ought in most cases to be pursued.

Doctor Turner proceeds afterwards to give rules concerning the method of salivating by unction: and here it may seem perhaps trifling to take notice of the manner of dressing a patient under these circumstances, by wrapping his whole body in flannels a method still in use with many; nor is the confinement of the patient to his bed, and in a hot room, so frequently dispens'd with as might be. There may undoubtedly be constitutions that will bear this without considerable inconvenience, especially in cold weather, and some may possibly be benefited by an extraordinary perspiration, as that secretion ought in all to be free and open; but such a quantity of flannel covering, in every case and on every person alike, does not appear to be necessary in general practice. So very great a difference in the cloathing from
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what is common, and the confinement in a hot room, and perhaps in bed, must of course weaken the patient; and by heating the body must oftentimes aggravate the painful and inflammatory symptoms. The doctor seems likewise to observe too little difference in the degree of his salivations, directing in common a plentiful, or, what would frequently be called, a profuse salivation. In many instances it is right to carry that point of security as far as possible; but as the malignity of the disease is different in different habits, and the mercury has a much more powerful effect in some persons than in others, it will be often found unnecessary to proceed so far, as it will be always desirable to avoid such a force on the constitution when it can be safely omitted. Upon this head you will consult Dr. Astruc, who gives (*p*) a very good account both of the milder and the more severe way of raising a salivation; where you will likewise meet with ingenious explications of some of the effects of mercury, as well as useful directions in conducting these different courses.

(*p*) P. 463.

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One cannot however recommend the strict observance of this author's (q) preparatory course. Every judicious practitioner will, it is presumed, according to the state of the constitution, direct some gentle evacuations previous to the use of the mercury. As these will empty and cool the body, they will be a likely means to moderate any painful symptoms which may ensue, and the mercury will act with greater freedom in the circulation. To clean and soften the skin by the warm bath may also be proper, in order for the more easy admission of the mercurial particles when the ointment is rub'd upon it; and in some few instances it may be thought expedient to repeat the use of the bath: but you will find in Astruc that the work is very far from being finish'd here. Besides bleeding and purging, the patient is to be bathed twice a day if he can bear it, and an hour or more each time: the number of these bathings to be from ten to twenty. He is likewise to take draughts or medicated broths every morning, then bleed and purge again; and in bilious habits bathe once or

(q) P. 459.

twice

twice more, to allay the heat which this second purging may have occasioned: and all this is not done upon the pretence, as some make it, of disposing the mercury to pass afterwards by the skin, but is the usual preparation when you intend a salivation.

So again in cases where other diseases are complicated with the pox, you are first to attempt the cure of these, and then begin the preparatory course for the other.

To give one instance. If the patient has the scurvy or is inclinable to it, he is to take ptisans made with the antiscorbutic roots or herbs, together with boluses composed of medicines adapted to the same intention; also chalybeat water, and a decoction of guaiacum, &c. When the patient has persisted in this method a month or two, and the scorbutic symptoms are suppos'd to be less'n'd, he is then to go thro' the common preparatory course for a salivation. But what is to become all this time of the pocky complaints? I am afraid that while you have been concerned about the others, the venereal symptoms

symptoms have been increafing, and are become more confirm'd and malignant. Yet thefe preparatory circumftances are what Aftruc would never have omitted, except in one or two inftances that he mentions, and which very rarely happen.

The caution this celebrated author (*r*) immediately fubjoins to thefe directions may, I imagine, make moft of them unneceffary, that is, to ufe the mercury fparingly, employing it in fmall dofes and at due diftances of time. This, as he himfelf obferves, will probably prevent fudden and violent agitations in the blood, which might happen from too free a ufe of the mercury; and we may add, it is highly probable that, by purfuing the courfe, not only the venereal fymptoms will be hereby effectually relieved, but if you find no amendment of the other complaints, you will at leaft meet with no confiderable interruption from them to the principal intention, the eradicating the venereal difeafe.

I fhall trouble you with only one particular more under this article; and I mention it not

(*r*) P. 463.

merely

merely with regard to practice, but also to show how apt the most sensible of systematical writers are to run into a detail of circumstances that may serve to dress up their method rather in an agreeable than in a practical manner.

Speaking of the ulcerations of the mouth, (*/*) he says, some of them are useless and painful, and ought to be immediately suppress'd and healed; others are useful, and ought to be encouraged during the whole course of the salivation. These directions are very agreeable in theory, and what every man would wish to put in practice.

The same circumstance would be as desirable in the management of the small-pox. The eruptions about the lips, nostrils, and eyelashes, may be painful and troublesome, and therefore one would wish to get rid of them. But as in the latter instance it would be either not practicable, or at least unsafe, so in the former it is full as impracticable, and, if free from danger, might at least be liable to great inconveniences. The method of doing this

(*/*) P. 468.

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he informs you is, by touching the ulcers with an arm'd probe dip'd in a styptic or restringent mixture quicken'd with spirit of vitriol, or by using spirit of vitriol alone, washing the ulcers afterwards with something more emollient. The consequence of this might be a great deal of pain to the patient, an inflammation and swelling of the ulcerated parts, and, the flow of saliva being interrupted, a swelling of the whole face might ensue and prove very disagreeable.

I shall conclude what I have to offer on venereal complaints, by explaining some disingenuous proceedings in the management of these disorders : a subject not very agreeable in its own nature, nor very encouraging to enter upon from the success which usually attends it; for whilst credulity affects the minds of some, and unreasonable apprehensions possess the imaginations of others, there will never be wanting artifice to impose upon the weakness of the former, nor knavery to avail itself of the fears of the latter.

There is hardly any disease which furnishes such frequent opportunities for imposition as the venereal disease : not only because disorders

ders of this kind being kept private, bad practices are less liable to be exposed than in other cases, nor that the apprehensions of the patient readily receive the impressions of such delusions, but it happens too that the remedy for the distemper is favourable to the purposes of imposition.

This will appear evident from considering the different effects of mercury in the common use of it. Thus for instance, when the situation of the patient's affairs make a salivation, or even a confinement, impracticable, we find, if the mercury acts kindly in the constitution, venereal complaints are sometimes cured without much attention to common rules: when a moderate confinement is complied with, or particular care is taken to avoid catching cold, success is still more to be expected; and if the course is pursued till the mouth is made tender without bringing on a regular salivation, the present success as well as the future security will generally be greater and more to be relied on. Again, when a salivation is really intended, we often find that the mercury, instead of affecting the mouth, either does not occasion any

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visible

visible alteration in that respect, or else exerts its operation on the kidneys, bowels, or skin, increasing the quantity of urine, stools, or perspiration. Upon these occurrences in the common use of this medicine have been founded the various schemes of employing mercury in such a manner, that it should answer the purposes of cure without the inconveniences of a salivation.

With this view some practitioners, after evacuations and bathing, used the mercury in small quantities and at considerable distances of time, till they had employ'd as much or rather more of the medicine than is usually necessary to raise a salivation. As this circulated and mixed with the general mass, it was expected that, by its specific property, it would destroy the venereal poison; and that by doing it in this gradual way, it would not occasion any disturbance in the constitution, nor affect the mouth, as it generally does when used in a more hasty manner. There was the more reason to hope for such an event, from considering that the salivation was not in itself necessary to destroy or carry off the venereal poison, since the mercury, used without

out certain precautions, would produce that effect in a person of the most perfect health equally with one of the most diseased constitution. In reality this method would sometimes succeed very well, but was much more frequently liable to the following objections. In some instances the symptoms disappear'd only, without being absolutely cured. In others the symptoms would not even lose their external appearance till a more effectual course was pursued : a salivation would often happen in other cases, in spite of all endeavours to prevent it.

Another opinion advanced was, that a freer use of the mercury might be allowed without hazard of affecting the mouth, by determining the operation of the medicine to some of the common discharges of the body. Amongst these, the evacuation by purging seems to be the principal. 'Twas asserted that by the alternate use of mercury and purging, the blood might receive all the benefits of the medicine, and the poison as well as the mercury would be carried out of the body by the purging when the remedy had work'd its effect on the venereal infection.

Cures were made by this method, but many reasons prevented its becoming general. As in the preceding instance a salivation would sometimes accidentally supervene or was absolutely necessary to remove the symptoms; or even if the complaints seemed to be cured, the disease was oftentimes only withdrawn from view and not eradicated. Besides these inconveniences, the frequent purging, which was thought necessary on these occasions, was almost as disagreeable and troublesome as a fore mouth, and was infinitely more prejudicial to many constitutions by impairing the strength and weakening the digestion: and if you add to these, that very severe colics were sometimes consequences of such a course, you will not wonder that this method lost its credit.

Other practitioners imagined, that the intention proposed might be answered by increasing the quantity of perspiration or urine. Upon trial of these methods it appeared, that some of the preceeding objections, as well as others peculiar to each of them, frustrated the designs of their patrons, who, by attempt-

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ing to bring these different methods into general practice, deprived them in some measure of that share of attention afterwards which each in particular cases might have preserved.

The chief inducement for the promotion of all these schemes was to remove the grand objection against the use of mercury, its affecting the mouth; a circumstance so desirable, that no wonder it was sought after by the practitioner and encouraged by the patient: nor is it surprising that, for a certain time, speculative men of little experience and the artful adopters of novelties should find plausible reasons to support the propriety of their opinions. Numerous less likely schemes have been formed for the cure of almost every disease. But when men boldly assert that in each of these instances the safety and certainty of the method might be depended upon, and that the truth was confirmed by repeated experience; what shall we say when the facts appear generally otherwise? Shall we impute this contrariety to the warmth of these people's imagination? to their partiality for a favourite opinion? or may we not venture to think

that self-interest had sometimes a prevailing influence? There is the more reason to admit now and then of the latter construction, as these pretences are usually accompany'd with inviting assurances of the convenience and ease of the method, and an exemption from the disagreeable circumstances which a patient would wish to avoid.

The remarkable power of mercury in subduing the malignity of the venereal disease, will frequently procure success in whatever form this medicine is administered. The least valuable of its preparations will now and then appear to do wonders to those who are unacquainted with its usual effects, and will very likely gain a temporary credit where it is managed with address. Hence partly arose the reputation which, at different times, was bestowed on several nostrums of this kind. It appeared, however, afterwards, that most of these were some of the common preparations disguised, and had only the additional merit of being secrets; or else that the common preparations were mixed with some other ingredient, with a view of determining the
operation

operation of the mercury from the mouth to some of the other secretions.

It would be endless to enumerate all the compositions which have been boasted of by quacks, or recommended by those who ought to have been more cautious in their encomiums. 'Tis sufficient to observe of the once secret compositions, that, as most of them became publicly known, they lost their credit with their secrecy; and that those which continued secrets, at least such as their proprietors would not allow were discovered, are now scarce ever heard of.

At present therefore the compositions of mercury are confined by men of experience and candour to a very small number. Most of the chemical preparations (except the *mercurius calcinatus*) differ in little else than in their milder or rougher effects on the stomach and bowels, according to the different combinations of the acid with the quicksilver, without receiving any considerable alteration in the specific property of the mercury; and those compositions which act by gentler means, and are more particularly distinguished as alteratives, are to be chiefly regarded as

different methods only of dividing the particles of crude quicksilver.

Among other remedies which have been recommended for the cure of venereal complaints, diet-drinks have been used, and with a degree of credit very unequal at different times. We find in the history of the several methods of cure which have prevail'd in different ages, that the first use of mercury was very unsuccessful: not from the real inefficacy of the medicine, but from the extreme bad management of it. The unhappy or fatal consequences which ensued, made the remedy look'd upon almost as bad as the disease. In this dilemma other means were sought after. The chief substitutes for mercury were diet-drinks or decoctions of guaiacum, china root, or sarsaparilla, which were given in very large quantities a considerable time. The first of these was highly extoll'd, but lost its credit and gave place to the china root. The china root underwent the same fate, and was succeeded by the sarsaparilla, which was recommended likewise for complaints remaining after

after a course of mercurials; and the same is now in credit for these latter or secondary symptoms. But whatever good effects these compositions may have in the removal of some disorders remaining after a salivation or a course of mercurials, on which accounts they sometimes appear to be useful, we find, if they are given, unmixed with any mercurial preparation, in such recent cases as admit no doubt of their being venereal, that they do not discover any specific power to destroy the infection in that state of the disease. This must have appeared very plainly in the early management of this distemper, for the specific property of these medicines, you may conclude, must be very inconsiderable, since after a diligent and plentiful use of them, practitioners were again obliged to have recourse to their former remedy, mercury, however disagreeable at that time in its effects. The event indeed proved fortunate, for instead of using the mercury with that imprudence as before, they administer'd it with greater caution; and the more modern improvements in the management of this most valuable medicine have not only fix'd the cha-

character of its efficacy, but have render'd the inconveniences that formerly resulted from it comparatively inconsiderable. Diet-drinks, that is, diet-drinks uncompounded with mercury, are therefore very rarely given now unless on account of some complaints which affect the patient after a course of mercurials; or they are try'd sometimes where the cause of the symptoms is judged to be doubtful.

In regard to the general complaints remaining after a salivation or a plentiful use of mercury, the cause of these is frequently mistaken by the patient, who, after what he has suffer'd, is naturally enough alarm'd at every pain or unusual appearance. It will be found however that the common objects of fear upon these occasions often go away of themselves, when the strength of the patient is restored, and the natural secretions are become regular. This indeed is not always the case: the venereal disease happening in every kind of constitution, as the scrophulous, the gouty, the scorbutic, &c. it must be expected that different circumstances will sometimes necessarily occur from this natural difference
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in the habit independent of infection. For this reason, disorders which seem'd perhaps originally to have taken their rise from the venereal poison, may, by being mix'd with scrophulous or scorbutic complaints or where other dispositions prevail, be with difficulty quite removed or may be liable to return tho' the infection is absolutely eradicated. In such cases the use of mercury being laid aside, various other means have in different instances been occasionally directed with the desired success: and here the method of giving diet-drinks has been frequently recommended, and in particular cases will preserve a certain degree of credit. But besides the diet-drinks that have been in use for the purposes just recited, there have been some which had an addition of mercury to the common ingredients, and were given for the cure of venereal complaints in every state of the distemper. Astruc mentions several wherein mercury makes part of the composition, and mercury, as was before observed, will often prove successful in whatever form it is administered. It may be questioned indeed whether in some of the diet-drinks that he describes

scribes the mercurial particles are really blended with the liquor, tho' in others they certainly may, by means of the mercurial waters, such as the solutions of corrosive sublimate or of quicksilver in spirit of nitre, which Astruc, (t) observes, tho' in an unfavourable manner, to be a method with some practitioners in London and Paris(u).

Having attempted to show how the purposes of quackery may be answered by the powerful effects of mercury and the variety of its operations, and having observ'd how much the disposition and the apprehensions of mankind coincide with such designs, it will not appear surprising that men of less honesty than ingenuity should avail themselves of these advantages. It is by no means a matter of wonder that they should adopt the most trifling complaints into the number of venereal

(t) P. 169.

(u) The solution of corrosive sublimate having been brought into common use since the former publication of these observations, and the result of the experiments which have been made with this medicine having been already considered in the introduction to the present edition, any further pursuit of the subject here is now unnecessary.

disorders,

disorders, and magnify every real symptom of the disease into a circumstance of the highest importance, when they can thereby answer the double purpose of profit and an occasional reputation.

To carry on these designs with the most advantage, the least breaking of the skin about the private parts, the least pain, knot or fullness about the groins, the slightest discharge or running after strong exercise or debauch, shall be attributed to a venereal cause. In like manner every pain from the alteration of weather, especially if near the parts supposed most liable to be affected, as the nose, shins, &c; any foulness, disagreeable smell or unusual appearances in the urine, must be derived from the same unhappy source. Eruptions of almost every kind, are deemed venereal: nor can a pimple or wart, unluckily situated, escape being made the object of dread and horror to the affrighted and deluded patient.

From these and from the numerous other schemes practised in the management of venereal complaints, a variety of misfortunes are

are necessarily produced. Had the practitioner been as desirous of securing the patient's future welfare, as he was of establishing the character of some favourite theory, the effects of former disorders would not probably have re-appeared. The disease might have been intirely eradicated before it had tainted the whole constitution; nor might the consequences have been felt at a time perhaps when from some change in the patient's situation of life, the distance from proper advice, or other unfavourable circumstances, relief is very difficult to be procured.

On the other hand, if the belief of imaginary complaints had not been encouraged, many might have been freed from the most tormenting apprehensions. It would be hardly credible to relate what a number of unhappy persons languish under the most severe anxiety from imaginary symptoms of the pox. There is not in the world a set of people who are so calculated for the objects of imposition as these are. There is but one thing that you find a difficulty of making them believe, and that is, their being free from the disease; and in their pursuit after different advice they seldom

dom fail to find those who will indulge them in their fears, in order to profit themselves of such credulity. Even this deception might be pardonable, if the courses which the patient is made to undergo would contribute at all to his peace of mind; but they almost always confirm rather than lessen his unhappiness. A bad state of nerves, or a melancholy disposition, will be little benefited by the use of mercurials; and it is more probable that such rash undertakings either quite destroy the patient's life, or serve as a preparation for a mad-house.

I have now gone through what I proposed at the beginning of my first letter. I have endeavoured to point out and explain such particulars in the writers on the venereal disease, as I imagined might lead a man of little experience or too much theory into a perplexed and erroneous practice. I have attempted likewise to clear the subject from many false pretences in the management of this disorder, and have offered some general observations relative to the cure as they occasionally arose.

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A minute account of other circumstances are to be met with in books that treat of this distemper: a repetition of them here therefore would be tedious and unnecessary.

I am, Sir,

Yours, &c.



AN
ACCOUNT
OF THE
STRUCTURE of the EYE,
WITH OCCASIONAL
REMARKS on some DISORDERS
of that ORGAN,
DELIVERED IN
LECTURES
AT THE
THEATRE of SURGEONS-HALL.

TO THE
MEMBERS OF THE
ROYAL SOCIETY OF LONDON
AND THE
FELLOWS OF THE
ROYAL COLLEGE OF PHYSICIANS
IN LONDON

AN ACCOUNT
OF THE
STRUCTURE OF THE EYE,
WITH OCCASIONAL
REMARKS ON SOME DISORDERS
OF THE ORGAN,
AND
LECTURES
AT THE
THEATRE OF SURGEONS-HALL.

TO THE
MASTER, GOVERNORS,
AND
COURT of ASSISTANTS,
OF THE
INCORPORATED SOCIETY
OF
SURGEONS of LONDON.

GENTLEMEN,

THE obliging manner in which you appointed me to the office of reading these occasional lectures was esteemed by me as a mark of your regard; nor had I less reason to be satisfied with your favourable behaviour at the Theatre. Justly sensible of these civilities, I take this public opportunity of returning you my thanks.

In compiling the anatomical part of these Lectures, I endeavoured to collect the principal articles of this interesting subject, and to form such an account of the eye and eye-lids as

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DEDICATION.

might convey a clear and comprehensive idea of their structure and uses without being tediously circumstantial.

If I have succeeded in my design, as I am encouraged to hope, the trouble I took on the occasion may probably, by this publication, be useful to those who are in pursuit of the same knowledge.

I am,

GENTLEMEN,

With due regard,

Your most obedient Servant,

THOMAS GATAKER.

FIRST LECTURE.

T H E

I N T R O D U C T I O N.

TH E subject I have chosen for the following lectures, is the structure of the eye and eye-lids; a subject which, from its importance in regard to the diseases of these parts and from the difficulty of acquiring a perfect knowledge of it, will, I imagine, very properly admit of being often explained.

As the employments and the pleasures of life depend, in a great degree, upon the faculty of seeing, whatever may interrupt or destroy the use of that faculty deserves our utmost attention. Agreeable to this opinion, we find in all times, that the disorders which affected the sight were considered as objects of importance. Anatomists have taken great pains in discovering the structure of the eye; the arts of physic and surgery have been employed

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ployed to remove or alleviate the diseases of this organ; and to these assistances has been added the result of philosophical enquiries, which, by explaining the nature of vision, have pointed out the means of relief in some cases, wherein neither medicines nor manual operations avail.

With all these advantages, it may seem extraordinary to assert, that disorders of the eyes are frequently treated with far less propriety than many other complaints of a much less interesting nature.

May I be allowed here to mention some of the reasons which induce me to form this opinion?

If we look into the accounts given of the diseases of the eyes, we shall find, that most authors, who have written at large or professedly upon this subject, seem fond of making numerous distinctions of the complaints, and of bestowing particular appellations upon them; multiplying them by this means into such an useless and perplexing variety, that the disorders of the eyes and eye-lids are made by some writers almost equal to all the other distempers which ever affected the human body.

body. But whatever indulgences of this sort a creative fancy, or a motive less justifiable may induce a writer to take, it ought to be considered, that all distinctions and subdivisions upon these occasions, which are not essentially useful, are in reality prejudicial: they load the memory, and confound the judgment of the unexperienced, and by filling the mind with false and trifling ideas, they prevent in some degree the more plain and necessary circumstances from being properly attended to. In the treatment of tumours formed upon the eye-lids, of what consequence can it be to know, whether any of them resemble a barley-corn, a gravel-stone, or a hail-stone? In the description of some disorders of the eye itself, what an unnecessary and perplexing trouble must it be to determine the figure and size of certain appearances? as whether they are formed like the nail of a man's hand, or like the wing of a bird? or whether they resemble a grape-stone, a small apple, the head of a nail, or the head of a fly? Yet such kind of distinctions are to be met with in writers of the greatest eminence.

Another circumstance to which the want of success in these cases seems to be often owing, is, that they are frequently of so complicated a nature as to be incapable of relief, without the united assistance of physic and surgery. Upon such occasions, if a practitioner is unskilled in either of those professions, and wants opportunity or inclination to procure any additional help, the patient must necessarily lose part of that benefit which the circumstances of his case would have allowed. The same disadvantage indeed may prevail more or less in the treatment of complaints incident to some other parts of the body; but here the observation serves at least to account for the little advantage attending the general practice of oculists. The merit of most practitioners of this class consists chiefly in knowing the anatomy of the eye, and in a dexterous performance of particular operations: In respect to the more general part of physical knowledge, as they rarely have much real pretence to this, so their conduct is seldom ingenuous enough to make them
desire

desire the advantage of such knowledge from those who possess it.

To the reasons already assigned may be added the following one, which relates more immediately than the others to the business of the present lectures. Some practitioners may not have that thorough knowledge in the structure of the eye, as to enable them in all cases to treat the several disorders of this organ with that judgment and propriety with which they would execute many other parts of their profession. The study of anatomy, it must be owned, has of late years been very much cultivated, and the methods of teaching it have been much improved: but notwithstanding the progress which many students make in this very useful branch of physical education, many of those who attend anatomical courses cannot, I conceive, be reasonably expected to receive from thence all the benefit that could be wished. The time and opportunities which they are allowed for this improvement, are very often unequal to the design. A multiplicity of things are to be learnt; many of

them are very minute; and it is extremely difficult to comprehend them perfectly, and to fix them all in the memory from one or two transient views, though accompanied with the most exact and ingenious descriptions. A moderate share of knowledge may be acquired by this means in the gross anatomy, but when the finer organs of the body become the objects of attention, greater difficulties occur: repeated examinations and explanations are then necessary, in order to understand perfectly the structure and uses of these delicate parts, and to impress a lasting idea of them upon the mind. Shall I assert too much in saying, that the want of these opportunities of improvement, by repeated inspection and explanations of the parts, is not so well supplied by books as the subject seems capable of? For though there is very little known in anatomy that has not been given to the public, yet the manner in which this knowledge has been communicated, makes the acquisition of it in some instances very difficult to persons who are little acquainted with the subject. Thus, in respect to the structure of the eye,

we find some writers have been so concise and imperfect in certain articles, as by no means to answer the full intention of such descriptions: others have been more elaborate and exact, and very much deserve our acknowledgments and attention; but in some particulars, I presume, are more diffuse and circumstantial than is generally necessary. The account is also frequently complicated with critical discussions; perplexed, like most other articles in anatomy, with an useless multiplication of names and distinctions; and when particular parts of the eye are described, as is often done, among other things that have not any immediate connection with it, there is not that methodical arrangement of the several parts which leads best to a regular view of the whole.

Though unequal, I fear, to the task of removing every difficulty from the subject, I shall endeavour, at least, that the following lectures may be as little liable as possible to the objections which I have taken the liberty of making in the preceeding paragraph.

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The substance of these lectures will consist, as was before intimated, of a description of the eye and eye-lids; to which will be occasionally added some few remarks relating to the diseases of these parts, and an explanation of the nature and uses of eye-waters, ointments and liniments for the eyes,

Description of the Parts.

T H E E Y E - B R O W S.

PREVIOUS to the description of those parts which more immediately and principally constitute the organ of sight, it may be proper to say a few words on a neighbouring part, the eye-brow.

The eye-brows are raised a little above the even surface of the forehead, by the thickness of the adipous membrane which lies underneath them, and by the shape of the frontal bone in that part. The form and substance of the eye-brows are in general too well known to require any particular description: In different persons they have indeed some peculiarities in regard to their form, and likewise to their size and colour; but these differences, though they often relate essentially to the beauty and expression of the countenance, are not the proper objects of the present account.

The eye-brows admit of two motions, depression and elevation. The first of these is performed

performed by a muscle peculiar to the eye-brow, and is termed depressor or corrugator supercilii. This muscle is adherent to, and covered by the inferior portion of the frontal muscle, of which it is reckoned by some to be an elongation. It takes its origin in the great angle of the eye, from the superior part of the nasal bone, and running obliquely upwards, is inserted tendinous into the skin of the brow.

The use of this muscle, when it acts singly, is to move its respective eye-brow downwards; but when both these muscles act together, the brows are drawn nearer to one another at the same time that they are depressed. In this action, the skin that covers the lower part of the forehead between the eye-brows, and that which covers the upper part of the nose, is drawn into wrinkles of different directions, as is particularly seen in frowning. The eye-lids are likewise brought closer by this action, and the eyes, it is supposed, are thereby in some degree occasionally defended from dust or other small
bodies

bodies floating in the air, as well as from the glare of a very strong light.

The elevation of the eye-brows is performed by the frontal muscles, whose fleshy fibres cover the anterior portion of the frontal bone, and are partly inserted into the skin of the brows. When these muscles contract, they draw up the eye-brows, and at the same time wrinkle the skin of the forehead and move the scalp.

The eye-brows receive blood-vessels from the temporal and frontal arteries; and nerves from a branch of the fifth pair of nerves. This branch, accompanied with an artery, proceeding from the internal carotid artery, runs along the periosteum lining the socket of the eye, and passing through the superciliary hole or notch of the frontal bone, is partly bestowed upon the eye-brow and its muscles.

In respect to the general uses of the eye-brows, they are said to intercept the rays of strong light falling in some oblique directions from above; but though probably they are seldom of much service on this account, they are certainly very useful in preventing rain, sweat,

sweat, or other moisture from running immediately off the forehead into the eyes: this they do, by directing the course of such moisture either along the sides of the nose, or down the temples.

It might seem proper likewise in this place, as a preliminary article to the following description, to give some account of the orbit or bony socket, in which the greatest part of the organ of sight is contained: but as the general form and the general use of this bony cavity are well known, and as several bones contribute to the formation of it, which are subservient likewise to other purposes, a regular description of it here will be omitted. In the course of the following account, different parts of the socket will necessarily be mentioned, and whatever relates in this respect essentially to explaining the present subject, shall be occasionally observed. The next parts to be considered therefore are the eye-lids.

THE EYE-LIDS.

THE eye-lids are connected to the circumference of the socket by the tunica conjunctiva, which will be particularly described hereafter with the coats of the eye. It is necessary, however, to observe here in general of the tunica conjunctiva, that it is a very smooth and fine membrane, which lines the internal surface of the eye-lids, and from the edge of the socket, to which it adheres all round, is reflected upon and covers the anterior half of the globe of the eye.

The eye-lids are composed of the common teguments, a cartilage called tarsus, and an internal membrane. They have two angles or corners, one the small or external, the other the large or internal angle. The form of each eye-lid is that of a segment or portion of a circle, and in regard to the eye is such, that when both eye-lids are shut they make a uniform arch, adapted to the convexity of the eye, and in contact with it: but in regard to one another when shut, their edges are so contrived, that they leave a sort of groove or channel between them, which

is narrow towards the outer angle, and wider towards the inner, and serves to conduct the tears as they come from the upper part of the eye, to what are called the lacrymal points. The margin of each eye-lid being of considerable thickness, is divided into the outer and inner edge. It is the outer edge only of each lid that is supposed to join when the eye-lids are shut; the inner edge being formed oblique or slanting, makes the groove or channel just mentioned for the passage of the tears to the lacrymal points.

The outer edge of each eye-lid is furnished with a row of hairs. These hairs are designed to prevent dust or other small bodies flying in the air, from being admitted to the ball of the eye, by the immediate warning which they give to shut the eye-lids when any such bodies touch them. They serve likewise in some measure to defend the eyes against the impressions of very strong light. The loss of these hairs, which happens sometime from disorders in the lids, shews the utility of them in their natural state and situation. The eye-lids, in such cases, are often disagreeably irritated, even by the common light,
and

and are kept almost in constant motion, either on that account, or to prevent dust or other small substances from being admitted and lodging upon the eye.

On the internal edge of each lid is a row of small holes, which are the excretory ducts of what are termed the ciliary glands. These glands, which are likewise distinguished by the name of Meibomius's glands, appear of a whitish colour, and are situated on the internal surface of the eye-lids, immediately under the tunica conjunctiva. Their ducts which are extremely short, open at the internal edge of each lid, and when squeezed, yield a kind of oily or unctuous matter. This matter is supposed to be of use in preventing the attrition of the eye-lids from their frequent motion; and by keeping their edges moist and soft, it serves in a great degree to hinder them from being inflamed and excoriated, and from adhering to one another.

Under the external teguments of the eye-lids is the thin cartilage, called tarsus, which forms the chief part of the edge of each lid. The tarsus of each lid is different in respect

to its breadth and figure. In the lower lid it is narrow, and nearly of an equal breadth all along; in the upper lid it is broader in general than in the lower, and rising in its middle and superior part, is of a femilunar shape. From the superior edge of the upper tarsus and the inferior of the lower, is continued a membranous expansion to the neighbouring edge of the orbit. Each of these membranes together with its respective tarsus, has the form of the eye-lid to which it belongs, and is called *ligamentum tarfi*. The tarfi are concave towards the globe of the eye, and convex on the other side; and upon their internal surface are transverse channels for the reception of the ciliary glands before-mentioned. By the firm substance of the tarfi, and by their form, they serve to strengthen and to keep the lids smooth and equally extended, so that they may be freely moved alike in every part; and they make that arch by which the internal surface of the eye-lids is adapted to the convexity of the eye.

The inside of the lids is lined with a fine and very sensible membrane, which is a portion of the *tunica conjunctiva* as has been already

ready

ready observed and as will appear more particularly hereafter.

The muscles subservient to the motions of the eye-lids, are the *musculus orbicularis*, and the *levator palpebræ superioris*.

The *musculus orbicularis* furrounds and covers both lids. The origin of this muscle is at the great or internal angle of the eye; and the fibres of it spreading from thence and covering the lower lid, proceed on to the outward or lesser angle: passing round this angle they are continued over, and cover the upper lid, and then terminate at the great or internal angle where they began. This muscle has a slight ligamentary tendon, which extending transversely from the nasal process of the maxillary bone towards the internal angle of the eye, and appearing like a white line, terminates at the union of the lacrymal points.

The use of this muscle is by its contraction, to bring the upper lid downwards and pull the lower lid upwards, by which means both lids are drawn together so as to shut up on the eye.

The levator palpebræ superioris arises from the bottom of the orbit by a small tendon; and as the fleshy fibres of this muscle pass over the globe of the eye, they gradually spread, and afterwards terminate by a broad tendinous expansion in the superior part of the tarsus belonging to the upper lid. The use of this muscle is to open the eye, by drawing the eye-lid upwards.

The integuments of the eye-lids, and the orbicular muscle, are furnished with blood by ramifications from the angular, temporal, and frontal arteries; and these communicate with branches that are sent to the internal membrane of the eye-lids. The levator palpebræ superioris receives a ramification from a considerable branch, which is sent through the inferior orbital fissure from the internal maxillary artery, and is distributed to this and several other parts of eye.

The veins of the eye-lids correspond pretty nearly with the course of the arteries, and emptying themselves into the neighbouring veins of the temples and face, have their blood carried by them into the external jugulars.

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The eye-lids are supplied with nerves from the opthalmic branch of the fifth pair. The orbicular muscle of the eye-lids receives nerves from the same branch ; likewise from another branch of the fifth pair, called the superior maxillary branch, and from the portio dura of the seventh pair.

The levator palpebræ superioris receives a branch from the third pair.

The eye-lids serve as a veil or curtain, which may be closed or opened at pleasure by the action of their muscles. When they cover the eyes intirely, as in sleep, they exclude the light, which otherwise would hinder rest. They prevent the eyes from growing dry and uneasy, and defend them from being injured by a variety of small bodies which might fall upon them from the common air. Even the softest, purest air, and the mildest light, would create very painful sensations in the globe of the eye, if it was intirely divested of this most useful covering. In the day, the eye-lids form a sort of shade, and occasionally moderate the influx of light into the eye. The frequent motion of them serves also to spread the tears or lacrymal

fluid over the anterior surface of the globe of the eye, and by that means washes off and cleanses it from any foulness which may have been collected there: By the same means the transparency of the cornea is preserved. Nor is this frequent motion of the eye-lids, which is so necessary for the purposes just mentioned, at all inconvenient in respect to vision; as the quickness of the motion prevents its being any continued and perceptible obstruction to the free passage of the rays of light into the eye.

The eye-lids are subject to little tumours either in their substance or on the surface of them, which fanciful writers have divided into several kinds, and have distinguished by particular names from a resemblance which they conceived they had to some other things, as hail-stones, barley-corns, &c. Of these it is sufficient to say, that a person who is well acquainted with the structure of the parts and with the plain rules of surgery, will find very little difficulty in the treatment of them, further than the common difficulty of handling or applying dressings to parts which are constantly in motion, as well as contiguous

contiguous to so tender an organ as the eye. But there is one complaint of the eye-lids, which may deserve more particular mention in this place. This disorder chiefly affects the ciliary glands, and is the occasion of that redness which is sometimes observable along the edges of the lids, attended with excoriation, and a discharge of humour. Different methods may be properly directed for the cure or relief of this disorder in different circumstances of it; but there is one which is not so generally attended to as others, and which in some instances has been found successful, after other means, both internal and external, have proved ineffectual. A prudent use of the lunar caustic to the parts has answered this purpose; probably by very powerfully constringing and strengthening the excretory ducts of the ciliary glands, which a long determination of humours to them has relaxed and enlarged; and by drying up and healing those excoriations of the orifices of these ducts and of the neighbouring skin, which have been produced by the discharge.

The parts next to be considered are the lacrymal gland, the lacrymal points, and the lacrymal bag; the first serving to secrete the lacrymal fluid to be diffused upon the anterior surface of the eye, the two last serving to carry off this fluid after it has answered the purposes for which it was separated. To these may be added, the lacrymal caruncle.

The GLANDULA LACRYMALIS, PUNCTA LACRYMALIA, SACCULUS LACRYMALIS, and CARUNCULA LACRYMALIS.

GLANDULA LACRYMALIS. In the upper part of the socket, a little above the external angle, is a depression which receives the superior part of the glandula lacrymalis. This gland, which was formerly termed glandula innominata, is situated behind the tunica conjunctiva, and is considerably large. It is of a whitish colour, and is composed of several small lobes, each of which, it has been said, sends out an excretory duct. But though the number of these ducts is not easily determinable, it is certain there are
such

such ducts, which piercing obliquely the tunica conjunctiva of the upper lid, open on the inside of that membrane near the superior part of the tarsus.

The office of the lacrymal gland is to separate a lymph or fluid, which passes through the excretory ducts, to be diffused over and to moisten the fore-part of the eye-ball; which might otherwise grow dry, and become painful from the friction of the lids, and the action of the air upon it. And in order that this constant supply of fluid may be properly diffused, there is a frequent motion of the lids which spreads the fluid equally. By this moisture likewise, any foulness between the eye-ball and lids may be washed off.

It is observable, that when any extraneous, irritating substance is accidentally lodged upon the eye and excites pain, an unusual quantity of this lacrymal fluid is immediately separated, and is diffused over the fore-part of the globe, in order to carry off the cause of the irritation. The assistance which nature furnishes thus for relief of such accidents, and likewise the profusion of the lacrymal fluid,
which

which is instantaneously separated and flows from the eyes upon sudden and violent fits of crying, are circumstances very extraordinary, considering there is not any collection or visible reserve of lymph to answer occasionally these purposes. And here, though it is not a remark essentially relative to practice, it may not be amiss to take notice, that the generality of brute animals are furnished with nearly the same apparatus for the secretion and conveyance of the lacrymal fluid, and the same purposes seem to be answered by this fluid in them as have been observed to be in man, except in the last instance. It is a quality peculiar to the human species, to shew the passion of grief by a sudden and involuntary discharge of tears; unless we admit of a few exceptions, which are imperfect in their kind, and are but barely allowable at all.

PUNCTA LACRYMALIA. Upon the inner edge of each eye-lid, near the internal angle, is a small eminence, which is perforated obliquely by a fine orifice. These orifices, which are situated opposite to one another, are termed lacrymal points; and they
serve

serve as waste-pipes to carry off the lacrymal fluid, after it has answered the purposes already mentioned upon the anterior surface of the eye. The manner in which this fluid is directed along the groove, formed by the eye-lids to the lacrymal points, has been before taken notice of; but in order that the course of the lacrymal fluid may not be obstructed after it arrives at the lacrymal points it is necessary that these orifices should be constantly kept open, or at least that they should never be totally closed. To this end, each of the lacrymal points is incircled by a white cartilaginous ring, the direction of which inclining a little obliquely towards the globe of the eye, they never come into contact with one another intirely; but when the eye-lids are slightly shut, the lacrymal points touch each other only at that part next the outer edge or external skin; and when the eye-lids are quite shut, they are still kept at nearly the same distance from one another by the interposition of a small round substance in the corner of eye, called the lacrymal caruncle.

It

It must be further observed, in regard to these lacrymal points, that they are the orifices of two short ducts, which run behind the tendon of the orbicular muscle, and which uniting near the lacrymal sac, form one duct that immediately opens, beyond the angle of the eye-lids, into the upper part of the sac.

The course of these ducts, as they run behind the tendon of the orbicular muscle, may deserve consideration in respect to the operation for a fistula lacrymalis. It was long, we know, supposed, that a transverse incision of this tendon might occasion an inversion or distortion of the eye-lid; and therefore, in performing that operation, particular directions were given to avoid this circumstance. This precaution has indeed of late been almost intirely disregarded. Since, however, it is supposed by some, that from such a division of the tendon, these ducts of the lacrymal points may be wounded; and as the divided parts of the ducts may possibly not heal afterwards so aptly as to admit a free passage of the lacrymal fluid through them, it should seem
right

right to prevent this accident where it can be done with propriety. For this purpose, one of the methods which was formerly proposed of beginning the incision immediately below the tendon, in order to avoid wounding the tendon, particularly in those cases where there is little or no external swelling, appears a reasonable practice in one respect as it will certainly prevent a division of the lacrymal ducts.

The SACCULUS LACRYMALIS. The lacrymal sac is described to be an oblong membranous bag, and, if seen in a state of distention, it has that appearance. The prints which we have of it give it likewise the same figure, representing it uniformly distended. It ought however to be observed, that in a natural state of the lacrymal sac, in which the tears have a free passage through it, the anterior side of it suffering no distention, is nearly flat. The upper part of the sac lies under the tendon of the orbicular muscle, and receives the tears from the lacrymal points by the ducts just taken notice of. Near the middle, which is the widest part of the bag, it is somewhat less than a quarter of an inch

inch in diameter; but descending a little lower it gradually lessens, and passing obliquely backwards, terminates by a very small opening, under the os turbinatum inferius, in the cavity of the nostril. The lacrymal bag is situated just within the orbit, in a bony passage, formed by the os unguis and the os maxillare. The length of this passage is about three quarters of an inch, the greatest part of which is to be considered as a groove, the anterior surface of the bag for about the space of half an inch, not being covered with bone. The remaining narrower part of the passage is formed into a complete canal, which incloses the contracted and shorter part of the bag, as it passes into the nostril.

Whoever duly considers the situation of the lacrymal sac, as it lies in the passage just described within the edge of the socket, will perceive, I imagine, that a proper compression of the sac (however useful such a compression might be could it be easily made) is not generally so practicable as some have thought it to be in the cure of a fistula lacrymalis. Less still will be expected from this method

method of compression, when it is considered, that the disease generally beginning with an obstruction in that part of the passage which forms the complete bony canal above mentioned, this obstruction must be first removed before any effectual progress can be made by other means towards a real cure of the disorder.

The structure and uses of the parts described in this and the preceding article, ought, in general, to be strictly attended to, in order to conceive rightly of the operation for the fistula lacrymalis. Many other circumstances are necessary to be likewise attended to in regard to the management of that complaint; but as these have been treated of by the best of our modern writers on the operations of surgery, and as the subject has been elaborately considered very lately, I am precluded from saying more upon it at present.

CARUNCULA LACRYMALIS. The lacrymal caruncle is situated between the internal angle of the eye-lids, and the ball of the eye. It is a small reddish substance, and has the appearance of being fleshy, though
it

it is thought to be glandular. It is said to have a great number of very fine hairs upon its surface, and to be covered with an oily, yellowish matter, not unlike that which is discharged from the ciliary glands. These hairs, it is supposed, serve to stop and prevent any feculencies or extraneous substances from entering into, and obstructing the lacrymal points; a use that is ingeniously enough applied, if the existence of these hairs was really ascertained. The caruncle itself, as was intimated in the preceding article, by its situation in the corner of the eye, serves to prevent the internal edges of the lids at that part from ever coming quite into contact with one another; and thereby the orifices of the lacrymal points being to a certain degree kept open, the tears or lacrymal fluid pass freely through these points into the sac.

The lacrymal gland, points, bag and caruncle, receive arteries from the maxillary and temporal branches, and nerves from the opthalmic branch of the fifth pair.

THE

SECOND LECTURE.

Of the form and coats of the Eye, and of
the Optic Nerves.

THE figure or natural form of the eye is that of two unequal portions of unequal spheres. The portion of the smaller sphere is situated anteriorly; the portion of the larger sphere makes the posterior part of the eye. If the eye had been one sphere, the distance from the cornea through the center of the eye to the retina would have been so short, that the focus of the rays of light would have fallen beyond the eye, and vision would have been confused.

In considering the particular parts of the eye, they may be divided into the coats and the humours; to which may be added, the muscles.

The coats of the eye are the tunica conjunctiva or adnata; the sclerotica and cornea; the choroides with the uvea or iris; and the retina. To these may be added, the capsular tunics of the crystalline and vitreous humours, which will be taken notice of in the description of those humours.

The Tunica conjunctiva.

Some anatomists divide the tunica conjunctiva, adnata, or, as it has been sometimes termed, though improperly, albuginea, into different membranes. One of these is said to be a continuation of the periosteum lining the socket, the other a continuation of the internal membrane of the eye-lids; both of them are said to pass from the edge of the socket over the anterior part of the eye to the termination of the sclerotica in the cornea; and likewise to be covered with an extreme fine membrane, proceeding from the scarfskin of the eye-lids. But without pursuing any further account of these, it may be sufficient to observe, that though the conjunctiva may sometimes admit of being
divided

divided into distinct laminæ, as may be done in other membranes where no such distinction is observed, yet as the division here is far from being easily practicable, and as the distinction does not appear to have any real use, it may be properly ranked amongst the many other articles which can serve only to burthen the memory.

The tunica conjunctiva therefore, the origin of which is not well determined, may be considered as one membrane, which lines the internal surface of the eye-lids, and which, from the edge of the socket, to which it adheres, is reflected upon, and covers the anterior half of the globe of the eye; the part of this membrane which lines the lids being distinguished as the conjunctiva of the eye-lids, the portion of it that is spread upon the globe, as the conjunctiva of the eye. The conjunctiva of the eye-lids adheres closely to the internal surface of the tarsus. It is full of capillary blood-vessels which appear very plainly; and it is said to be perforated with numerous small orifices, through which a lymph constantly passes, serving with the tears to moisten the inside of the

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eye. This portion of the tunica conjunctiva is endued with a remarkable degree of sensibility, as is known by the extreme pain which sometimes ensues from dust or other irritating substances accidentally lodging upon this part. The conjunctiva of the eye, which adheres all round to the edge of the socket, and from which circumstance probably it has been supposed to have its origin from the periosteum lining the socket, is loosely connected to the eye by a reticular substance, as far as where the sclerotica is said to terminate in the cornea. Here it has been thought that the conjunctiva ends, or changes its nature and becomes one with the cornea; but by a careful dissection it may be separated from the whole surface of the cornea.

It may be proper to add here, that immediately under and adherent to the conjunctiva of the globe, is situated the tendinous expansion of the four straight muscles of the eye; which expansion by its internal surface adheres closely to the forepart of the sclerotica, and covering all that part of the globe which appears white, terminates at the edge of the sclerotica: Some have given the name of
tunica

tunica tendinea to this expansion. It is the colour of this tendinous substance, and of the anterior part of the sclerotica, in which at last this expansion is lost, that chiefly forms, what is commonly called the white of the eye; for though the conjunctiva has been supposed to produce this colour, and from thence probably received one of its names, albuginea, yet in reality the conjunctiva, though whitish, does not afford much colour of itself, but being transparent, the colour of these subjacent parts is seen strongly through it.

The temporal and frontal arteries send branches to the tunica conjunctiva, and these branches communicate with those which are sent to the integuments of the eye-lids, and to the orbicular muscle. The same membrane is likewise supplied with blood-vessels, by means of the internal maxillary artery, which sends a considerable branch into the socket, where it divides, and spreading into various ramifications, is distributed to several parts of the eye, and amongst others, to the tunica conjunctiva. The vessels of that portion of this membrane, which have been

distinguished by the name of conjunctiva of the eye, are chiefly such as in their natural state carry only lymph or serum, and are not visible unless made so by anatomical injections; or else, when in the living subject, they are accidentally distended with blood in inflammations of the eye; or when the blood is admitted into and stagnates in them, by a mere weakness or relaxation of these vessels.

The admission of blood into these vessels, is a circumstance which frequently deserves attention in disorders of the eyes. The eyes, we know, are subject to inflammations from a variety of causes, in most of which, not only the sanguinary vessels of the conjunctiva are fuller and more distended than is common, but the blood, as was before intimated, is likewise thrown into the numerous lymphatic vessels, and occasions chiefly that general appearance of redness which attends these disorders. The method of treating these inflammations in their first state, is sufficiently obvious; but there is a time in many of these cases (to be judged of by the general indications, and by the means of
cure

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cure that have been already made use of) when the redness and fullness of the vessels will in a great degree remain, and yet to pursue the same method of cure as was at first directed, would be very improper. The truth is, the fine lymphatic vessels, which either from fullness, heat, or other general cause in the constitution, have had the blood thrown into them, will for a considerable time admit the same after the original cause of the disorder is removed: They are now so relaxed and weakened by the distension which they have suffered, that they still admit the blood, for want of power to contract themselves to their natural diameter, and thereby to resist the influx of it into them.

Upon this occasion it may not be improper to take notice of those external applications, which are known by the names of eye waters, liniments, or ointments for the eyes.

Among the variety of medicines which are distinguished, as being good for particular complaints, there are few that have been more celebrated, than certain compositions

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for the disorders affecting the eyes and eyelids. Most of these are recommended indiscriminately for almost every complaint of these parts; in which kind of practice it is not to be supposed, that any just idea of the medicine directs the use of it. On the other hand, the real properties of these medicines are not, I conceive, sufficiently explained, where a more intelligent method might have been expected. Most writers upon the distempers of the eyes, recommend applications of this sort, but they either speak of them in too general terms, without attempting to shew wherein their proper use consists, or they give a partial and undeserved preference to some particular composition. In fact, these medicines are almost all capable of doing service, under certain circumstances of the distemper; but as the advantages arising from a promiscuous use of them, must be owing rather to accident than judgment, the manner in which they may be supposed to act ought to be attended to. If we examine into the ingredients of these compositions, we shall find the basis of them is more or less of a restraining nature, and it is from

this property that they are capable of doing service by contracting and thereby strengthening the vessels, which have been too much distended. In some cases a different form of these medicines may agree better than others; a liniment may be preferable to a water, or a water to a liniment, according to the nature or quantity of the discharge, with other circumstances: besides that there is a peculiarity in some constitutions, which will not admit of the same means of cure, either external or internal, as are effectual in other people. And this is particularly true in the present case, in regard to unctuous applications—So likewise the strength of the medicine, with respect to its degree of restringency, is to be observed; and what is still of great consequence, the preparing or compounding these medicines ought to be done with the utmost exactness and neatness, that no rough particles may come in contact with the eye, which may create any unnecessary irritation there. These precautions being attended to, the applications just mentioned may be often employed with the greatest advantage; and when the principle upon which they are directed is properly considered,

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sidered, it is easy to see that many forms or compositions of these medicines will equally answer the purpose, without attributing any specific property to them.

The nerves of the tunica conjunctiva proceed from the ophthalmic branch of the fifth pair.

In regard to the uses of the tunica conjunctiva, it serves as a ligament to connect the eye to the edge of the socket, and, being of a texture admitting some extension, it allows, notwithstanding this connexion, of a free movement of the eye in different directions without pain or inconvenience. Also by the adhesion of this membrane all round to the edge of the socket, any foulness collected on the eye, or any irritating substance accidentally lodging upon it, are prevented from passing to the back part of the globe; an accident which might produce extreme pain, and could not without great difficulty be relieved. This membrane likewise gives a smoothness to the parts which it covers, and thereby makes the friction less considerable between the eye and the eye-lids.

Previous

Previous to the description of the other coats of the eye, it may be necessary to give some account of the optic nerves.

OF THE OPTIC NERVES.

THE optic nerves are two thick, round, and whitish bodies or chords, which arise pretty near each other, from two considerable eminences in the brain, termed thalami nervorum opticorum. From thence they pass in an incurvated course outwards and forwards, but approach each other afterwards, and seem to unite before that part of the brain called infundibulum. After this seeming union of the optic nerves, they divide, and are sent separately through their proper orifices in the sockets, to the posterior part of the eye-balls, where their coats and nervous substance are supposed to be expanded and continued on, as will be more particularly expressed hereafter, to form the different coats of the eye.

The insertion of the nerve is not directly opposite to the center of the pupil, but a little on the inside towards the nose; the reason of which

which will be explained in the discription of the retina.

The substance of the optic nerves consists of medullary fibres, which are productions of the medullary substance of the brain. They are covered only with the pia mater, till they reach the orifices through which they pass into the socket: there the dura mater gives them another covering, which is continued on with the first.

Different opinions have arisen about the seeming union of these two nerves before the infundibulum. Some think that they cross one another here; others, that their substance is mixed and blended together; and others imagine that there is only a strict cohesion of the two nerves, without any mixture of their substance, an opinion which seems to have been warranted by observations related by writers.

To return now to the description of the remaining coats.

OF THE SCLEROTICA AND CORNEA.

THE sclerotica and cornea are mentioned by some anatomical writers as two different coats of the eye, though they are now generally allowed to be only two different names to signify different parts of the same coat; the sclerotica being the external coat of the posterior part of the eye; the cornea, the external coat of the anterior part. Others distinguish these two portions of this membrane, into cornea opaca, and cornea lucida; by the first, understanding the posterior portion; by the latter, the anterior.

Till of late, it was the general opinion of anatomists, that the three different principal coats of the eye, were continuations and expansions of the different substances of the optic nerve; that is, the sclerotica was thought to be a production or continuation of the covering which this nerve receives from the dura mater; the choroides was supposed to proceed from the second coat of the optic nerve, arising from the pia mater; and the retina was said to be an expansion of the
medullary

medullary substance of this nerve. These continuations or expansions are not now generally allowed, as they cannot be sufficiently and perfectly ascertained by laying open and examining the course of the optic nerve: on the contrary, by examining this nerve, and comparing the structure of it with the sclerotica, the choroides, and the retina, there appears to be a considerable difference between the texture and thickness of the parts whence they are supposed to be derived and continued. But though the force of this objection may have some effect against the common theory, yet, as other reasons are brought to invalidate this objection, and as the origin of these coverings to the humours of the eye is not otherwise well accounted for, it may be proper to retain the old opinion till a more certain one is established.

The sclerotica then, or the external coat of the posterior part of the eye, may be said to be a production of the dura-matral coat of the optic nerve. In man it is inelastic. This disposition in the sclerotica appears to be particularly useful; for as it is necessary to alter occasionally the convexity of the cornea,

nea, in order to adapt the eye to the different distance and magnitude of the object to be seen; and as in one instance which will be mentioned hereafter with the muscles, this alteration is supposed to be effected by drawing the eye backward into the socket, and pressing it against the fat contained there, by which means the humours of the eye being protruded forwards, the cornea, which is elastic, is rendered more or less convex; if the sclerotica had been as capable of being distended as the cornea is by its elasticity, this pressure would have been lost: the convexity of the cornea would consequently have remained unaltered, as the coats of the eye would have given way in every part alike. The sclerotica is made up of several laminæ closely connected, whose fibres run in different directions and form a dense, compact substance. It is opaque, and also of considerable thickness, particularly in the posterior part where the optic nerve enters; but it gradually grows thinner towards its anterior part. Here we see a change of appearance, and the external coat of the anterior part of the eye, from a fancied resemblance

blance

blance to transparent horn, takes the name of cornea.

The cornea consists of two principal laminae, an external and internal, each of which is composed of thinner laminae. The substance of the cornea is, as was before observed, in some degree elastic, that, in order to fit the eye to the different magnitudes and distances of objects, its convexity might be rendered greater or less, as the humours of the eye are more or less protruded: it is likewise perforated with a great number of exceeding small orifices, through which a very fine fluid is supposed to be constantly discharged, but which soon evaporates.

The sclerotica and cornea are furnished with arteries chiefly from a branch of the internal carotid, which entering the socket with the optic nerve, gives, amongst other ramifications, several which run into the posterior portion of the sclerotica: of these, some are distributed into the different parts of this membrane, whilst others, after running a little way obliquely in the substance of it, penetrate through it, and pass on to the next coat, the choroides.

The

The nerves proceed chiefly from the ophthalmic branch of the fifth pair, which running into the substance of this membrane, some, like the blood-vessels, are sent into the different parts of it; whilst others, after passing a little way in the substance of the sclerotica, penetrate through it, and are continued on between the sclerotica and choroides towards the iris, having the appearance of fine ligaments.

The sclerotica and cornea serve in general to enclose and cover the humours of the eye: the cornea, in particular, serves to transmit the rays of light into the eye, and produce the first refraction of those rays necessary to vision.

The natural transparency of the cornea, so necessary for the admission of light into the eye, is liable to be altered and obscured by inflammations or humours affecting the forepart of the eye, the frequent consequences of which, where they remain any time, are a thickening of particular parts of the cornea, imposthumations in this membrane, or ulcerations: these are apt to leave opaque marks or spots in the cornea, which accord-

ing to their size or situation, intercept more or less the rays of light, and are with much difficulty, if at all, removed, especially in grown people. A very large number of those unhappy persons, who, from a defect or total loss of sight, live uncomfortably to themselves and burthensome to their friends or the community, owe their misfortune in this respect, to the want of early application for assistance, or to that assistance being administered less speedily than the nature of such cases generally requires; whence the spots or marks before mentioned. It cannot therefore be too often and too earnestly inculcated, that every suitable method for relief should be employed here as soon as possible.

THE CHOROIDES.

AMONG the variety of instances in anatomy where the subject is perplexed by different distinctions, this membrane is one. From its resemblance to the chorion, in respect of its numerous blood-vessels, it appears originally to have had the name of choroides. From some fancied similitude to a grape in regard to its form and colour, the whole or part of this membrane had likewise the name of uvea given to it. Among the moderns, some divide it into two parts, calling the posterior portion, choroides, the anterior uvea, and the external surface of the latter, on account of the variety of its colour, iris. Others call the whole anterior portion iris, reserving the name of choroides to signify as usual the posterior portion of this membrane; and this last distinction will be observed in the present account.

The choroides is situated within the sclerotica, lying contiguous to the inner surface of it, and derives its origin, according to

the most generally received opinion, from the second or pia-matral covering of the optic nerve. When the sclerotica is removed, the choroides appears of a dark-brown or blackish colour. The choroides is divided into two laminæ, the external of which is slightly connected to the sclerotica, and is covered with a black substance interposed between it and the sclerotica. Both laminæ are extremely vascular, but the internal is furnished with a great number of inosculating blood-vessels, whose almost innumerable extremities project from its inner surface, and have been termed by some writers villi and papillæ; and this lamina being first distinguished by Ruysch, has the name of tunica Ruyschiana. The same black substance, which, as was just now observed, covers the external surface of the choroides, being interposed between that and the sclerotica, appears also on the internal surface of this membrane between it and the retina. Some reckon this black substance, which has been considered by writers as a pigment, to be an exceeding fine membrane, analogous in its texture to what is termed in anatomy the rete mucosum:

mucosum: it easily separates, and, when the choroides is put into water, dissolves into a kind of black paint. This black substance seems to answer different purposes: thus in the choroides, properly so called, it absorbs the rays of light, and prevents the reflection of them again into the eye; on the back of the iris and between the ciliary processes, it prevents the passage of the rays through them, it being necessary to distinct vision that no rays should pass to the retina, but such as, entering at the pupil, pass through the crystalline humour.

Near where the sclerotica and cornea join, the choroides is connected and adheres strongly all round to the sclerotica. At this circle of adhesion the choroides seems to change its colour and texture, appearing as a whitish kind of ring of a compact substance, which serves to form this connection between the sclerotica and coroides, and is termed *ligamentum ciliare*. Here the internal lamina of the choroides dips inwards to make what are termed the processes, from their supposed resemblance to the cilia or eye-lashes. The ciliary processes, which are very numerous

and lie close to one another, appear as radiated folds or wrinkles of the internal lamina from the part before-mentioned, and the external extremity of each fold respects the circle of the ligamentum ciliare. From this point the processes run upon the fore-part of the vitreous humour to the edge of the crystalline humour in which they are inserted and terminate, like lines drawn from a circumference to a center: the whole radiated ring made by the ciliary processes is sometimes distinguished by the name of corona ciliaris; and it may be proper likewise, in order to prevent confusion, to observe that many writers describe these processes by the term of ciliary ligament. After the black pigment, which lies thick in these ciliary folds, is washed off, numerous blood-vessels, that are continued from the choroides, appear plainly in an injected eye; and some of these enter into the crystalline humour. It is asserted likewise that between the duplicatures of the ciliary processes fleshy fibres may be seen lying in small grooves of the membrana vitrea; but modern enquiries do not confirm the existence of these fibres. Upon cutting

cutting the coats of the eye, and separating the crystalline and vitreous humours from their adhesions to the ciliary processes, part of the pigment before-mentioned is left lying in black radiated lines upon these humours : these lines, of which further mention will be made, are called ductus nigri ; and between them it is said the muscular fibres are situated.

In regard to the uses of the ciliary processes, they serve, by being covered with the black pigment, to prevent any rays of light from falling on the retina, which have not passed first through the crystalline humour. They likewise send vessels both to the capsule and body of the crystalline humour, and others probably to the vitreous humour. There is also reason to believe that, by their numerous villi, they contribute very considerably to the secretion of the aqueous humour. One opinion of their use has been more generally received, namely, that by their contraction, the crystalline and vitreous humours are brought forward, making the cornea more prominent, as when we would view

small and near objects distinctly ; but as the existence of muscular fibres in the ciliary processes is by no means proved, it may be reasonably doubted whether the actions of these processes can have any power in the motion of those humours.

Having described thus the ciliary processes as radiated folds or wrinkles, proceeding from that part of the internal lamina of the choroides which adheres to the ciliary ligament, it remains next to be observed, that the external lamina of the choroides, after it has formed the ciliary ligament, leaves the sclerotica ; and being continued in nearly a transverse direction, makes the anterior lamina of the perforated partition, which is seen through the cornea lying across the eye, and is called the iris : the internal lamina of the iris is formed by a continuation of the internal lamina of the choroides, after it has dipped inwards in the manner above described and made the ciliary processes.

The hole or opening in the iris called the pupil, is observed to have a different form, in different animals, according to the situation or form of the eye itself, and according
to

to the peculiar occasions of the animal in its way of life. In man the pupil is round, the circle of which allows of being made greater or less upon different occasions by means of the iris, which has a power of shutting out too much light or admitting a sufficient quantity, according to the nearness or distance of the object, or according to the degree of light required: these motions are called contraction and expansion. It has been a dispute, whether these motions are the effect of muscular fibres or of a nervous tension and relaxation. Those who seem to have examined this affair carefully, agree in general, that there are between the laminæ of the iris, two orders of fibres, one circular or orbicular, and lying round the margin of the pupil or internal edge of the iris; the other radiated, one extremity of which terminates at the circular order, the other at the external edge of the iris. It is indeed exceeding difficult to discover the fibres said to produce the motions of the iris; but as it is certain, that the iris is contracted and dilated, it is reasonable to suppose, from the analogy of other

other parts, that muscular fibres subsist here and produce these actions.

The use of the pupil is to transmit the rays of light to the humours of the eye which are situated behind it : the use of the iris, as was before intimated, is by its dilation and contraction to determine the diameter of the pupil in any given quantity of light, so as to admit a sufficient number of rays for clear vision, and to exclude the rest.

The arteries, which in the description of the sclerotica, were said to penetrate through the posterior portion of that membrane, pass afterwards through the external lamina of the choroides and are diffused through this membrane in numerous branches, some of which, from their direction, are called *vasa vorticosa*. From the branches of the external lamina are continued the fine vessels of the internal or the *membrana ruyfchiana* ; and of these, some probably pass on to the vitreous humour as others do, by means at least of the ciliary processes, to the crystalline humour, contributing, it is to be believed, to the formation of those humours. From the vessels of the external lamina likewise

wise are sent several ramifications to the circumference of the iris, where they produce a vascular circle called *circulus arteriosus*. From this vascular circle pass off many smaller vessels, some of which, after they have run about two thirds of the breadth of the iris, inosculate and form the appearance of arches: from these arches are sent still finer vessels, terminating at the internal edge of the iris, and serving probably to secrete a part of the aqueous humour of the eye.

The veins of the choroides, and indeed of the other internal parts of the eye, empty their blood chiefly into the optic sinuses, to be conveyed to the internal jugulars; some of these veins however communicate with the external veins of the eye, and their blood is consequently carried to the external jugulars.

The nerves of the choroides proceed from the ganglion, formed by short ramifications of the ophthalmic branch of the fifth pair of nerves and by a branch of the third pair. These run along the optic nerve, and perforating in white filaments the sclerotica, they pass afterwards between the sclerotica
and

and choroides towards the iris; and then dividing again into several other very minute branches, terminate in the substance of the iris.

As an appendix to this article, it may not be improper to take notice here of the membrana pupillaris or velum pupillæ, an extreme fine membrane, of which very little has been said by writers, and which has not been at all attended to till of late years. Both in the human and brute fœtus a very fine membrane is spread like a film before the pupil: This membrane, which is discoverable only in a fœtus, is termed the membrana pupillaris or velum pupillæ, and seems to be a continuation of the external lamina of the iris. The use of the membrana pupillaris is not satisfactorily determined: some have supposed it serves to moderate the impression of the rays of light, and render them less troublesome to the tender organs of animals newly born; a plausible account at least, if not a true one. Agreeable to this, is the supposition, that after birth the membrana pupillaris bursts or breaks, and contracting itself, approaches to the edge of the pupil; but

but what really becomes of this membrane after birth is still uncertain.

THE RETINA.

WITHIN the internal lamina of the choroides is a white soft membrane, which from its supposed resemblance to a net, is called retina, and is the third coat of the eye.

As the sclerotica was said to proceed from the external or dura-matral covering of the optic nerve, and the choroides to be an expansion of the second or pia-matral coat, so the retina is supposed to be a production of the medullary substance of this nerve, expanded like a membrane; though it must indeed be allowed, that by laying open the coats of the optic nerve, its medullary substance cannot be clearly traced, as continuing on to form the retina.

At the bottom of the eye, just where the optic nerve is inserted, the choroides is deficient, in order to admit the passage of that nerve: at the same place there appears a
small

small white protuberance a little depressed in its middle; and at this depression pass out blood-vessels, which in general are expanded, through the substance of the retina. These vessels proceed from an artery that runs in the middle of the optic nerve, and which, entering with that nerve into the globe of the eye, spreads afterwards in the manner just mentioned: Some of the blood-vessels appear plainly in the retina without the assistance of injections. The retina is connected to the choroides, and extends from the insertion of the optic nerve, over the surface of the vitreous humour, to the external edge of the ciliary processes; and some say it may be traced between the ciliary processes to the circumference of the crystalline humour.

The retina is generally supposed to be the immediate seat of vision; but this opinion has been controverted, and the choroides has been said to be the part which receives the impression of the object. It should seem however, by the impossibility of rays of light passing through the black pigment to the choroides, that the retina is the part of the
eye

eye upon which visible objects are sensibly impressed; and the rays of light striking upon this membrane, the sensation is conveyed by the optic nerves to the common sensorium in the brain.

It is observed that the center of this expansion, or the part of the eye where the optic nerve is supposed to enter, either on account of some particular disposition of the nerve at that place, or because the artery before-mentioned enters the eye there, is insensible. It appears therefore to be a wise contrivance of providence that the optic nerve should not enter the eye, in the point where the axis of vision falls, but is inserted on the internal side of the axis of vision; by which means, though some of the rays from any point of an object may happen to fall on the insensible part of one eye, yet other rays from the same point will fall on the sensible part of the other eye; for it is proved by experiment, that one eye being shut, three objects may be so placed as one of them may be lost, though visible when both eyes are open. The reason of this is, the objects whose rays fall on the insensible
part

part of one eye, is discoverable by other rays falling on the sensible part of the other eye.



THE

THIRD LECTURE.

OF THE HUMOURS OF THE EYE.

THE cavity of the eye is filled by pellucid substances called humours, which are three, the aqueous, the crystalline, and the vitreous.

The **AQUEOUS HUMOUR**. All that space in the eye between the cornea and the anterior part of the crystalline humour, is filled with a limpid water, called therefore the aqueous humour. The space in which this humour is confined, is divided into two parts called chambers; that part between the cornea and the iris, and which is much the larger of the two, is called the anterior chamber; that part between the iris and the crystalline humour, which is very small, especially near the pupil where the crystalline comes almost into contact with the iris, is called the posterior chamber: these two chambers communicate by means of the pupil. The vessels

which immediately furnish this fluid are so extremely fine, as makes it difficult to speak of them with certainty. It is however probable, that part of the aqueous humour is secreted from the blood, as was before observed, by the very fine vessels sent from the vascular arches described in the account of the iris, and which terminate at the internal edge of the iris, and that a considerable portion of it is supplied by the fine arterial villi of the ciliary processes. These vessels, it is to be supposed, by the smallness of their diameter exclude all particles of the animal fluids that are grosser than the most limpid water, at the same time that they suffer this fine fluid to pass into the eye. It is observable, that when a wound is made in the cornea, and the aqueous humour is discharged by this accident, it is renewed in a few days and sometimes sooner. From this observation, it is reasonable to suppose that the aqueous humour is perpetually secreted; and if it is thus constantly separated from the blood, there must necessarily be some means of carrying it off, since without this resource the cornea would be too much distended

tended and protruded. The manner in which this superfluous humour is carried off is not clearly demonstrable; but it is probable that part of it is taken up by absorbent veins, and part of it may transpire through the cornea. It is said that the aqueous humour is not perfectly clear in new-born infants, in order that their tender eyes may not at first be too violently affected by the light: it is further observed that in old age this humour sometimes changes its consistence, becoming thicker; and likewise alters its colour, growing whitish; by which means the rays of light do not pass so freely to the retina as usual: and this among other more common causes may be one reason of imperfect sight in old people.

The use of the aqueous humour is to keep the cornea distended, and in such a state of convexity as to refract the rays of light in a proper degree; to preserve a due distance between the cornea and the crystalline humour; and to serve as a proper medium for the iris to float loosely in, whereby its different actions may be performed more easily. Some likewise suppose the aqueous humour is necessary

for the crystalline to move in, that objects may be seen more distinctly at different distances.

The CRYSTALLINE HUMOUR. Next to the aqueous is the crystalline humour, which is a transparent mass resembling crystal, whence it takes its name. It is situated between the other two humours, its anterior part being opposite to and very near the pupil; its posterior portion being lodged in a cavity formed for its reception in the middle and fore-part of the vitreous humour. The figure of the crystalline is that of a lens, convex on both sides, but rather more so posteriorly. This humour, which is the least of the three, is of a much more firm consistence, particularly in the middle of it, than either the aqueous or vitreous; for this reason it has sometimes been called the crystalline body. In the center or more compact part, it feels like glue and may be easily pressed into different forms; but it gradually becomes of a less firm consistence, somewhat like a thick jelly, towards the outer surface. In time it is subject to change both its consistence and colour, growing still more firm, especially in
the

the middle, and gradually taking a yellowish tinge. The crystalline humour is membranous, and consists of a great number of coats inclosed in one another by very fine fibres. The crystalline is contained in a capsula, formed by a continuation of the covering of the vitreous humour hereafter to be described. This capsula, which is sometimes termed a-ranea, is a fine transparent membrane, elastic, and rather thicker in its anterior than its posterior part. It is furnished with vessels from the ciliary processes, and from an artery which enters at the bottom of the retina and runs through the vitreous humour, as will be further taken notice of in the description of that humour. If the capsula be pricked with a needle, and a blow-pipe applyed to the orifice, the air may be introduced between the capsula and the crystalline, and will form a small transparent bladder. It has been observed likewise, that, after pricking the capsula in this manner, a little clear water will sometimes be discharged from the puncture; and it has been thought that the external portion of the crystalline body is of an aqueous nature, and that the middle and more solid part

of it swims as it were in this water. It has been asserted, in consequence of this opinion, that the body of the crystalline humour has no connection or communication with the capsula, nor is nourished in the ordinary way by a circulation of fluids, but by absorption. This opinion, however, though it has been espoused by very eminent writers, does not appear to be sufficiently warranted; as there is good authority to believe that the vessels, which pass from the ciliary processes to the capsula, are continued from the capsula to the body of the crystalline. Admitting then such a continuation of vessels, which we must suppose to be extremely fine, it is reasonable to conclude that the capsula being elastic, will, if punctured, be drawn back in consequence of that elasticity, and that the fine vessels just mentioned, being necessarily torn by this means, the body of the crystalline will be separated from its proper coat, and water will ouze out from these lacerated lymphatics. Perhaps too the quantity of this water may be increased by the eye being examined after it has been kept some time, which may have occasioned part of the crystalline to dissolve.

dissolve. The chief use of the capsula is to confine the crySTALLINE humour in its proper situation, to which purpose the connection between the capsula and the vitreous humour, the manner of which will be explained in the next article, is subservient. To explain the uses of the crySTALLINE itself, it has been supposed by some that the ciliary processes, which are partly inserted into the circular rim or anterior portion of the vitreous humour, will, when they contract, depress the vitreous humour; that this depression of the vitreous humour will push forwards the cavity that receives the posterior part of the crySTALLINE, and of course the body of the crySTALLINE humour will be protruded nearer to the cornea; but that when the ciliary processes are relaxed, the vitreous humour will return to its former situation, and the crySTALLINE again recede nearer to the bottom of the eye. By this means it is imagined that the distance of the crySTALLINE from the retina is occasionally fitted to the different distances of objects. The most acknowledged use of the crySTALLINE humour is to produce a second refraction of the rays of light, the first refraction, which is

produced by the cornea and the aqueous humour, not being sufficient to bring them to a focus at the retina.

VITREOUS HUMOUR. The third and last of the humours of the eye is the vitreous, called so from its resemblance to melted glass. It occupies all the posterior, and indeed the greatest part of the globe of the eye: the consistence of it is thicker than the aqueous, but less firm than the crystalline; it is a very transparent mass, and has a good deal the appearance of a fine clear jelly; but if exposed some time to the air, it gradually collapses and wastes, a fine limpid water oozing through the membranes which give this humour its consistence; for the substance of this mass is composed of numerous little membranous cells or vesicles filled with a pellucid humour. It has already been hinted that the formation of this humour may be partly owing to a continuation of the vessels making the papillæ of the internal membrane of the choroides; but probably a considerable share of it is derived from the ramifications of a vessel, which proceeds from the artery that has already been described as running through the center of the

the optic nerve. The ramifications of this artery are indeed in general distributed on the retina; but there is one branch arising from it which passes quite through the vitreous humour, and spreads itself in a beautiful manner on the back of the capsula of the crystalline. This vessel gives off very fine lateral branches as it passes through the vitreous humour, and from these it is reasonable to suppose the pellucid humour above-mentioned may be in a great measure secreted. In the middle and fore-part of this humour is a depression or cavity, which receives the posterior portion of the crystalline, and the margin of this cavity appears like a circular protuberance. On this circular protuberance are seen the little radiated channels before-mentioned, which are made by the ciliary processes as they pass to the circular edge of the crystalline, and which appear black at their bottom upon separating the crystalline and vitreous humours from their adhesions to the ciliary processes. This appearance of blackness is owing to the substance before described under the name of black pigment, which covers the ciliary processes, and

and of which part is now left at the bottom of these channels after the proceſſes are removed.

The vitreous humour is covered with a coat that is perfectly pellucid, and is termed the tunica vitrea. It is contiguous to the retina, and is a double membrane. The internal lamina of this membrane is ſaid to inſinuate itſelf into the ſubſtance of the vitreous humour, in order to form the little cells or veſicles before mentioned; but this humour having a depression or cavity, as has been juſt deſcribed, in which the poſterior portion of the cryſtalline is lodged, the two laminæ of the tunica vitrea ſeparate when they arrive at the edge of this cavity; here the internal of theſe two laminæ paſſes between the vitreous and cryſtalline humours, ſerving to line the cavity in which the cryſtalline lies, and to make the poſterior part of its capſula; the other lamina paſſes over the cryſtalline, and becoming thicker and elastic makes the anterior part of the capſula.

The uſe of the vitreous humour is to fill up the back part of the eye, and together
with

with the crystalline and aqueous, to preserve the due distance between the cornea and the retina; serving also with the other humours, so to refract the rays of light as they may converge to a point on the retina.

The different humours being described, it may not be improper here to add some remarks on the depression and extraction of the crystalline, when it is become opake and forms the disease called a cataract.

The dispute about the cataract, whether it be an opacity of the crystalline humour, or whether it be a film or membranous substance formed in the aqueous humour behind the iris, does now no longer prevail. It is the general opinion at present that a cataract is an opacity of the crystalline. By what means was this dispute determined? by a method the most likely to destroy an erroneous theory and to establish a true one, by examining into the state of the parts after death. From this examination it appeared, that the crystalline humour was become more or less opake, and on the other hand, the supposed film or membrane was not to be discovered.

The

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The feat and nature of the cataract being in this manner established, the means of cure were more plainly indicated; either the opacity of the crystalline humour was to be cleared by medicine, or the humour itself was to be removed from its situation by an operation. The first of these has not been found practicable: there are no medicines yet discovered, which either internally or externally used, have the power of restoring the opaque crystalline humour to its natural transparency, 'Twas necessary therefore, in order to have the light transmitted to the retina, that this opaque body should be removed from its natural situation by an operation. Two ways have been practised for this purpose; the one to depress the humour, the other to extract it intirely out of the eye. The method by depression has generally been by passing an instrument, the couching needle, through the coats of the eye, into the crystalline humour, and pushing the humour gently down towards the lower and posterior part of the eye. The needle being then carefully withdrawn, and the crystalline left in this new situation, the rays of light are again transmitted

ted through the vitreous humour to the retina; and the defect in the refraction of these rays, for want of the crystalline in its natural situation, is to be supplied by a proper optic glafs.

Whether the crystalline humour is by this operation always separated and dislodged from its cavity in the fore-part of the vitreous humour, or whether in attempting to do this, the vitreous is not sometimes turned and moved along with the crystalline humour, (from the strong connection between them by means of the capsula of the crystalline) is not easy to be determined. This is certain from experience, that it is much less difficult to depress the humour than to keep it depressed. The crystalline humour left at the lower part of the eye may be considered there perhaps not improperly as a foreign body, and having in this place no particular cavity for its reception as it has in its natural situation on the fore-part of the vitreous humour, the common pressure upon different parts of the globe in the several motions of it, but particularly on its posterior portion by the contraction of the muscles when the eye is drawn inwards,

inwards, would be very apt to protrude this foreign body again into the bed or cavity which nature originally prepared for it. So likewise the force of coughing, vomiting, or putting the head into some particular position, have been known to raise the cataract into view again; and if we allow that the vitreous humour may be turned or moved along with the crystalline, in the depression of the crystalline, 'tis equally probable that nature, ever solicitous to preserve the due order of her necessary functions, will by some such means as have been just now recited, replace this organ in its former situation.

Upon the whole, the frequent return of the opake crystalline into its natural position after it had been depressed, the troublesome symptoms which, though not often, yet sometimes ensued either from wounding the coats of the eye, lacerating the ciliary processes, or doing other injury to these delicate parts in the depression of the crystalline, made the success of the operation uncertain in general, and the effects in some instances disagreeable; so that any other method of
operat-

operating which carried with it a reasonable prospect of answering the purpose well, had a claim to consideration. Another method was proposed, and at first sight seemed so reasonable and proper, that, like many other discoveries, 'twas rather surprising it should not be sooner brought into common use (for the general scheme of the operation appears to have been thought of before; and the operation had probably been practised by the remarkable, itinerant operator of our own country) than that it should now be received with approbation and eagerness. It had been observed, that in the operation by depression, the crystalline had sometimes been dislodged from its cavity in the vitreous, and had come forward into the anterior chamber of the aqueous humour, and that upon such occasions an opening had been made in the cornea, and the crystalline successfully extracted. From this consideration, 'twas not unreasonable to try whether the opaque crystalline might not generally be extracted intirely out of the eye with safety and success, through a proper opening made for

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its passage in the cornea. An opening is made in the cornea in such a manner as to give room for the crystalline to pass through it; the capsula of the crystalline is divided, in order to free the body of the crystalline from any attachments which might keep it back, and to prevent the vitreous humour from being drawn along and discharged with it; the crystalline humour, either by the common motions of the eye, or by a gentle pressure made upon the eye, is protruded through the pupil, and passes through the opening in the cornea. Thus the obstacle which hindered the transmission of light through the vitreous humour to the retina, is for ever removed, and the want of a due refraction of the rays occasioned by the discharge of the crystalline is to be supplied afterwards, as in the operation by depression, by an optic glass of a suitable convexity.

What has been the success of this method? not equal to what was wished and reasonably expected. Whether in the operation by extraction, the iris was sometimes wounded in passing the needle through the
cornea

cornea or in dividing the capsula of the crystalline ; whether it was over-distended or torn by the crystalline's passing through the pupil ; whether in the expulsion of the crystalline the ciliary processes were lacerated, and an extravasation of blood ensued from a rupture of the fine vessels of these processes or of other parts of this delicate organ ; or lastly, and what appears very probable, whether the air let into the eye by the large wound made in the cornea, injures the humours and the membranes that invest them, an effect which often happens in some other cases where membranous parts are exposed to the air, is difficult to determine. This is certain, that tedious and painful inflammations are apt to follow the operation by extraction, and sometimes considerable imposthumations ensue : in consequence of these, adhesions have been formed ; the figure of the pupil has been changed, or the motion of it entirely lost ; and sometimes the globe of the eye has wasted and been destroyed. Even the scar from the wound in the cornea, or the thickening of the cornea in consequence of the

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long-continued inflammation upon it, are apt sometimes to hinder the free passage of the light through it.

Upon these considerations the operation by depression, hitherto at least, seems preferable *. In regard to the method by depression, as the symptoms attending it are seldom very bad, and are free from danger; and as some cases admit of a reasonable hope of success; where the circumstances of the case are such as are commonly judged proper for the operation, it ought certainly to be recommended.

The next and the last parts to be considered are the muscles.

* See page li. of the Introduction.

OF THE MUSCLES OF THE EYE.

THE eye, thus curiously constructed to admit the rays of light and to receive the impression of external objects on the bottom of it; placed likewise in a situation the most favourable for commanding the view of objects; and lodged in a bony cavity serving to secure it against many accidental injuries; would, with all these advantages, have been much circumscribed in its uses, if it had been fixed in the socket without the power of being occasionally moved in different directions, according to the position of the object to be viewed. In order therefore to answer the important purposes of vision most effectually, the eye-ball is made capable of various motions, and is furnished with a proper apparatus of muscles for the performance of those several motions. Each eye has six muscles; four of which are called right or straight muscles; and they receive likewise other denominations relative to their situation, functions, or some power which they are supposed to have in expressing par-

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ticular affections of the mind. Thus one is called rectus superior, attollens, or elevator, and superbus; another is termed rectus inferior, depressor, and humilis; a third has the names of rectus exterior, abducens, and indignatorius; a fourth is styled rectus interior, adducens, and bibitorious; all these strait muscles arise by short narrow tendons from the bottom of the socket near the hole which gives passage to the optic nerve: they soon become fleshy, and running over the posterior part of the globe of the eye, are inserted into the anterior parts of the sclerotica by thin broad tendons, which by their expansions unite with one another, and are continued on to form the white of the eye.

The musculus rectus superior, passing over the upper part of the globe of the eye, is inserted into the superior and anterior part of the sclerotica; the rectus inferior passes along the under part of the globe, and is inserted into the sclerotica opposite to the insertion of the preceding muscle; the rectus exterior runs on the side of the globe next the temple, and is inserted into the sclerotica

tica on the same side; the rectus interior passes on the side of the globe next the nose, and is inserted into the sclerotica on that side, and opposite the insertion of the former.

When these muscles act singly, they serve either to lift the eye-ball upwards, or turn it downwards, to move it outwards or turn it inwards, according to the respective action of each muscle. Thus the rectus superior raises the anterior portion of the globe of the eye upwards when we lift up our eyes; the rectus inferior brings it downwards, when we turn the eye in that direction: the rectus exterior serves to move the globe sideways towards the temple; and the rectus interior to turn it inwards towards the nose. When two neighbouring strait muscles act together, they give the eye some degree of obliquity in its motion, as when the rectus superior and the adductor move together, they turn the eye obliquely upwards and towards the great angle; and so of the others: These last motions have been supposed to be effected by the oblique muscles. When all these muscles act successively, they give the appear-

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ance of a rotatory or rolling motion to the eye. If all the strait muscles act with equal force and at the same time, they are said to draw the eye ball in some degree towards the bottom of the socket, and to keep it as it were fixed and directed right forward. It is thought likewise that by drawing the eye towards the bottom of the socket, the posterior part of the eye may be so compressed against the fat contained in the socket, as to shorten the distance between the retina and cornea: at the same time the humours of the eye are supposed to be protruded forwards, and to render the cornea more convex, by which means the eye, it is imagined, is fitted to see small or near objects distinctly.

Besides these four strait muscles there are two others, which, from their direction, are called oblique. They are distinguished by the names of obliquus major or superior, and the obliquus minor or inferior. The first of these is likewise termed trochlearis, from the tendon of this muscle passing through a cartilaginous pulley that is situated in the orbit near the great or inner angle of the eye. The two oblique muscles together are by

some named *circumagentes* and *amatorii*, from the power which they were supposed to have of winding or rolling about the eye in the manner of looking that is commonly termed ogling.

The *musculus obliquus major* or superior arises tendinous from the bottom of the socket, near the entrance of the optic nerve, and passing towards the upper part of the socket near the great angle of the eye, the round tendon of this muscle runs through a cartilaginous pulley, which is there fixed to a depression in the *os frontis*. From thence it is reflected and runs obliquely backwards inclosed in a ligamentous sheath, and is inserted tendinous into the *sclerotica* upon the upper part of the globe of the eye, a little more backward than the insertion of the *rectus superior*.

The *musculus obliquus minor* or inferior arises chiefly fleshy, just within the edge of the lower and anterior part of the socket near the nose, and passing obliquely backwards under the globe is inserted into the *sclerotica* on the external side of the eye.

When

When the first of these muscles, the obliquus major or superior, acts singly, it rolls the eye about its axis, drawing the globe forwards and turning the pupil downwards; when the second, the obliquus minor or inferior, acts singly, that too rolls the eye about its axis, serving likewise to draw the globe forwards; but turns the pupil upwards. When both the oblique muscles act together, they draw the eye outward from the socket, serving by this means as antagonists to counteract the power of the strait muscles, which, when they all act together and with equal force, draw the eye-ball backwards; and even when they act singly, in the performance of their other motions, they have some tendency to draw the eye-ball backwards. The oblique muscles are thought likewise to have a further use in bringing the eye-ball forwards or outwards from the socket, as thereby they take off all pressure from the back part of the eye, and fit the form of the eye to view distant or large objects distinctly.

The muscles of the eye-ball are furnished with blood-vessels from the external carotid artery,

THE MUSCLES OF THE EYE. 281

artery, by means of the internal maxillary artery : The branch of the internal maxillary, which has been described to enter the socket and to be divided there into several ramifications, gives some to these muscles.

The nerves which pass to these muscles are from the third, the fourth, and the sixth pair.

The third pair of nerves, or as they are likewise called, the motory pair or movers of the eyes, give a branch to the superior, to the inferior, and to the internal right muscles ; also another branch to the inferior oblique muscle. The fourth pair, or as they sometimes called, the pathetic pair, are sent on the superior oblique muscles ; and the sixth pair of nerves are sent chiefly to the exterior right muscle or abducens.

C O N-

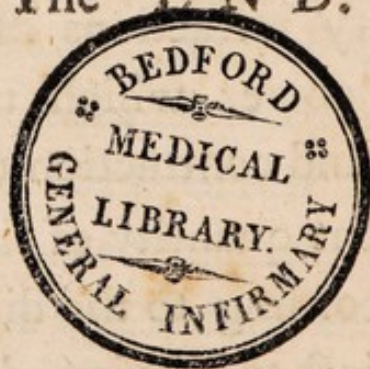
C O N C L U S I O N.

HAVING endeavoured thus to give a plain account of the structure and uses of the eye and eye-lids, I have proceeded in this subject as far as the duty of my office requires. It might however have been no unpleasing task to have recapitulated and given in one collected view the various uses to which the several parts described are most admirably subservient; but as I may already have engaged more of your time than has been agreeable to your convenience or inclination, I shall only beg leave to take notice in general terms—of the situation of the eye, as it is placed in that part of the body which is most advantageous for commanding the view of objects—of the figure of the eye, which, with the contained humours, is best calculated to receive and refract the rays of light, so as to form a distinct picture of external objects upon the bottom of it—of the manner in which the eye is connected to the socket, by which means it is properly retained there, and yet is capable occasionally of a free movement

ment in different directions without pain or inconvenience—of the defence with which nature has furnished this organ against many external accidents, by inclosing the greatest part of it in a firm, bony cavity or case—of the lodgment of it upon a soft yielding bed of fat, which facilitates the motions necessary to vision, prevents the injuries of pressure from these motions, and keeps the parts in a due state of softness and flexibility—of the various movements which the eye is capable of, by means of its several muscles, according as the different situation of the object to be viewed requires—of the coats or coverings of the eye, and the substances called humours contained in those coats, for the production of the necessary refractions of the rays of light—of the power which the eye has by the expansion and contraction of the pupil to admit a sufficient quantity of light or exclude too much, according to the distance or nearness of the object to be viewed, or according to the degree of light it is seen in, which is almost perpetually varying—lastly of the number, the course and the fineness of the blood-vessels and nerves serving for the constant supply

ply of the humours, and for the due nourishment and sensation of the other parts of the eye.—There is one observation more, which arises indeed so naturally from the subject as to make the mention of it here hardly necessary—every sensible and feeling mind will reflect with pleasure, admiration and reverence, on the infinite art and wisdom, which are so remarkably displayed in the structure and uses of this exquisite organ.

The E N D.



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