

General observations on artificial eyes : their adaptation, employment and the means of procuring them / by A.-P. Boissonneau.

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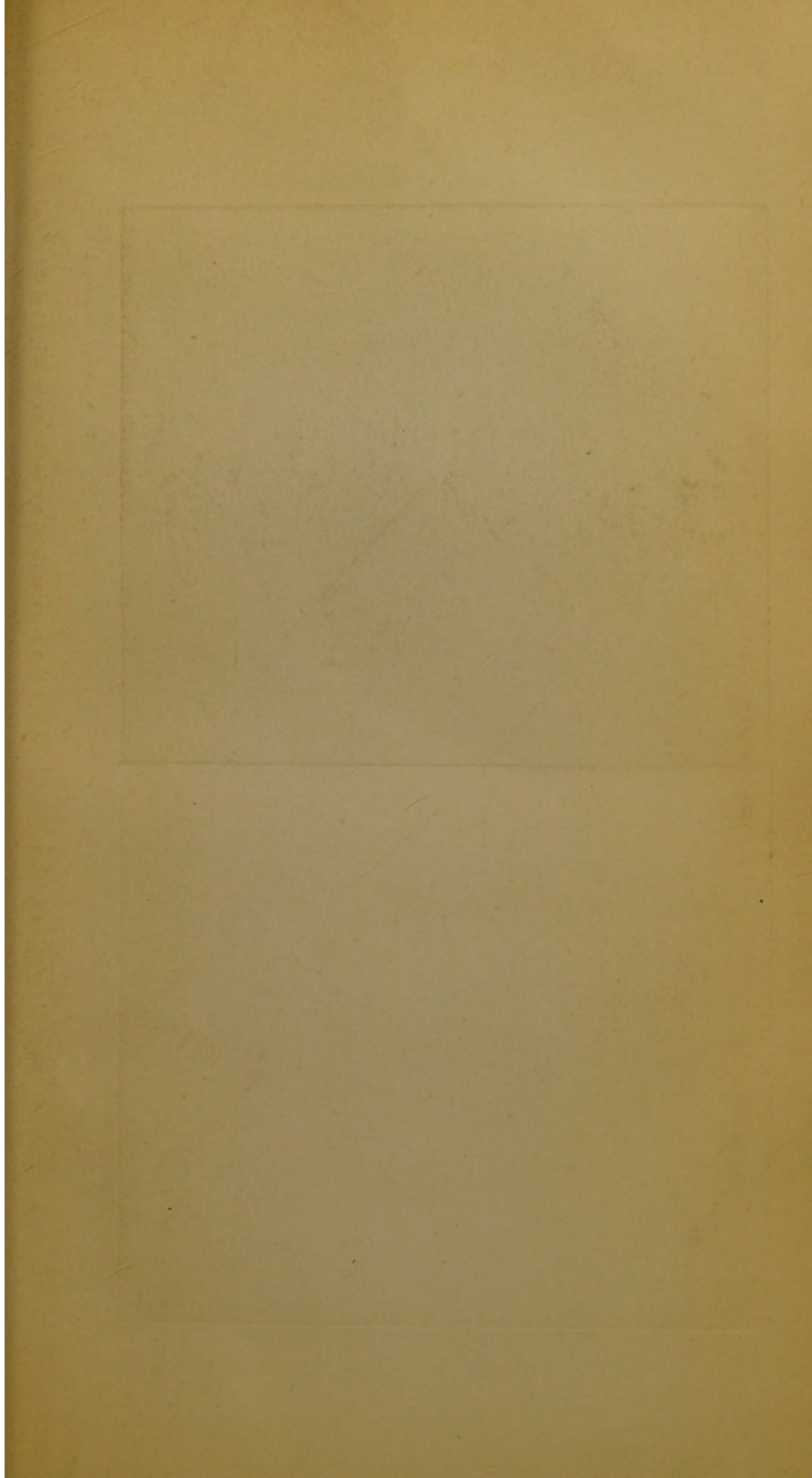
H. Badié, photographer.

Portrait of a subject who lost the left eye at fourteen years of age. The ocular globe is diminished by about three-fourth of its original volume. The eyelids are depressed and contracted, and their



17, boulevard Sebastopol.

Adaptation of an artificial eye to the same subject at the age of twenty, after the dilatation of the orbital cavity and of the eyelids.





H. Badié, photographer.

Portrait of a subject who lost the left eye at twenty-three years of age; photographed at thirty-five. The ocular globe is diminished by about one-third of its original volume. The frontal

17, boulevard Sebastopol.

Adaptation of an artificial eye to the same subject at the age of thirty-five.

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GENERAL OBSERVATIONS

ON

ARTIFICIAL EYES

THEIR ADAPTATION, EMPLOYMENT

AND

THE MEANS OF PROCURING THEM

BY

A.-P. BOISSONNEAU, JUN.,

OCULARIST TO SEVERAL FACULTIES AND MEDICAL COLLEGES,
IN FRANCE AND IN OTHER COUNTRIES.



PARIS

AT THE AUTHOR'S RESIDENCE

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GENERAL OBSERVATIONS

ARTIFICIAL BYES

THEY ARE THE ONLY ARTIFICIAL BYES

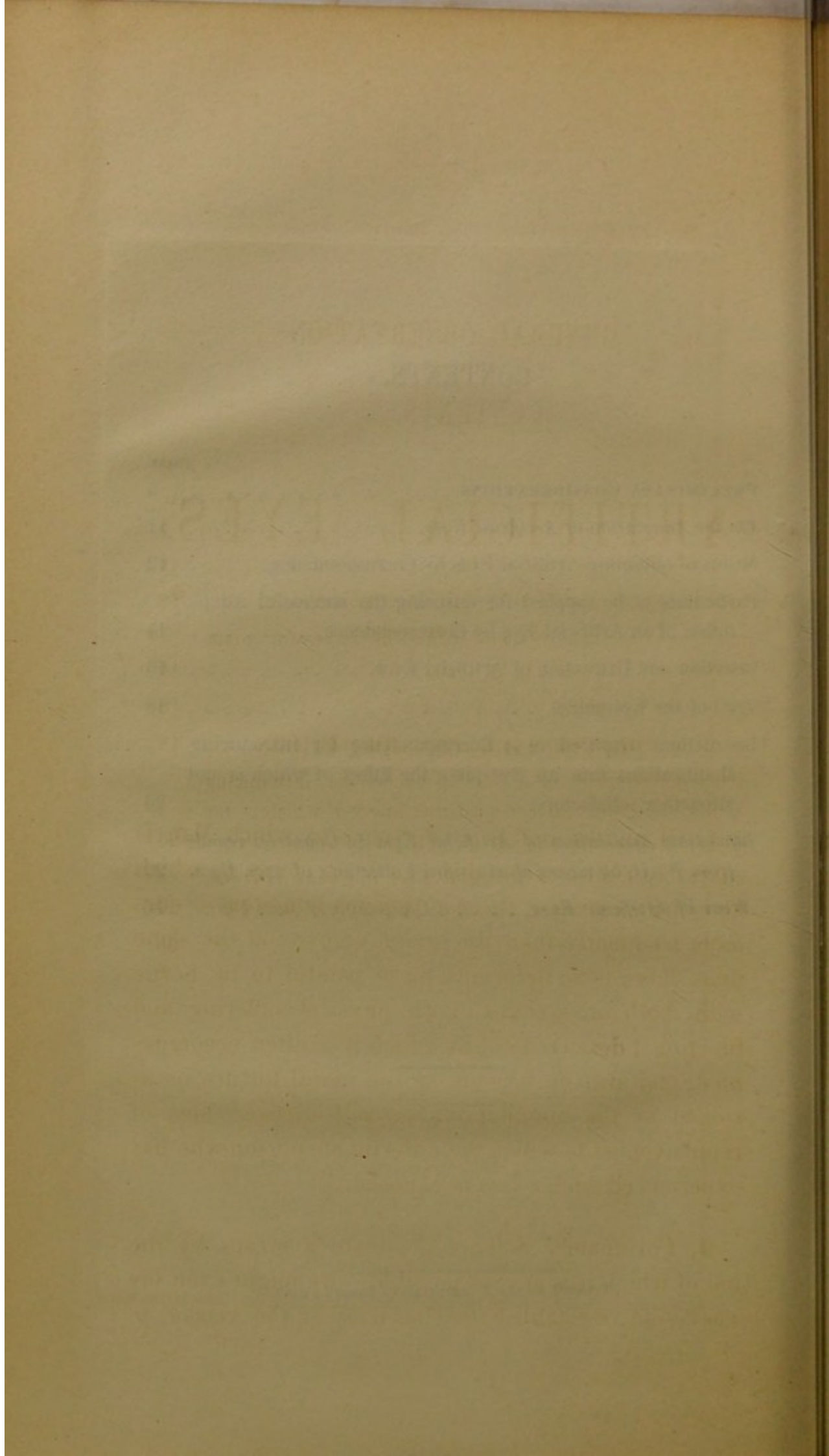
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GENERAL OBSERVATIONS

ON

ARTIFICIAL EYES.

PRELIMINARY CONSIDERATIONS.

1. Of all the bodily misfortunes to which Man is subject, resulting from diseases or accidents to which he is daily exposed, there is perhaps none that occurs more frequently than the loss of an eye : at the same time, there is no deformity more painful to be borne with, both on account of the physical suffering and functional derangement by which it is often accompanied, and also on account of the moral torture occasioned by the humiliations or self-imposed idea of repulsiveness to which the unfortunate person who has experienced such a loss is exposed.

2. Fortunately Science possesses a means by the aid of which it is always possible — we might even say easy — to re-establish the harmony of the visage, to

restore to the physiognomy its wonted expression, and, finally, to remedy all the inconveniences resulting from the disorganisation, the deformation, and even the absence of the ocular globe. The employment of the means in question, although already become very frequent, is not so general as it ought to be, because few persons are acquainted with it : — it consists in the adaptation of an artificial eye imitating, in the most precise manner, the size, the form, the colours, and even the movements of the healthy eye.

5. This result is obtained without the least inconvenience, without causing the slightest suffering to the patient, and especially *without having recourse to any preparatory surgical operation*, or even to the assistance of any kind of instrument. The use of a well-made artificial eye is so simple and so devoid of all trouble, that the person wearing it would certainly forget it completely if the precautions required by cleanliness did not oblige him to take it out and return it to its place every day.

4. An artificial eye is a small shell of enamel, thin and perfectly polished. Its anterior (convex) surface reproduces exactly the colour of the iris of the healthy eye, — the diameter of the pupil, the projection of the cornea, as well as the shade of the sclerotic conjunctiva and its different vessels. Its posterior (concave) surface covers the injured ocular globe, which, when the adaptation is successful, communicates all its movements to the false eye. The artificial piece is kept in its place by the eyelids, and no anxiety need be felt as to its perfect security.

5. The facility with which an artificial eye is worn will be readily understood when it is remembered that the extreme sensitiveness of the eye is limited to the transparent cornea. But this membrane being almost always destroyed at the same time that the globe of the eye becomes disorganised, the peculiar sensitiveness disappears also. The foreign body may then be safely introduced under the eyelids, without any fear of pain or irritation.

Should the transparent cornea not be entirely disorganised, or the contact with the foreign body cause the slightest pain to the patient, a little attention on the part of the artist will be sufficient to avoid such inconvenience; a trifling modification in one of the details of the adaptation is all that is required, and this alteration is easily accomplished.

6. There is no necessity for insisting at great length on the utility of artificial eyes. Let it suffice for us to say that the special advantages to be derived from them by patients are two.

The first, and the most easily appreciated by persons who have no knowledge of Surgery, consists in the fact that the artificial eye, whilst concealing a deformity of, to say the least, a disagreeable aspect, permits its wearer to look after his business and keep up his relations with society in general, without the fear of being looked upon as an object of repulsion or of pity.

7. The second, though not less important, is, that in many cases this little apparatus is of great assistance, if even it does not constitute the only efficacious means

for preventing or curing certain affections resulting from the loss of an eye, and which, although slight, may be very troublesome and are sometimes extremely painful.

Let us cite a few examples :

When the atrophied globe no longer exactly fills the socket, the eyelids fall one over the other, and the irritating contact of the lashes with the palpebral mucous membrane gives rise to inflammation followed by a purulent secretion, not unfrequently the cause of severe attacks of blepharitis, or of the falling inwards or outwards of the eyelids. Moreover, there being no longer the natural convex and perfectly smooth surface for the passage of the tear-drops to the lachrymal points, their course is interrupted, and they occasion, especially towards the external commissure, a watering of the eyes often accompanied by excoriation. The adaptation of an artificial eye, by sustaining and separating the eyelids, and keeping them in their natural position, will prevent or cure such painful affections.

Again : when the sight is totally abolished by the partial destruction of the membranes by means of which it operated, it may happen that the patient can still distinguish light from darkness : in such a case, the glare of the sun, or a strong artificial light, are capable of producing uneasiness, and even pain, and the sight of the healthy eye is troubled. In this instance, the artificial eye, applied to the suffering globe, serves as a screen, and causes the inconveniences which interfered with the proper action of the healthy eye to disappear.

8. The adaptation of an artificial eye is practicable whenever the globe of the lost organ has undergone a diminution, no matter how slight, in its natural size ; and whether atrophy be partial or complete, or should the globe even have been extirpated, the adaptation in question is still quite possible. (See Figs. 1, 2, 3, and 4.) However, we feel bound to state that the instances which furnish the best results are those in which the enamel can be placed on a but slightly diminished globe :—in such a case, the movements of the artificial eye are almost as regular as those of the healthy eye, and the illusion is complete.

9. The question of age is altogether without importance in the adaptation of an artificial eye, which is accomplished as easily for a child as for an adult. The physiological result obtained with young subjects is still more striking than at a more advanced period of life ; for observation proves that atrophy of the ocular globe, at the time when the organic development is not complete, gives rise, in a greater or less degree, to the deformation of the face. Not only does the artificial eye obviate this deformity, but it also prevents the exaggerated diminution of one of the sides of the visage, which comes on very rapidly when the employment of an artificial piece is deferred, and ultimately, if too long neglected, becomes irremediable. (See Fig. 2.) Recourse should therefore be had to the use of the artificial eye as soon as possible after the cure.

In hospitals, we generally effect the adaptation a month after the ablation of a staphyloma.

10. Let us mention that the support furnished by

the artificial eye to the orbital cavity prevents it from contracting. The eyelids recover their natural movements, which facilitate the circulation of the blood in those delicate membranous coverings; and not only do they not contract, but their development is actually encouraged in children and rendered equal to that of the eyelids of the healthy side.

ON THE ADAPTATION OF ARTIFICIAL EYES.

11. The success of the adaptation of an artificial eye depends upon the precision of the relations established between the artificial piece and the oculo-palpebral cavity destined to receive it. Two things must be considered : — first, the anatomical disposition common to every case ; and next, the different conditions under which the diminution of the ocular globe has been produced, or the pathological complications which may have arisen.

The form to be given to each artificial piece depends, in every case, on the anatomico-pathological conformation. It will thus be readily understood that artificial eyes present, in their dimensions, in their forms, and in their colours, as many differences as there are particular cases.

12. It is this diversity of conformation, added to the necessity for satisfying the requirements of good and painless wear, which renders the adaptation of artificial eyes all the more difficult in proportion to the degree of perfection sought to be obtained.

13. Persons desirous of procuring an artificial eye, in the best conditions possible, would therefore do well to go to Paris ; for there only can they obtain all that the perfection of art has been able to accomplish.

14. However, the suitable adaptation of an artificial

eye is not absolutely dependent upon the presence in Paris of the person desirous of wearing one : excellently-adapted artificial eyes may be obtained by correspondence. In this case, recourse must be had to the employment of the means we have indicated under the numbers 16 *et seq.*

15. There are some persons who not only could not undertake a voyage to Paris, but who inhabit countries so remote, that even the time required for the adaptation of an artificial piece by correspondence would offer considerable difficulty, if not an absolute obstacle. Such persons usually have recourse to the use of artificial eyes made beforehand and sent by collections into foreign countries where such an acquisition is desired, and content themselves with an adaptation less perfect, it is true, but the use of which is nevertheless highly satisfactory.

Farther on, under the numbers 47 *et seq.*, will be found the description of our collections of artificial eyes, classified specially for this purpose.

**Means of obtaining Artificial Eyes
by Correspondence.**

16. The details into which we are about to enter will appear perhaps, at first sight, somewhat minute. But we must be allowed to remark, that it is an excessively delicate matter to adapt an artificial eye by correspondence, and that, in order to obtain a satisfactory

result, even the most insignificant circumstances have their value. We will therefore beg our readers to take for granted the utility of the particulars we ask for, and not to forget that their object is to enable us to appreciate the special case we may have to provide for, as well as though we had ourselves examined it. It thus becomes highly important that they should be forwarded to us with scrupulous accuracy, since they will be our only data for determining the form, the dimensions, and all the peculiar marks of resemblance which every artificial eye ought to possess.

17. If, beyond the indispensable particulars we ask for, the patient, or the doctor who attends him, should think fit to add any others, it is evident that it would be well not to omit them ; in this respect, excess would be an advantage : but even in these cases it will still be necessary to reply to the *questions* put by us, of which a complete list will be found farther on. We again insist upon the necessity for sending us the different particulars asked for, without even a single omission.

18. However intelligent or well-educated the patient may be, we prefer, whenever it is possible, that the particulars be collected and drawn up by a doctor. Long experience has taught us, that the daily habit of observation enables the medical man to arrange, in a more precise, more complete, and decidedly preferable manner for us, the notes of which we stand in need for our delicate ocular production.

**Particulars to be supplied for ensuring
the successful Adaptation of an Artificial Eye
by Correspondence.**

19. *a.* The name of the person about whom the information is given ¹?

b. His age?

NOTES TO BE TAKEN RELATIVE TO THE HEALTHY EYE.

c. What is the diameter of the iris ²?

d. What is the mean diameter of the pupil?

e. What is the colour of the iris?

f. What is the colour of the sclerotic?

NOTES TO BE TAKEN RELATIVE TO THE LOST EYE.

g. Which eye is lost? Is it the right or the left?

h. How long has it been lost?

i. Is the ocular globe atrophied, or has it been extirpated?

j. What is the degree of diminution of the globe compared with the size of the healthy eye?

k. Is the anterior surface of the ocular remain flat, round, or conical?

l. Although the sight be lost, do any portions of the transparent cornea still exist?

m. What is the depth of the oculo-palpebral sinus, measured from behind the lower eyelid?

¹ This particular is indispensable in order to avoid confusion.

² The measures may either be given in French *millimètres*, or in this way : —————

n. Give a description of any complications which may have arisen after the loss of the eye. If any strings or adherent ligaments partially unite the eyelids to the globe, state exactly their extent as well as the position they occupy.

20. These particulars may be very advantageously completed, when possible, by a coloured drawing, of the natural size, faithfully representing the ocular region of the two eyes, the exact colours of the iris, and that of the sclerotic. A photograph might suffice. Either should be a full front view.

21. Figs. 1, 2, 3, and 4, give an idea of the region of the face which ought to be drawn.

22. If it should be found impossible to supply the drawing or the photograph we ask for, then that of the four Figures we have just designated might be pointed out to us as bearing the greatest resemblance to the case about which it might be wished to inform us.

23. The preceding information is addressed to persons who have never used artificial eyes. But those who already possess a well-made piece, and who might wish to procure others, need only forward that as a model. If the eye should be broken, it would then be necessary, so far as possible, to send us *all* the fragments. Finally, if there be any defects, they should be pointed out to us in accordance with the form printed farther on, under the number 46, after having taken care to observe the rules indicated for the trial of the pieces in the numbers 33 *et seq.*

Insertion and Extraction of the Artificial Eye.

24. The fragility of the enamel requires certain precautions to be employed before proceeding to the insertion or extraction of the piece. Above all, care should be taken not to let it fall on the ground, nor strike against any hard substance.

25. In order to facilitate its passage under the eyelids, it is well, in general, to wet it before insertion. But this precaution is not indispensable; and some persons, to whom the contact of water occasions uneasiness, prefer introducing the piece dry.

26. If the globe of the lost eye remain tolerably large, or if the whole or a part of the transparent cornea be preserved, the piece will be introduced more easily by looking downwards.

27. On the contrary, it will be necessary to look upwards to facilitate the extraction.

INSERTION.

28. To place the piece properly, the first thing to be done is to recognize its nasal and temporal extremities, that is to say, those which correspond to the two angles of the eye; they are both indicated on the piece by a fasciculus of sanguineous vessels. The nasal is usually smaller than the temporal extremity, and, almost always, the iris is nearer to its edge.

29. So much being well understood, the eye should be taken, in the sense of its width, between the thumb and forefinger of the right hand, in such a manner that the *forefinger* be placed upon the nasal extremity of the piece, in the case of a right eye ; or, on the contrary, the *thumb*, in the case of a left eye.

The left hand should now be applied to the forehead, and the extremities of the fingers of this same hand, directed downwards, raise the upper eyelid.

The artificial eye is then introduced under this eyelid, and kept there by placing on it one of the fingers of the left hand. The right hand then abandons the piece and pulls down the lower eyelid, behind which the corresponding edge of the piece at once places itself.

EXTRACTION.

30. Some persons, in extracting their piece, take hold of it with their fingers and draw it outwards. This means is the best, because it is the most simple.

31. But, as the piece is most frequently deeply imbedded under the eyelids, it is necessary to have recourse to a pin, easily procured everywhere.

32. The manner of proceeding is this : — The right hand being provided with a round-headed pin, of average size, one of the fingers of the left hand pulls down the lower eyelid ; the head of the pin is then introduced, behind that eyelid, under the edge of the artificial eye,

which is thus slightly raised and drawn outwards. It should be allowed to fall on a handkerchief or a napkin, to avoid the possibility of breaking.

Trial of the Pieces.

33. We would first of all observe, that the most difficult point in the adaptation of artificial eyes is the determination of the exact form required in each particular case. Not only is the most perfect resemblance desirable; but the artificial piece should also not cause the slightest uneasiness, and should assist, rather than interfere with, the functions of the membranes or organs in the midst of which it is placed.

34. Also, whenever a trial is to be made, and a collection of pieces of different forms and sizes is at hand, great care should be taken to select that, the form and dimensions of which appear most likely to suit the oculo-palpebral cavity.

35. It must not be forgotten, likewise, that after a considerable diminution of the ocular globe, or its extirpation, the eyelids become depressed and contract; and, if too much time be lost, the cavity sometimes becomes so small, that it is no longer possible to adapt an artificial eye equal in size to the healthy one. This is the reason why we are of opinion that the delay of a month or five weeks is that after which, with rare exceptions, it is advisable to try the placing of the piece for the first time. (See Fig. 2.)

36. In the first instance, it will be better to try a piece rather too small than too large, in order that its introduction may be effected with ease. Afterwards a piece of larger size may be tried, and so on progressively, to the extent permitted by the size of the cavity and the dilatation ordinarily produced through the use of the piece, till the most suitable dimension be attained.

37. But, in any case, it is always preferable that the piece definitively adapted should be a trifle smaller than the sound eye. The apparent effect will be better, the use more convenient, and the movements more decided.

38. It is also very essential that the volume of the piece should allow the eyelids to close completely.

39. A trial-piece seldom fulfils at first all the conditions of a successful adaptation. We will therefore point out the means for recognising the defects it may possess, and afterwards give a list of the particulars required by us to facilitate their correction.

Certain precautions are indispensable.

40. When the piece is inserted, care must be taken to see that it is well placed, which may be easily ascertained by observing whether the two fasciculi of sanguineous vessels, drawn on the nasal and temporal extremities of the artificial piece, are visible at the two angles of the eye.

41. We would strongly recommend this examination to be made calmly and without haste. In cases

of the description in question there is never any occasion for hurry. Let the observations be therefore made at leisure. By waiting a few moments, the examination will be accomplished with greater accuracy.

42. In cases where the artificial piece is tried by a patient who has never hitherto used one, should even no inconvenience nor pain be experienced, it will be well to cause the enamel to be worn for several days before taking note, in a definite manner, of the defects it may possess. (See number 46.)

43. While making the observations, the examiner and the patient should both stand up, in front of each other, at the distance of about a yard.

44. If the patient supplies his own observations, he should place himself in a standing position in front of a glass placed against a wall (not held in the hand) at a similar distance.

45. The patient should endeavour to keep his head in the position to which he is most accustomed, and direct his look horizontally.

Instructions required in a Correspondence for introducing Modifications into an Eye-piece the effect of which is not altogether satisfactory.

46. Among the defects that may occur, we will point out those which, in every case, it is important to sig-

nify to the artist charged with the execution of the artificial eye. Some exceptional cases may render special particulars necessary ; in such instances, it will be advisable to adopt the plan recommended in number 17.

i. One of the defects to which we think it advisable to call particular attention is that presented by a piece, from the peculiar movement in which the sanguineous vessels place themselves, on the one side, under the lower eyelid, and, on the other, under the upper eyelid.

ii. Does the artificial eye appear to be of a suitable size ?

iii. When the eyelids are closed, do they cover it completely ?

iv. If the artificial piece occasions uneasiness, where is the uneasiness or pain felt ?

v. Can this uneasiness be compared either to a pressure or to the presence of a grain of sand ?

vi. Is the diameter of the iris equal to that of the healthy eye ?

vii. Is the look of the artificial eye parallel with that of the healthy eye ? Should there be a strabismus (squint), indicate its direction (inward, outward, descending, or ascending), and mention its proportions.

viii. Observations on the colours of the iris and that of the sclerotic.

ix. Special remarks.

Fig. 1.

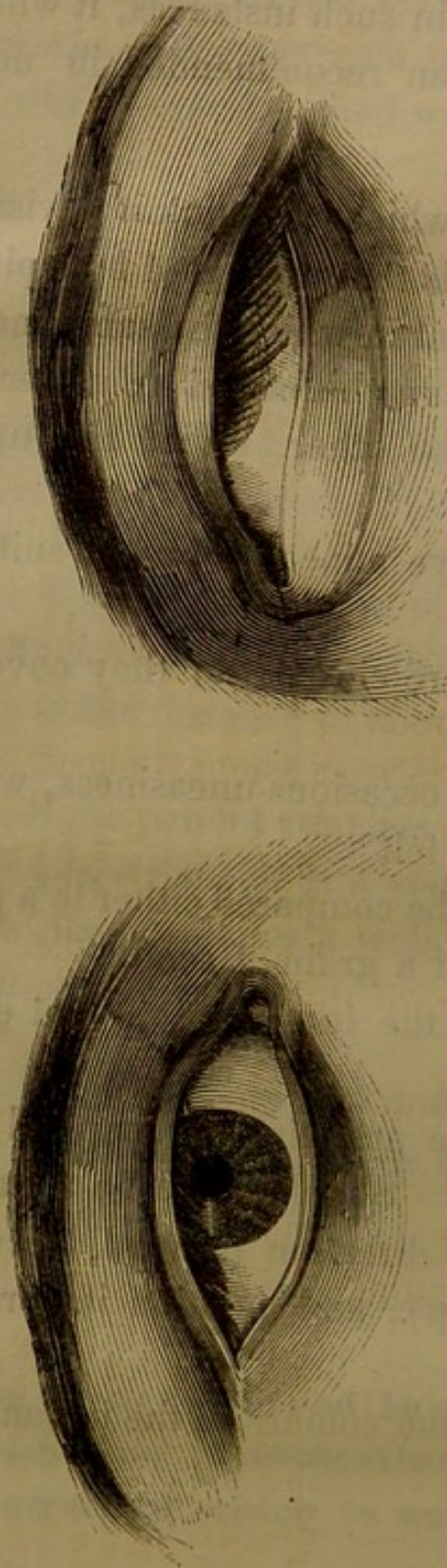


Figure 1. represents the two eyes of a woman thirty years of age. The lost left eye offers the most favorable conditions for the adaptation of an artificial eye.

The ocular globe is diminished by about one-fifth of its original volume: it has preserved its spheroidal form. The transparent cornea is totally disorganised, and at the place it occupied may be perceived a scar, usually of a greyish colour,

which is more or less extensive, according to circumstances.

This case may have been the result of the ablation of the staphyloma, the cornean portion and the iris alone having been removed.

In this instance, the ocular remains supplies the artificial piece with an excellent point of support, and also with the means of motion. Every cause of feeling has been destroyed,

and the deformation of the face need not be feared.

If, in this case, a portion of the cornea, no matter how slight, should still exist, the adaptation of the artificial piece would present obstacles often difficult to be overcome. Sometimes, also, the cornean scar assumes a conical form, the projection of which likewise constitutes a condition unfavorable to the prosthesis.

Fig. 2.

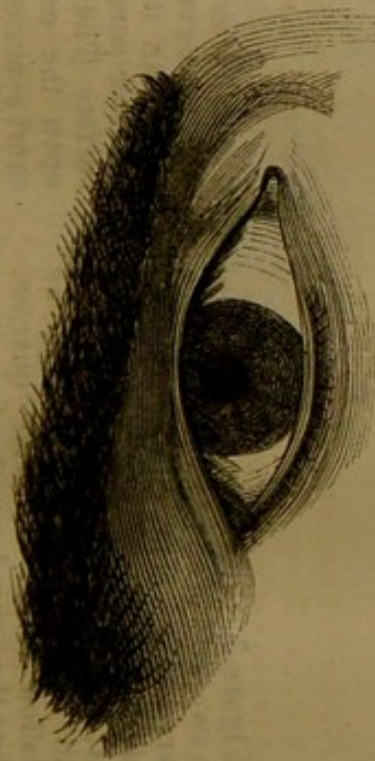


Figure 2. shows the exact image of the ocular region in a subject, twenty years of age, who lost the left eye, when six months old, in consequence of a purulent ophthalmia.

The atrophy of the globe was complete from the first. The eyelids, after having become depressed, contracted. From the absence of a point of support supplied to them by the globe, they remained motionless, and their development was stopped. The



side of the atrophied eye is shrunk and thin, whereas the side of the sound eye presents the rounded curves of an ordinary development.

In the present instance, the ocular prosthesis can remedy the deformity but very imperfectly. The artificial eye will be smaller than the natural eye, and its motion scarcely perceptible.

bones forming the orbital cavity in time approached each other: the frontal bone lowered considerably, whereas the cheek-bone attained a higher level than that on the side of the healthy eye. The healthy eye shared in the deformation, as indicated by the oblique direction taken by the eye-brow.

If, in a case like this, the whole of the face of the subject be examined, it will be found that all the

Fig. 3.

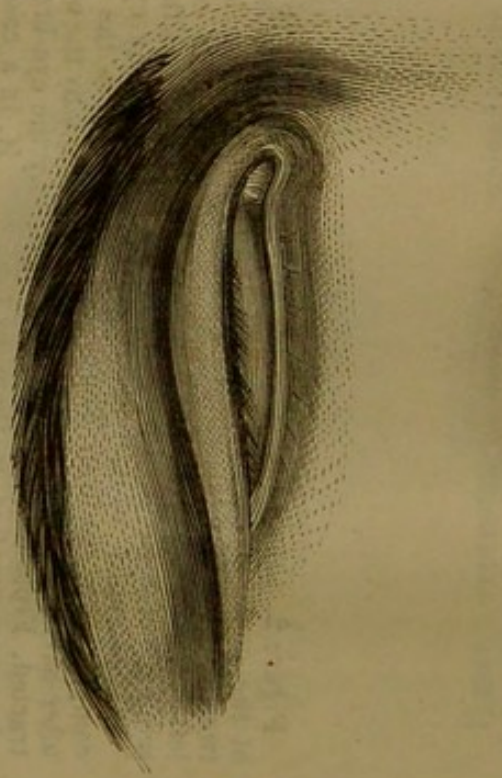
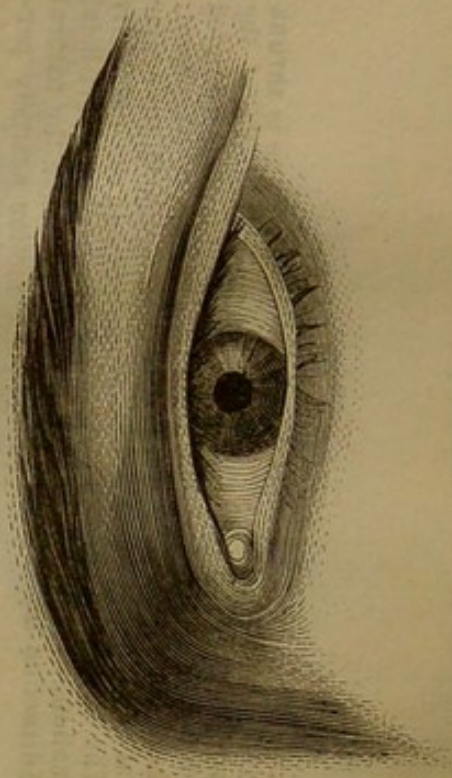


Figure 3. illustrates the image of the two eyes of a young girl eighteen years of age. The left eye is sound, and large in size. The right eye is lost; the globe, which was affected with staphyloma, had undergone ablation of its anterior quarter. When the wound was healed, about



a month after the operation, the globe had preserved only two-thirds, or about half its original volume. Its anterior portion presents a flattened surface. The eyelids have sunk down upon the ocular remain; but the short space of time elapsed since the

operation has not been sufficient for the contraction of their tissues.

The volume of the artificial eye may here be equal to that of the healthy one; but its movements will be more limited than in the case represented in Figure 1.

Fig. 4.

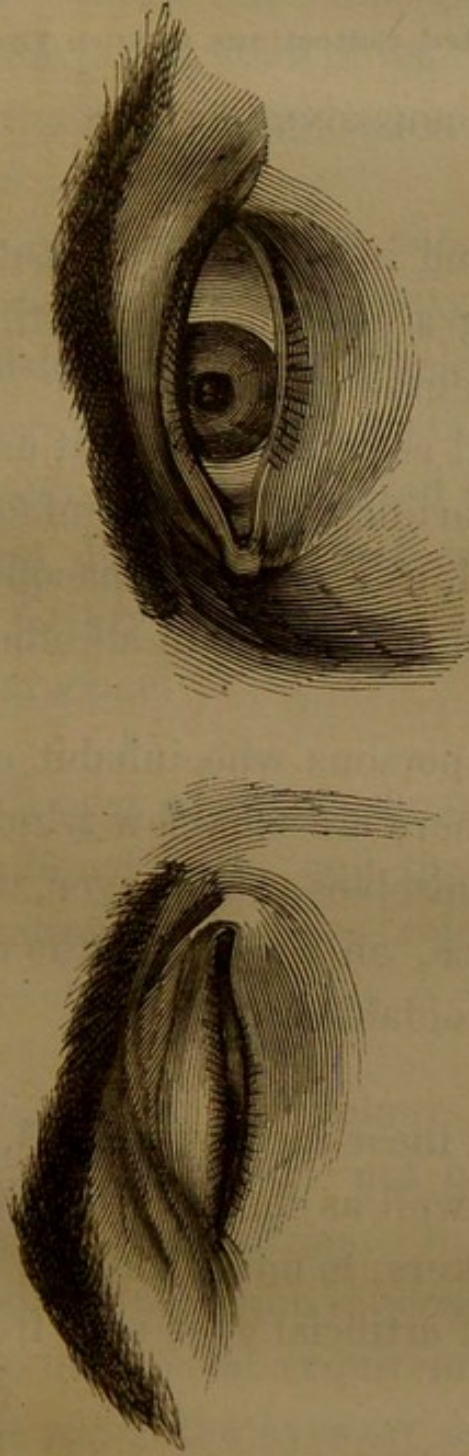


Figure 4. represents the two eyes of a man forty years of age. The left eye is healthy; the right eye, which is lost, has undergone no operation. It is atrophied in consequence of a disease by which it was affected. Its volume is reduced about one-half, and it has preserved its

spheroidal form, so that its anterior portion is round. The diminution of the globe dates from several months; the eyelids have fallen over the ocular remain, and their tissues are already contracted. The palpebral opening has lost about one-fifth of its extent. The use of an

artificial eye may occasion dilatation of the eyelids, and cause them to recover their lost amplitude.

In this case, the volume of the artificial eye will be only a trifle smaller than that of the sound eye, and its movements will be satisfactory.

IMMEDIATE APPLICATION

OF ARTIFICIAL EYES IN COUNTRIES REMOTE FROM PARIS,

By means of classified Collections of such Eyes.

BY M. A.-P. BOISSONNEAU, JUN.

47. It is in France, and in Paris only, that the Art which aims at replacing a lost eye by an artificial one has attained to a real degree of perfection.

For this reason, in all countries (without exception) the superiority of the artificial eyes manufactured in Paris is undisputed, and, as a natural consequence, recourse is had to them in preference to all others.

48. But, among the persons who inhabit countries remote from France, there are very few who can undertake the voyage themselves. Moreover, the adaptation by correspondence, on account of the distance, would give rise to unavoidable delays.

49. In order to avoid these inconveniences, it is not unusual for doctors, as well as chemists, opticians, and surgical instrument makers, to undertake the required adaptation by means of artificial eyes sent from Paris by collections.

50. It therefore became necessary to place at their disposal eyes easy of application, yet possessing at the same time all the requisite qualities. But to obtain this desideratum, it was also necessary that the formation

of the collections should be undertaken by experienced and scrupulous hands.

51. It is with a view to arriving at this result that we have created our collections of classified artificial eyes, in the preparation of which we have endeavoured to unite the indispensable conditions above alluded to.

52. It is quite true that the pathological conditions presented by the orbital cavity after the loss of an eye vary considerably; nevertheless, certain cases occur much more frequently than others. The eyes of which our collections are composed include all the types of forms and dimensions that can be adapted with the greatest facility in such cases as are the most often met with in practice.

53. All eyes of extraordinary forms, suitable only for exceptional cases, and therefore rare and difficult of application, have been rejected from our classification.

54. The question of colours has received our particular attention, Nature not having distributed them uniformly in all countries. In the composition of each collection, the selection is consequently made with due regard to the special requirements of that part of the world for which the eyes are destined.

55. Each collection consists of an equal number of eyes for the right and left sides respectively.

56. For both sides, the eyes are divided into series

of different forms and dimensions. The pieces in each of these series correspond to the various degrees of diminution undergone by the ocular globe, as well as to the different pathological conditions most frequently presented by the orbital cavity after the loss of an eye.

57. The assortment is so contrived that, with a tolerably-furnished collection, an eye suitable for immediate application in ordinary cases may always readily be found.

58. All the eyes are marked with a number of classification, and each collection bears likewise its special number.

59. To complete a collection when one or more pieces have been disposed of, it is only necessary to make us acquainted with the numbers wanting. Care should also be taken to remind us of the number of the collection with every fresh order.

60. It will occasionally happen, in exceptional cases, that some alteration is required to be made in one of the pieces comprised in the collection. In this instance, the piece should be sent to Paris, accompanied by the particulars drawn up in accordance with the formula given at number 46.

61. In some special cases, moreover, it becomes advisable to forward two pieces of the collection, one for the indication of the form, the other for that of the colour.

62. When several pieces are required exactly si-

milar to one contained in the collection, the model should always be sent to Paris : the necessity for copying it with scrupulous accuracy renders this precaution indispensable.

63. It will always be well to add to the pieces forwarded as models, a description of the ocular region in accordance with the formula prescribed in number 19.

64. For the trial and definitive choice of the pieces, consult the instructions detailed in number 33.

65. Our classified collections are composed of 36, 50, 72, 100, or 144 eyes.

66. The more numerous the collection, the more complete, necessarily, will be the assortment of forms and colours.

67. The extent of a collection may always be easily increased, or the types of the forms and colours of the eyes (in a collection that might prove insufficient) be varied, by mentioning its special numerical designation.

68. Finally, we have arranged for medical gentlemen small trial-collections composed of twelve pieces only, by the aid of which they may be enabled to order all the forms and all the colours by following out the instructions given in numbers 19 and 46.

WEAR OF ARTIFICIAL EYES.

69. The wearing of an artificial eye is as simple as possible ; it may, in this respect, be compared to an article of toilet.

70. In the morning it is inserted, and at night, on going to bed, it is taken out.

71. No serious inconvenience, however, would be felt, were it to be kept in during one or even several successive nights ; but this should be the exception, and on no account be allowed to become a habit.

72. The artificial piece ought to be kept perfectly clean ; it should be washed with care immediately after extraction, and wiped with a piece of fine linen.

73. During the night, it is better to shut it up in a small box than to leave it in a glass of water.

74. A well-adapted artificial eye causes no pain whatever, and the person wearing one entirely forgets the circumstance ; at any rate, an exception to this rule rarely occurs.

75. Like the healthy eye, the artificial eye is bathed by tears, whose secretion it assists, at the same time that it facilitates their passage through the lachrymal tubes ; and, so long as it is not worn out or injured, it occasions no unusual secretion.

76. The duration of an artificial eye is not indefinite : at the expiration of a year it is worn out. Its incessant movement, added to the rubbing of the eyelids and the action of the tears that bathe it, destroy the polish of the enamel, the surface of which at first becomes dull, and afterwards wrinkled.

77. It then becomes necessary to replace it by a new eye, in order to avoid exposure to irritation followed by a secretion of mucus. At this stage, however, such accidents present but little gravity, and the employment of the new enamel speedily causes their disappearance.

78. But, if the use of a worn-out or unpolished artificial eye were to be persevered in for too long a time, the rubbing of the unpolished parts upon the membranes would not fail, sooner or later, to occasion inflammation accompanied by a purulent secretion. This secretion would be followed by the growth of fleshy excrescences, which, under the form of swellings or proud-flesh, would gradually fill up the cavity, push the artificial eye forwards, then make it appear too big, and finally expel it altogether.

79. We only mention these accidents (fortunately of very rare occurrence, since they are purely owing to neglect) as a warning to persons not sufficiently careful.

80. This is the place to say a few words about a proceeding, as incomplete as it is injurious, employed by some persons for diminishing the volume or modi-

fyng the form of an artificial eye, and which consist in cutting its edges upon a grindstone or with a file. The unpolished enamel will be sure to produce all the accidents we have just mentioned. We think it right to point out the disastrous consequences of the proceeding in question, because, for want of such information, they might be attributed to the use of artificial eyes in general, whereas they are merely the result of the injudicious practice alluded to.

81. We will sum up with a fact long since proved by experience, namely, that the wearing of a well-adapted artificial eye, not too large in size, not worn habitually during the night, and carefully replaced as soon as it is worn out, is never attended with inconvenience, and may be safely continued, whatever the age of the wearer.
