

diagnosis of difficult cases, and so it unquestionably did in the hands of Sanson. Since his death other surgeons have resorted to the above means of diagnosis, but with very unequal success, so that of late, among the Parisian practitioners, it has been falling into disrepute. It is under these circumstances that Dr. Mayne, a favourite pupil of Sanson, has contributed an interesting article on the subject in a recent number of the *Gazette Medicale*, which we shall transcribe, as it is very concisely written. We are induced to give Dr. Mayne a little more room than we should have otherwise done, from the belief that the attention of ophthalmologists has not been pointedly directed in our own country to this very interesting phenomenon. It is not even alluded to in Mr. Scott's able treatise on cataract, which we reviewed last year. Dr. Mayne writes as follows:—

Professor Sanson first remarked in 1836, that when a candle is placed before the eye of a person affected with amaurosis, the pupil being dilated, three images of the flame are perceived, placed one behind the other. The most anterior and the most brilliant is straight; the second or middle one is paler and inverted; the third or posterior one is straight, as the first. Sanson communicated his discovery to his class in 1837, and subsequently explained the mechanism of the phenomenon by means of an apparatus in glass, imitating the human eye, with which he demonstrated the effects produced by cataracts. This his two internes, MM. Bardinet and Pigné, effected on their side with the assistance of a few watch glasses. Sanson and his pupils arrived at the same result. They found that the anterior straight image is produced by the cornea; the second or middle inverted one by the posterior segment of the crystalline capsule; and the posterior straight one by the anterior segment of the capsule. Opacity of the cornea destroys three images; opacity of the anterior capsule destroys the two posterior ones; and opacity of the posterior capsule prevents the production of the inverted image. In other words, in posterior capsular cataract, the middle or inverted image is not seen; in cataract of the anterior capsule, the anterior straight one only is visible, which also is the case in capsulo lenticular cataract.

Sanson concluded from his experiments that cataract, even in its incipient stage, could be distinguished by this means from amaurosis and glaucoma. The extensive opportunities for studying diseases of the eye which he enjoyed, enabled him to test his discovery on many patients, which he did with great success. How is it, then, that this means of diagnosis should now be nearly abandoned? It must be that the difficulties which it presents in the hands of surgeons who are unaccustomed to resort to it, are such as to modify the results obtained, and consequently to dishearten them; and this I believe is really the case. Several clever practitioners have told me that they have been led into error by having recourse to the lighted candle, but such a circumstance does not prove against Sanson's discovery; it merely shows that the experiment was erroneously carried into effect. There are several sources of error which must be guarded against.

The first indispensable precaution is to dilate the pupil previous to performing the experiment. (It was on an amaurotic patient that Sanson first observed the phenomenon.) The field of the pupil is of very limited extent, and the impression produced on the eye by the presence of the candle tends still further to diminish it, causing the iris to contract. Were not the pupil, therefore, artificially dilated, the three images would have to be sought for in a circle not presenting more than three millimeters in diameter. A person perfectly familiar with the appearance of the images would have the greatest difficulty of recognising them under such circumstances. Now if we suppose the examination to be made by a surgeon who has never seen them, and has not dilated the pupil, it is easy to understand that he may only observe one, and conclude that his patient is affected with

cataract. Time, however, may prove that such is not the case, and he then supposes that the mode of diagnosis which he resorted to is in fault, whereas the error was the result of proper precautions not having been taken. It is therefore necessary to increase, as far as possible, the field of the pupil, which may be doubled or trebled by the use of belladonna. In order to obtain immediate dilatation, a few drops of a solution of atropia should be instilled into the eye. Its instillation is followed by pain, injection of the conjunctiva, and by a discharge of tears, but the pain is bearable, and the injection and epiphora are of short duration. The eyelids should be kept closed, or the solution would be carried away by the tears. It is equally necessary that the examination of the eye should take place in complete darkness, otherwise the external light will produce reflections in the eye which will sometimes simulate the images of the candle, and sometimes prevent their being recognised. The pupil being thus dilated, and the patient placed in a dark room, the light should be moved about before the eye. In addition to the above causes of error, there are others which may lead the observer to suppose that the images are deceptive, when such is not the case. The cataract may be so slight as merely to consist in a scarcely perceptible cloudiness, through which the rays of light penetrate, although with difficulty. Or, the opacity may commence by the circumference, and only affect a limited portion of the surface of the crystalline capsule or lens, the remainder being perfectly sound.

The surgeon who has recognised the three images in these cases, and who has concluded from them that there is no cataract, is surprised to perceive, in the course of time, the opacity becoming manifest, and thinks the mode of diagnosis which he resorted to is in fault. These cases are, it is true, very embarrassing; nevertheless, it is possible to recognise them. If the change consists in a slight cloudiness, the images perceived are not like those in the healthy or amaurotic eye; the anterior one alone is brilliant, and the others are extremely pale and dim. This circumstance alone should put the surgeon on his guard, and, combined with the other symptoms, may enable him to arrive at a correct diagnosis. When, on the other hand, the crystalline apparatus is only affected in a limited extent, if the opaque point does not present itself to the flame, you recognise three images, of normal brilliancy: and yet the diminution of the sight is not referrible either to amaurosis or glaucoma. The patient should be told in such cases to move his eye in every direction; and an object should be presented to it and made to follow its movements. When this object is in the direction of the cataract, it will not be seen. Having thus ascertained the diseased point, the surgeon must place the flame opposite the diseased region of the eye, when one or two only of the images will be seen, according to the nature of the cataract, and the disease will be recognised. These, no doubt, are the sources of error which have deceived many well-informed practitioners. The following cases are instructive, as illustrating this fact:—

CASE I.—In June, 1841, the Duchess of M—— came to consult Sanson; he was then suffering from the long and cruel malady which eventually carried him off, (a disease of the spinal cord,) and asked me to examine her. The eyes appeared healthy, and had been judged so by several surgeons. The iris was moveable, and the pupil dilated in both eyes. The two posterior images were scarcely perceptible. I was consequently inclined to admit the existence of a cataract, and in order to acquire a greater certainty, requested the lady to use a belladonna ointment over the orbits, and to call the following day. Sanson examined her along with me on her second visit. We saw the two images, but so dimly as to be scarcely perceptible. Sanson agreed with me in admitting the existence of two incipient cataracts, and time has verified our diagnosis.