but am not fully convinced of its frequent occurrence among them. Among several hundred colliers who resort to the North Staffordshire Infirmary for treatment every year, not half a dozen apply on account of nystagmus. Still it may be regarded as a morbid condition, having some peculiar relation to the employment pursued. It occurs in other people who from some eye-malady, as, for example, leukoma, suffer from imperfect and irregular access of light to the fundus oculi, and the suggestion rises to my mind whether the flickering lights of lamps, amid surrounding darkness, may not set up irregular muscular action; a sort of chorea of the ocular muscles. And why it happens in some and not in other colliers, may be attributed to inherent nerve weakness, constitutional or acquired, in those that suffer. Miners are pallid, with a dusky, unhealthy complexion; but their pallor is usually not from ordinary anæmia, and may be attributed to the absence of sunlight at work, causing a sort of blanching, to the begriming of the skin, affecting cutaneous circulation, and generally to the absence of fresh, healthy breezes to stimulate that circulation. Dr. Paul Fabre, from a microscopic analysis of the blood, asserts that the number of blood-corpuscles and the quantity of hæmoglobin are normal, and that true anæmia is not more common among them than among other workmen. The prevalence of ankylostomum is another reputed circumstance his inquiries do not confirm. Colliers, again, prematurely look old; the expression of their faces grows anxious and depressed; they are seldom stout, are weak-kneed, have a shambling gait, and oftentimes bowed backs. Their occupation is generally exhibited by blueish scars on their faces and hands, the results of small lacerations into which the coal-dust has entered and permanently stained—just as happens in tattooing with gunpowder.

Statistics.—In the matter of statistics, I cannot just now advance any figures carrying great weight; the number of colliers with which I have to deal being too few for the purpose. I have collected the diseases prevailing among 211 cases, and find that bronchitis, acute and chronic, constitutes 36.5 per cent. of the whole number; rheumatism, 17 per cent.; dyspepsia, 9.17; and phthisis, 4.23 per cent.

EXTRACTION OF SOFT CATARACT BY INTRA-CAPSULAR IRRIGATION.¹

By CHARLES G. LEE, M.R.C.S.,

Honorary Surgeon to the Liverpool Eye and Ear Infirmary.

At the Brighton meeting of the British Medical Association I brought before this Section five cases of senile cataract in which intracapsular injection of water had been employed for the removal of soft cortical matter. I then expressed my preference for irrigation rather than injection, and showed the apparatus I had devised for carrying out the process. It will conserve the time of the Section if at the outset I state that I have seen no reason either to modify the views I then expressed or to induce me to recur to the use of McKeown's syringe.

Since the Brighton meeting I have operated on sixteen cases; these, added to the five already referred to, bring the total to twenty-one cases, and include every case of senile cataract in which either injection or irrigation has been used by me in my hospital practice up to the present. The results I beg now to submit to your scrutiny, summarised in the following table—

Of 21 cases in all, 10 obtained	$\frac{3}{4}$
" " 3 "	$\frac{3}{4}$
" " 6 "	$\frac{3}{4}$
" " 1 "	$\frac{3}{4}$
" " 1 Distant v. not stated.	Jä 14.

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As a considerable proportion of senile cataracts are extruded entire without leaving any remnants of cortex behind, and in others pressure, either digital or instrumental, suffices to clear the pupil, enabling the patient to count the operator's fingers held in front of his face, no further proceeding is necessary.

There remains, however, a residue in which, after using all the pressure we think justifiable, the pupil continues more or less occluded with sticky cortical matter, and the patient is unable to see the fingers held up; with so much tenacity do the flakes

adhere that even the method adopted by Mr. McHardy—namely, to allow time for re-secretion of the aqueous to take place—is inoperative. These are the typical cases for irrigation, and are represented by my list.

In many of these cases not only was the soft matter removed from the pupil, but fragments often of a considerable size were washed from behind the iris, where, unless the capsule had been thoroughly searched by the water, they would have remained, their presence unsuspected, until an attack of iritis or iridocyclitis had been set up. That the danger of the supervention of iritis is very much diminished by thus thoroughly clearing out the capsule, I am persuaded, but have not yet accumulated evidence of sufficient weight to bring before you.

In looking through the list to discover whether any vision were present at the date of operation, I find six cases in which so considerable an amount was present that the cataracts might well be described as immature.

The term immature is, however, so vague that it will be well to state the exact condition present: four of the six cases were able to count fingers at a distance of one foot from the eye; the other two could accomplish the same feat at a distance of five feet. In none of these six cases was a less acuity than $\frac{3}{4}$ obtained, and two are in the highest rank, being able to read $\frac{3}{4}$. Mr. Charles Higgins's paper in the *Lancet* for May 12th, 1888, in which he relates the results of a certain operation on six cases of immature cataract would have been more valuable as a standard of comparison, had he furnished the condition of the eyes which enabled him to describe the cataracts as immature.

If Mr. Higgins's ideas of maturity and my own at all correspond, then we have in irrigation a preferable method of procedure to that of removing the lens in its capsule, as the best result obtained by Mr. Higgins was $\frac{3}{4}$, and in one case he was fain to be content with $\frac{2}{4}$.

A detailed description of the operation would necessitate my inflicting on you a recapitulation of what I have already fully described at the Brighton meeting. The cases have furnished nothing on which to plant the red flag of danger; vitreous has in no instance been lost, nor has any inflammatory reaction been kindled by the water. The slight prolongation of time occupied by irrigation is of small import contrasted with the end desired. Iridectomy was performed in every case either at the time of extraction or previously; and although I attribute the comparatively poor result obtained in the case at the foot of the list to an attack of iritis, which came on after the preliminary iridectomy, I am of opinion that excision of a portion of iris is almost an essential precursor to irrigation.

A distinguished American oculist (Dr. H. Knapp) has recently published his results of 100 cases of cataract extraction without iridectomy, which give only 1 per cent. of failure. This is sufficiently brilliant to induce many of us to make trial of simple extraction; and possibly the experience of some members of this Section present, which may be even larger than that of the gentleman already alluded to, may be similarly encouraging. Even then I venture to believe that when a more extended trial has been made it will be found that success will be more likely to follow, not so much those efforts which are directed chiefly to simplification of our operative measures, admirable as those aims may be, but those which are rather concerned in the removal of every particle of lenticular matter, or any other substance which, by its presence, might interpose in the smooth and beneficent processes of the vis medicatrix nature.

ON AN OPERATION FOR SYMBLEPHARON BY TRANSPLANTATION OF MUCOUS MEMBRANE FROM THE LIP.¹

By T. S. MEIGHAN, M.D.,

Surgeon to the Glasgow Eye Infirmary.

In bringing the subject of the treatment of symblepharon before you, it is not my intention to review the history or to criticise the various operations that have been devised from time to time for the cure of symblepharon, but rather to explain to you a method of treatment by transplantation of mucous membrane from the patient's own lip.

I have notes of ten cases operated on by this method at the

¹ *Gazette des Hôpitaux*, and *JOURNAL*, 1887, p. 583.
² Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, held in Glasgow, August, 1888.

¹ Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, held in Glasgow, in August, 1888.

Glasgow Eye Infirmary since January, 1880, of which four were done by myself, the others being done by my colleagues. All these cases were successful except in one case, where the raw surface on the ball was covered with transplanted tissue, and the lid left to granulate. In the process of cicatrising, shrinking of the eyelid took place to such an extent that another operation will be necessary.

The excellent operation for symblepharon by transplanting flaps of conjunctiva from the immediate neighbourhood, or from the sides of the eyeball as performed by Mr. Teale, is suitable in the cases where the tissues have been only superficially destroyed, and where the union is narrow, and does not widen out too much towards the sulcus.

In the severer cases, where a large surface requires to be covered, sufficient conjunctiva is not always obtainable to cover the raw surface on the ball; and even where this has been fairly managed, and the raw surface on the eyelid left to granulate and cicatrise, so much shrinking and puckering of the eyelid takes place from cicatricial contraction, that in many cases, after some time, the deformity has not been much benefited. In such cases the eyelid usually gets fixed to the ball in the sulcus, and from shortening through atrophy, and retraction of the lid towards the adherent part, the displacement of the original attachment of the eyelid to the ball is nearly all that can be said to have been accomplished. I thought that if it were possible to cover the raw surface on the eyelid with mucous membrane from the lip, not only would a mucous surface be next the eye and act as a conjunctival lining, but it would also give support, and, to a great extent, prevent the puckering and shrinking of the eyelid, with incurvation of eyelashes from cicatricial contraction, a condition more likely to ensue if the burn has penetrated any deeper than the conjunctival lining. I had already in several cases tried transplantation of human conjunctiva, and also of conjunctiva from the rabbit, but in none of these cases was the result so satisfactory as could be desired.

Mode of Operation.—The operation is somewhat tedious to be accurately carried out, but, except in very timorous patients, chloroform need not be administered; it may, however, be given when separating the eyelid from the eyeball, as this is somewhat painful; but a 4 per cent. solution of cocaine instilled upon the parts while incisions are being made does much to render the operation less painful. The eyelid should be dissected from the eyeball until the ball moves freely in all directions. The division being completed, and all bleeding arrested, the raw surface on the ball should be covered with flaps of conjunctiva, either from the immediate neighbourhood or from the sides of the ball. An estimate of the size of the raw surface on the eyelid should then be made and mapped out on the inside of the patient's lower lip, below the angle of the mouth, taking care to have it rather large (about a third larger) to allow for subsequent shrinkage; this piece should be dissected off, which may be readily done with scissors, and after carefully cleaning away the labial glands, fat, and submucous tissue, the graft should be carefully transferred to the raw surface on the lid, and secured by a few stitches. During the operation a 1 to 5,000 solution of bichloride of mercury should be used to clean the parts. The eyelids after the operation are closed, and boracic lint applied as a compress. The lids should not be opened for from twenty-four to forty-eight hours.

The following is an abstract of the reports of four cases taken from the Glasgow Eye Infirmary journals.

CASE I.—May 15th, 1880. J. T., aged 26 years. Six months before the inner portion of eyelid and neighbouring conjunctiva were burned with caustic soda solution, which has caused extensive symblepharon. Nearly a half of the lower lid is adherent to the eyeball, the adhesion extending from a little over the corneal border to the sulcus. Movements restricted, eye watery. The eyelid being dissected from the eyeball, flaps were obtained from the neighbouring conjunctiva, and united by stitches across the raw surface on the globe. A piece of mucous membrane was obtained from the patient's lower lip, and stitched on to the raw surface on the eyelid, extending down to the sulcus. Dry boracic lint applied, and eyes covered with a bandage. May 22nd, 1880. Transplanted tissue united, stitches removed, ball moves freely. September 8th, 1880. Movements perfectly free, symblepharon quite overcome. Transplanted tissue looks redder than the neighbouring conjunctiva, otherwise it could not be distinguished.

CASE II.—March 19th, 1881. W. M., aged 33 years, was struck on the left eye by a piece of hot metal four months ago. A symblepharon has formed, which occupies fully one-third of the lower

lid, and extends from the corneal border to the sulcus. The eyelid having been separated from the eyeball, one large flap of conjunctiva was taken from the outside of the globe and made to cover the raw surface on the eyeball. A piece of mucous membrane from the patient's lower lip was stitched to the raw surface on the eyelid. Dry boracic lint applied, and eyes bandaged. March 26th, 1881. Transplanted tissues united, eyeball moves freely, vision improved.

CASE III.—July 15th, 1882. W. L., aged 21 years. A large symblepharon occupies the middle portion of right lower lid, the result of a burn from hot metal. The adhesion being divided, the neighbouring conjunctiva was displaced to nearly cover the bare surface on the globe, and the raw surface on the lid was covered with mucous tissue from the patient's lower lip. July 22nd, 1882. Tissues united, no watering, vision improved, eyeball moves freely.

CASE IV.—February 16th, 1884. W. C., aged 20 years. A symblepharon occupies inner third of right lower lid; a small part of tarsal border of upper lid is attached. The attachment of upper lid separated, and symblepharon divided, bare surface on eyeball nearly covered by drawing conjunctiva over by stitches, surface on eyelid covered with mucous membrane from the lip. February 23rd, 1884. Tissues united, movements free.

The above cases clearly show that mucous membrane from the inside of the lip may be transplanted to the eyelid to replace conjunctival membrane, that it unites readily with the surrounding tissue, and that mucous membrane from the lip is suitable as a conjunctival membrane, and does not irritate the cornea. The operation is advisable in cases where the symblepharon occupies one-third or more of the lid, and especially in the cases where the sulcus is much involved, and in cases where only little conjunctiva can be obtained.

CIRRHOSIS OF THE LIVER IN THE DOMESTICATED ANIMALS.

By J. McFADYEAN, M.B., B.Sc., F.R.S.E.,

Demonstrator of Pathology in the Royal Veterinary College, Edinburgh.

If, as has been erroneously stated, cirrhosis of the liver were unknown in the lower animals, or, rather, if we were justified in asserting that cirrhosis of the liver does not occur in the lower animals, the field of inquiry regarding the causation of that lesion in man would be materially narrowed. Unfortunately, however, for any guidance that might thus have been afforded to human pathologists, cirrhosis of the liver is by no means confined to the human species. The only lower animals to whose pathology so much attention has been paid that one would be justified in predicating the non-occurrence of any lesion in them, are our common domesticated quadrupeds, and in all of these cirrhosis of the liver is known to occur. Among the domestic ruminants hepatic cirrhosis is very frequently encountered, but in them the condition in the great majority of cases is due to the presence of the distoma hepaticum, or common liver-fluke, in the bile ducts. But even among ruminants the lesion is found quite independent of parasitic irritation.

The disease occurs also among the domestic carnivora, and in the pig; but, apart from the parasitic variety, the horse appears to be more frequently the subject of hepatic cirrhosis than any of the other domesticated animals.

In certain regions in Germany there prevails a fatal enzootic affection of horses, in which the only constant organic changes are marked cirrhosis of the liver and dilatation of the stomach. This affection is known locally as "Leberverhärtung," from the constancy of the hepatic cirrhosis, and as "Schweinsberger Krankheit," from one of the districts in which it is most prevalent. The symptoms are those of gastro-intestinal disturbance, with progressive emaciation; and sometimes rupture of the stomach is the immediate cause of death. After a variable period there is generally more or less jaundice, but that may be absent. German veterinary surgeons ascribe the disease to the continued action of some vegetable irritant in the fodder, to the bad quality of the hay, or to feeding with hay without a due proportion of oats. In this country no such enzootic occurrence of liver cirrhosis has been observed, but in probably every district occasional cases are to be met with.

All the cases that I have observed have been in animals of at