two paintings a week, and, if this does not suffice, 1 per cent. mercurochrome drops are given to the patient to be instilled twice a day, but of late we have come to rely more and more on the painting and to discard the drops where possible, as they are certainly "messy" when used by any patient who is not careful. We believe that every type of conjunctivitis is benefited by so painting the conjunctiva; for instance, two cases of severe Parinaud's conjunctivitis, with involvement of the cervical glands, cleared up, without any surgical intervention to the glands by this treatment. A case of tuberculosis of the conjunctiva did excellently with this treatment combined with ultra-violet light. For the last four years the maternity department of the Bristol Royal Infirmary has issued a 1 per cent. solution of mercurochrome instead of the usual silver nitrate for instillation into the eyes of newborn babies. There has been a definite decrease in the cases of ophthalmia neonatorum, and now we never see those many red eyes that can be produced by silver nitrate. The only exception to our routine is if the parents are known to be infected with gonorrhoea, when silver nitrate is still used. All cases of ophthalmia neonatorum are now treated in the initial stages with mercurochrome drops; this drug, being non-irritating, can be used without fear of damage even if there be intense chemosis and swelling of the lids. In a case progressing favourably, mercurochrome painting of the lids in the later stages is also very beneficial, but in the more severe type of case one should still rely on silver nitrate in preference to mercurochrome.

Corneal Affections.

Ulcers of the cornea if seen early can, with benefit, be painted with mercurochrome, but too much reliance must not be placed on this drug to the exclusion of more energetic types of treatment. Large phlyctenulae, or the small miliary variety, at the margin of the cornea often improve considerably with mercurochrome paint. Following serious or trivial injuries to the cornea, a drop of mercurochrome into the conjunctival sac is as good an antiseptic as any.

Blepharitis.

This can be considerably benefited by the painting of the lids with a 2 per cent. solution. Before applying it all the scabs should, where possible, be removed. We use for this purpose a solution of warm sodium bicarbonate solution, applied gently with cotton-wool, so that the underlying tissues are not damaged. The edges of the lids are then thoroughly painted. The results, as compared with similar treatment with such solutions of brilliant green and iodine, show mercurochrome to be equally good, and, being so easy to apply and non-irritating to the conjunctiva, we now only use it for this condition. I have said that mercurochrome is non-irritating, but there is apparently an exceptionally rare idiosyncrasy to the drug. I have seen the occurrence only twice over a period of four years. In one, a patient suffered from oedematous lids, face, and, later, chest and body. He was seen by a dermatologist, who considered mercurochrome to be the cause. He rapidly recovered on cessation of the drug. The other patient had a considerable swelling of both eyelids of the treated eye, with a thin serous discharge, a condition very similar to atropine irritation. This cleared up rapidly on giving up the mercurochrome.

Mercurochrome in Ophthalmic Surgery.

As a preliminary to all eye operations, a 1 per cent. solution of mercurochrome is painted over the skin of eyelids and face after the part has been thoroughly cleansed in the usual way. Bacteriological investigations have shown this method to be as efficacious as painting with iodine, and no skin irritation is produced as with iodine, this fact being of some importance in eye surgery as the patient is less likely to interfere with the dressings. Before operations the conjunctiva is sterilized by instilling 1 per cent. drops of mercurochrome two or three times on the day before the operation, and once in the hour before the operation.

With the experience of mercurochrome over the period mentioned above, we feel justified in asserting that it is really of considerable value in ophthalmology.

RECTAL PARALDEHYDE AS A PRELIMINARY TO TONSILLECTOMY IN CHILDREN.

BY

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To remove tonsils and adenoids without anaesthesia is by no means a difficult task, as a visit to any of the Continental clinics will prove. Such a procedure has certain advantages, for it obviates all risks associated with the administration of anaesthesia, and also avoids the possibility of the unconscious patient being suffocated with his own blood. Surgeons in this country are thankful for anaesthetics, yet even with anaesthesia the removal of tonsils is no mean ordeal to a child. This ordeal can be minimized considerably by a procedure which aims at "stealing" the tonsils rather than forcibly removing them. Provided no complications supervene, the after-effects of tonsillectomy in children are so slight that they seem to suffer more from fear in the pre-operative stage than from discomfort after the operation. These pre-operative disturbances can effectively be avoided by preliminary medication which makes the child unconscious by the time he is brought to the theatre, and he is thus saved from the various stages that lead to being "put under"—a period of fear and struggle, and not differing very much from that extra minute during which Continental surgeons complete the operation without anaesthesia. The preliminary medication employed is the rectal administration of paraldehyde, a drug which induces a condition very similar to deep sleep. Given in the form of an enema whilst the child is in bed, it can be administered without any struggle, and without any nervous apprehension on the part of the little patient. This preliminary medication has the further advantage that it necessitates very little anaesthetic, and, furthermore, that the return to consciousness is considerably delayed, although the anaesthesia itself is light. By the time the child has fully recovered all the unpleasant after-effects of the anaesthetic have worn off, and many children are under the impression that no operation has taken place.

ROUTINE OF PARALDEHYDE ADMINISTRATION.

The child is admitted the night before operation. A soap and water enema is administered in the morning. An hour later the bowel is washed out, repeatedly if necessary, until the fluid returns clear. The patient is then ready for the administration of paraldehyde per rectum. This, however, should only be given one hour before operation. No other medication is necessary.

With regard to the administration of the drug, the following are important points:

Dosage.—The best results are obtained by the administration of one drachm of paraldehyde per stone body weight. This ensures the child falling asleep rapidly, in many cases before the administration of the drug is completed. The sleep is sufficiently deep for the child not to waken up when carried to the theatre an hour later, and it is quiet and restful.

Vehicle.—The paraldehyde is administered dissolved in stock solution of normal saline, neither warmed nor cooled. One and a half ounces of saline per drachm of paraldehyde should be used.

Method of Rectal Administration.—The paraldehyde solution should not be warmed before administration. The cold solution must be run in slowly, otherwise it will be returned. The stages in the administration are: (1) Pass the catheter, well lubricated, into the rectum. Then lightly plug anal margin with cotton-wool. (2) Fill the funnel and tubing with water, expelling all air, and clip distal end of tubing. (3) Connect to the catheter, release the clip, and run in the solution very slowly. This procedure should take at least ten minutes. The paraldehyde solution should be vigorously shaken before refilling the funnel, to ensure solution. (4) When all the solution has been run into the rectum the catheter is removed, leaving the wool packing in place. A pad of wool is placed on the perineum, the nates are strapped together, and the child is made to lie on his back with his legs together. Sleep always supervenes within half an hour.

A child thus prepared needs little anaesthetic, though no child is sufficiently comatose to be able to dispense with

the anaesthetic altogether. Owing to the synergic action of drugs a small quantity of anaesthetic produces very disproportionate effects. Open ether is safe, and the best anaesthetic. Very little is required (about one ounce) to make the child ready for the operation; the anaesthetic is taken without much struggle.

All children wake up whilst they are having cold douching after the operation, but though conscious they do not remember afterwards what has happened. They fall asleep as soon as they are put to bed. This sleep is prolonged and restful; it lasts between eight and sixteen hours; they wake up quite refreshed.

DIFFICULTIES AND DANGERS.

Pre-operative Preparation.—It is possible that the pre-operative preparation need not be so strict in the complete washing out of the rectum preliminary to the administration of the paraldehyde. Experience may prove castor oil, the night before, sufficient preparatory treatment; but, in view of the fact that paraldehyde may act as an irritant of the rectum, and that a loaded colon would interfere with the absorption of the drugs, it was deemed advisable to have the pre-operative treatment as thorough as possible.

Dosage.—A dose of one drachm of paraldehyde per stone body weight was employed in the last 572 cases. In a first series of 82 cases only half a drachm per stone weight was used. This had definite disadvantages, for not only did it fail to induce satisfactory hypnosis, but it also seemed to act as an exciting agent. The sleep induced was light; the child was irritable, easily wakened, and would wake up when taken to the theatre. The administration of the anaesthetic would provoke a struggle, and after operation there would follow an exceedingly restless sleep lasting for four to six hours. With such a dose there seemed to be no effect on the pupils; respiration was unaffected, but blood pressure was raised. A dose of three-quarters of a drachm per stone weight was tried out in a second series of 146 cases. The results obtained were a great improvement on those obtained with the smaller dose. The sleep, though deeper, was not sufficiently deep to prevent some of the children waking up when taken to the theatre. Struggling during the administration of anaesthesia was never very marked. The sleep after operation lasted for four to eight hours, but, as with the smaller dose, there was a distinct tendency towards restlessness. With this dosage the pupils tend to become contracted, and the blood pressure is raised. A dose of a drachm per stone body weight has no dangers, as shown by the last 572 cases, and has definite advantages. The sleep is deep; there is no restlessness before or after the operation, and hardly any struggling during the administration of the anaesthetic. With the full dose sleep lasts for eight to sixteen hours; the pupils are contracted; respiration is quiet; there is, however, a fall of blood pressure two or three hours after the operation.

Vehicle.—The paraldehyde should be dissolved in normal saline neither heated nor cooled, and this solution is to be run into the rectum. The solubility of paraldehyde is 1 in 10 at 0° C.; it is less at higher temperatures, and over blood heat the paraldehyde tends to evaporate. Hutchison reports a case of considerable sloughing of the rectal mucosa owing to the administration of half an ounce of paraldehyde. But he injected it in a highly concentrated form (the pure drug) "along with three or four times its volume of water."

Difficulties in the Rectal Administration.—An unsuccessful rectal administration leads to the evacuation of the paraldehyde and failure of the attempted medication. Extreme slowness in the running in of the solution is an essential condition for success. Retention is further aided by strapping the nates together, in addition to putting a pad over the perineum. It is advisable to have a nurse who has had some experience in the administration of solutions per rectum.

Anaesthesia.—As already pointed out, the quantity of anaesthetic is small, and the preliminary medication ensures a maximum effect considering the amount of the anaesthetic employed. Open ether has been found safe; it has also the advantage of raising the blood pressure, thus counteracting the fall that the full dose of paraldehyde produces. Ethyl chloride is also safe, though a needlessly

large dose may be administered should the child struggle. Chloroform would, however, seem to be highly dangerous. On one occasion, when ten children were being operated upon, all of them were given chloroform on top of the full dose of paraldehyde. In two cases there was severe collapse, the children turning greyish in colour; the pulse was rapid and thready, and the breathing was shallow. Chloroform has not been tried again. With ether the anaesthesia need be very light. The combined effect of the paraldehyde and ether, though producing complete narcosis and anaesthesia, is sufficiently light for the reflexes to persist. It is undesirable and unnecessary to push ether to the stage of abolishing the reflexes.

Complications.—In this series of 800 cases there were no complications that could be ascribed to the paraldehyde. In one case there was some slight bleeding after the operation. No active interference was necessary apart from swabbing out the throat. In another case the administration of the paraldehyde was unsuccessful. The child was unconscious on the table, was vomiting, and was difficult to anaesthetize. There was no apparent reason for this failure, though it is worth noting that this child was one of the earlier cases, and had not received the full dose of paraldehyde. Paraldehyde has an offensive odour; this seems to be more troublesome to the attendants than to the patients.

DISADVANTAGES.

The advantages of preliminary medication are real enough; this is well illustrated by the attitude of the little patients. A child operated upon without preliminary medication fears and mistrusts the surgeon when he attempts to examine the throat after the operation; but children who have had paraldehyde show no such fear and mistrust. The majority readily open their mouths, and do not hinder the examination. Disadvantages, however, are none the less just as real and genuine. Preliminary medication implies considerable extra nursing, for not only are there extra duties before the operation, but more alertness is required from the nurse owing to the prolonged sleep of the children. There is also the disadvantage that the extra preparations throw some strain on the child: an enema, a wash-out, and rectal paraldehyde are rather trying to any patient. Finally, there is the disadvantage that the preparations imply in-patient treatment. While this is all for the good of the child, it does, unfortunately, present a serious problem at this time, when the accommodation for tonsillectomy cases is so woefully inadequate.

The observations recorded here were carried out at the Plaistow Children's Hospital and at the London Jewish Hospital. It is a pleasure to acknowledge my indebtedness to Mr. W. M. Mollison of Guy's Hospital for suggesting this work, and for his kindly interest and criticism.

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AMIDOPYRIN IN THE TREATMENT OF MEASLES.

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SINCE 1924, when Loewenthal¹ published his paper on the value of amidopyrin in the treatment of measles, occasional short notes on this treatment have appeared in various foreign journals, but English writers have paid little attention to the use of this therapeutic agent. One of us (G. R.) tried the drug in a few cases of measles, but possibly on account of the fact that the cases were in a late stage of the disease the results did not appear sufficiently noteworthy to merit publication. In October, 1929, Hoyne of