have no children of their own. When this girl grew up illicit relations became established between her and the husband, who deserted his wife to go and live with her adopted daughter. The unfortunate woman believed that rectification of her deformity would be the means of bringing her husband back to her. I, of course, refused to operate. No man whose affection was real and worth keeping would entertain the idea of his wife risking her life solely for his gratification. In the case of such individuals the divorce court provides the proper solution of the difficulty.

2. Where, however, the sex sense of the woman is active, and she desires the operation not merely to satisfy her husband but for her own gratification as well, the case is different, and if after the nature, limitations, and risks of the procedure have been explained to the parties the patient elects to undergo it the surgeon is, I think, entirely justified in performing it.

Devonshire-place, W.

THE USE OF ATROPINE TABLETS FOR THE DETERMINATION OF REFRACTION IN CHILDREN.

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SINCE first undertaking the treatment of London County Council school children in the special department set apart for these cases at the Royal London Ophthalmic Hospital (Moorfields) in 1910, I have for varying periods made use of tablets of atropine for refraction, and have done so continuously since September, 1912. Ever since then I have been increasingly convinced both of the convenience and of the efficacy of this means of effecting paralysis of accommodation in children. In this short paper it is my wish to give a brief account of my experience with this method in the hope that more will be led to give it a trial.

In most hospitals and school clinics atropine is still ordered for children in refraction cases, either in the form of an ointment or of solution containing from 0.5 per cent. to 1 per cent. of atropine. The directions given for its use in these forms show a diverse and uncertain opinion as to the time necessary to obtain paralysis of accommodation; in the majority of cases ointment or drops are ordered to be used twice, three, or even four times a day, for anything from two, more often from four to seven, or even 14 days before the refraction is estimated. I contend that this practice is quite unnecessary, and a not inconsiderable waste of both time and expense, not only to the parents or guardians, but also to the hospital.

In justification of this custom of giving atropine one is told that it is the most convenient method, and that it is a saving of time. It may be so if the one who orders the ointment or drops does not also do the refraction on the return of the child, but in no other circumstances; and in any case I consider that the fact of the child and guardian having to make a second visit in order to save this time is a matter which in many cases entails no little hardship and expense to those who are least able to afford it. The only other argument advanced in favour of the use of ointment or drops at home for several days is the one that unless atropine is used for several days complete paralysis of accommodation is not obtained in all cases. I have never heard this argument advanced by anyone who has given the tablet method an extended trial, and I am convinced that if more would do so they would be satisfied that it is not only unnecessary, but a positive waste of time to do otherwise. For those who have not tried this method I will give a few details as to the use of the tablets.

First of all I may say that I have always used Messrs. Burroughs Wellcome and Co.'s ophthalmic "tabloid" brand of atropine sulphate, and have always found them highly satisfactory, combining as they do all the merits that an ophthalmic tablet should do—namely, speed in dissolving, accuracy of dosage, reliability in action, non-friability in handling, and a power of keeping for a long period, some that I have used having been in stock for several years. I have used the following strengths—namely, 1/500 grain, 1/200 grain, 1/100 grain—and find that the 1/200 grain

tabloid is a satisfactory strength for the purpose. The application of ophthalmic tablets to the eyes is, perhaps, the one part of this method which some will at first find difficult, and I hope that a few words on this will not be out of place.

After the routine external examination of the eyes, including the subjective test for distant and near vision, has been carried out, I take two tablets in the palm of my left hand, pick one up with the forefinger and thumb of my right hand, throw the remaining tablet into the palm of my right hand and pick it up with my left forefinger and thumb. I then ask the child to look up, and at the same time I draw down both lower lids by means of the ring finger of each hand; the tablet is then dropped into the lowest part of each fornix. Should the child tend or attempt to close the upper lids this can be prevented by holding them up with the middle fingers. Immediately the tablets are put in the child is asked to look at you, and at the same moment the lids are released; in this way the tablets are successfully entrapped in the fornices by the lower lids. This will perhaps seem a lengthy dissertation on a simple procedure, but by watching some attempt it I have proved that a few words of advice are helpful. By those who find the use of their fingers not so easy, I have had a double-pronged vulcanite applicator made, which Messrs. Burroughs Wellcome and Co. kindly undertook for me, a sketch of which is here shown.

Vulcanite applicator (full size).

With this applicator a tablet may be attracted to each prong—leaving one hand free with which to draw down the lids at one and the same time.

My reason for desiring to insert the tablets simultaneously, or as near as possible to this, is that if a tablet is put in one eye and that eye is allowed to close before applying the second to the other eye, it will be found that the child feels the first tablet, "screws up the eyes," and makes it extremely difficult to get the second one in. My reason for wishing to entrap the tablet in the lower fornix is that unless this is done the tablet is apt to ride up on to the cornea and thus cause irritation with copious flow of tears before it is fully dissolved, and in this way it may be washed out of the conjunctival sac on to the edge of the lids.

If the procedure is carried out as I have indicated it will be found that the tablet is dissolved almost before the child is aware that there is anything in the eye—in 10 to 20 seconds; very slight smarting is then felt, there is a little pericorneal flush, the pupil dilates fully in from 10 to 15 minutes, and there is a complete paralysis of accommodation in half an hour, at the end of which time I estimate the refraction and order the appropriate lenses. Accommodation is fully restored in from six to eight days. I have now dealt with over 800 children in this manner, and have only once had to apply a second tabloid to get paralysis of accommodation, and in that case it was due to faulty application of the first tabloid, part of which was found on the edge of the lid. It is the rarest thing to find any child cry after having put the tabloids in, and those few who have done so have always shown indications of approaching lachrymation almost before any attempt at touching their eyes had been made. The younger the children the less trouble it seems to cause them, their ages ranging from 4 to 14 years. In applying tablets to a dozen or more children one after the other they are generally all smiling freely after the first one or two have braved the ordeal; select your first two children, and if it is a good selection they will probably laugh over the sensation and the rest will follow suit.

I have more particularly wished to give my experience in this method of atropinisation in order to point out the enormous advantage in time and convenience it has over the home use of ointment or drops in dealing with the refraction of school children in school clinics and suchlike centres where many children are collected together at the same

time. It necessitates only one visit; whereas with the use of ointment or drops it is the invariable experience, no matter what elaborate instructions, written or otherwise, are given, that at least one or two, and often more, out of every dozen return for refraction, either not having used the ointment at all or only partially so. They are then sent back a second time with a further supply of atropine, which although not used the first time yet in some way has mysteriously disappeared. Then, again, a certain number of the cases do not return at all, whereas if the tablets have been used on the first visit there is no chance of escape from refraction at any rate. The use of atropine at home, too, is not such an easy matter, especially when it has to be done three or four times a day for several days. It requires not only experience but time and patience, and how often, as one knows, the home and mother are already saddled with a hundred and one other duties.

One further point to which I would like to draw attention is that I have not yet seen any case, when using these tabloids, present any signs or symptoms of atropine irritation or poisoning. As regards actual cost of material, the tablet method compares very favourably with that of ointment or solution, the hospital price of the tabloids working out at about 6*d.* for a tube of 25, so that 12 cases can be refracted at a cost of a fraction less than $\frac{1}{2}$ *d.* each. Atropine ointment is supplied in two-drachm chip-boxes at a cost of a $\frac{1}{2}$ *d.* each, in addition to which a glass rod for application has also to be given, and time spent in the dispensing of the ointment or solution.

London, W.

THE USE OF GELATIN IN MICROSCOPICAL TECHNIQUE.

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At the Conference of the Sudwestdeutsche Neurologen und Irrenärzte held in Baden-Baden on May 24th and 25th, Professor Edinger (Frankfort-on-Main) showed several microscopical specimens mounted in gelatin in place of the usual mountant, Canada balsam. As I have had the opportunity, while working in his laboratory, of practising this method, I append details for any who may wish to make use of it. The technique has been developed from suggestions originally made to Professor Edinger by a photographic chemist, Mr. Ralph Liesegang, and has been worked out chiefly from the point of view of utilising it for neurological preparations. It is, however, by no means confined to this particular branch, but can be applied to most pathological work.

Sections may be cut by any of the usual methods—viz., freezing, paraffin, or celloidin. They can then be stained in the ordinary way, and all stains are available with the exception of those which can be extracted from the tissues by immersion in water. This group of exceptions is not large, but, unfortunately, it includes Nissl's method and all others in which the aniline dyes figure. Efforts which we made to fix these dyes in the tissues—as, for instance, by the use of solutions of varying strength of ammonium molybdate—preparatory to placing the sections in water, have proved unsuccessful. Further work may possibly overcome this difficulty.

Having completed the staining process the section is put into water and is now without further treatment ready for mounting in the gelatin solution.

In the preparation of this a few essentials must be noted. Firstly, the solution must be freshly made and the best results are only obtained when the special gelatin, as used for photographic plates, is employed. Of this, 10 grm. are taken and allowed to soak for two hours (preferably overnight) in 100 c.c. of distilled water. When about to be used this solution must be warmed to a temperature of 50° C. by means of a water bath in order to render it sufficiently fluid. It is advisable to filter it beforehand, also at this temperature.

As much of this warm solution is then gently poured on to the slide as can be put on without any overflowing. It is important to pour on as much as possible in order to get a sufficiently thick film of gelatin in the final result. When

large sections are being treated it is better to keep the slide on a warm stage, and in the case of frozen or celloidin sections to pour on a thin layer of the gelatin solution first before putting the section in position on the slide. Larger sections still can, with profit, be immersed in the solution for a few minutes beforehand. The preparation is now left exposed to the air, and in the course of a few hours the water evaporates and one is left with the slide covered with a fine transparent film of gelatin in which the section is imbedded. This film behaves in every particular like the gelatin film on a photographic plate. It is intensely hard, resists scratching, and can be packed face to face with other specimens without involving the risk of finding them glued firmly together as is the manner of Canada balsam. Under the microscope a perfectly clear picture is given, and if necessary cedar-wood oil, for oil immersion purposes, can be used.

The great advantage of the method is the economy of time and material which results. There is no tedious transferring from dish to dish for the processes of dehydrating and clearing. Thus alcohol, xylol, Canada balsam, and coverslips are entirely dispensed with, and in addition one does away with the danger of injuring large brain sections which attends too much handling. Apparently specimens will keep indefinitely. Weigert-Pal preparations—for which the method is eminently suitable—have been preserved for three years. Serial sections, which require large slides and coverslips, lend themselves to this manner of mounting. Finally, perhaps, botanists may find here a useful servant. Their chlorophyll specimens, being untreated by alcohol, are able to retain their pigment unaltered, and so can be mounted in the natural state.

Clinical Notes: MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF ACCIDENTAL COAL-GAS POISONING, WITH RECOVERY.

BY WALTER ROBERT S. JEFFERISS, M.D., C.M. EDIN.,
D.P.H.

AS cases of accidental poisoning from coal-gas are not frequently met with in general medical practice, perhaps the following notes of a case may be of some interest to medical men.

On Oct. 4th, 1912, I was asked to go to the relief of a man over 60 years of age who was supposed to be dying. On reaching the house I found the whole place smelling strongly of coal-gas, and on going upstairs to the bedroom, a room of about 11 ft. square, I found the man lying on the bed on his back quite insensible, breathing stertorously, and to all appearance not far from death. There was also one other occupant of the room, a small grey linnet in a cage overhanging the bed, but it, alas, had sung its last song and was lying dead on the floor of its cage. The man's face was livid; his eyes were wide open, the pupils firmly contracted, and the corneal reflex gone. There was not a trace of consciousness left, and the breath smelt strongly of coal-gas. The bowel sphincter was relaxed; the temperature was slightly subnormal, the body being well covered in bed; and the pulse was 68, regular, and moderate in strength. I had the patient brought close to the open window and resorted to artificial respiration, coupled with cold affusion to the head and flicking the body with a wet towel. Consciousness gradually returning, and the patient being now able to swallow, I gave him some hot, strong coffee, a spoonful at a time, and after an hour's efforts he recovered, and I left him in the charge of his relatives. On the next day, after a good natural sleep, the patient seemed quite himself.

The history of the case is as follows. The patient, who lived with his son, not feeling very well on the previous day, had retired to bed somewhat earlier than usual, the gas being lighted to warm the room as there was no fire. The bedstead blocked the fireplace, the door and window were shut, and the gas was allowed to burn