and a certain amount of constipation which may or may not have been due to the use of this drug, the patient suffered no ill-effects, even after taking it for three or four weeks.

This means of increasing the coagulability of the blood was adopted in a puerperal case reported in the *BRITISH MEDICAL JOURNAL* in May, 1901, but, as far as I am aware, has not hitherto been employed as a preventive measure against the excessive haemorrhages of haemophilia, which are so troublesome and often serious in persons of this diathesis after the extraction of teeth.

NOTES OF CASES ILLUSTRATING THE USE OF ADRENALIN CHLORIDE IN OPHTHALMIC, NASAL, AND AURAL SURGERY.

By A. STANLEY GREEN, M.B., B.S. LOND.,
Lincoln.

THE introduction of a solution of adrenalin chloride—1 in 1,000—has removed the difficulties which hitherto have been met with in using fluid extracts of the gland of having a fluid always ready and active. This difficulty was very great during the hot weather at a time when it was in great request in the treatment of hay fever.

The solution requires dilution to the extent of 1 in 5,000 for introduction into the nose and ear and to 1 in 10,000 for instillation into the eye. The diluent should be either boiled water or sterilized salt solution, and the diluted fluid should be put into coloured stoppered bottles. If exposed to the light, the fluid becomes pink and later brick-red, but does not lose its activity. In ophthalmic work I have found it chiefly of use in inflammatory conditions of the conjunctiva, and its use is indicated in pannus, iritis, keratitis, scleritis, and acute dacryocystitis. I have not used it much in operations on the eye, but I tried it in one case of enucleation without benefit. I was disappointed at this, as I had previously used liquid suprarenal and chloretone, and had removed an eyeball without any loss of blood. In aural work its use is indicated in chronic otitis media suppurativa with exuberant granulations or polypi, and acute inflammation of the membrana tympani.

In nasal work it is chiefly of use in swelling and hypertrophy of the mucous membrane, and in intranasal operations where a bloodless field is of importance, but the nose must always be plugged after the operation is finished, as haemorrhage may commence 30 to 40 minutes after the application of the fluid, and is then often troublesome. This is especially the case in partial turbinectomy, and for this reason I do not now use it in those cases. Of its value in the treatment of a stuffy nose from a cold in the head I have had the most pleasant personal experience, the relief being rapid and lasting. Patients can insert the wool themselves if instructed how to twist it on the end of a match so that the wool projects well beyond the end of the wood; it is advisable to warn them that the application will smart for about 40 seconds, and that the plug should be pushed up gradually, as after about a minute the mucous membrane shrinks and the wool slips in quite easily. The same advice applies to its use in hay fever, in which it gives most brilliant results.

CASE I.—A. M. had a severe cold in the head, and was quite unable to breathe through his nose. I placed a dossil of wool saturated with a 1 in 5,000 solution of adrenalin chloride in each nostril for five minutes. When the wool was removed he felt immediate relief, and nasal respiration was restored. In this case no further application was necessary.

CASE II.—H. M., aged 50, was sent to me with stenosis of the right nasal passage, which was due to an enormously enlarged anterior end of the middle turbinate bone, which was exerting considerable pressure on the septum. I applied 10 per cent. cocaine and 1 in 5,000 adrenalin chloride solution, and removed the anterior end with scissors and cold snare. There was no haemorrhage at the time, but although the nose was plugged with cyanide gauze, there was considerable oozing during the afternoon and night, which was increased the next morning when the gauze was removed. On another occasion I cocaineized this patient's nose without adrenalin chloride; about three hours after she suffered from pain in the eye, lachrymation, restlessness, feeling of suffocation, and rapid pulse. After the combined use of cocaine and adrenalin chloride, though more of the former drug was used, she suffered from no unpleasant after-effects.

CASE III.—N. F. was suffering from nasal stenosis, due to a thickened deflected septum. Cocaine 10 per cent., and adrenalin chloride 1 in 5,000, were applied, and a piece removed from the septum 1 in. in length with a Bosworth's saw, without any haemorrhage at the time. The

nose was plugged with gauze soaked in iodoform emulsion; the haemorrhage during the rest of the day was only slight. In this case there was no bleeding when I removed the plug on the following day.

CASE IV.—N. V. was a patient with large inferior turbinate bones, and unwilling to have the galvano-cautery applied. Adrenalin chloride, 1 in 5,000 was applied by means of wool plugs. The nasal passages were free for the remainder of the day, and the patient continues to use the solution himself with great benefit.

CASE V.—J. T., aged 45, came to me on August 31st, 1901, complaining of intense headache and pain in the right eye of seven days' duration, which during the previous twenty-four hours had been of a stabbing nature. On examination there was found oedema of the upper eyelid, and a distinct bulging over the inner angle of the orbit, with tenderness on the slightest pressure. The right nasal cavity was full of crusts, and when these were removed the mucous membrane was found to be swollen and congested, especially in the middle meatus. Into this wool soaked in 1 in 5,000 adrenalin chloride solution was packed and left for five minutes, the nose was then sprayed with an alkaline solution, and she was instructed how to apply the solution thrice daily on wool, and ordered to spray the nose night and morning. Two days later she reported herself as quite free from headache and pain, and so far no relapse has occurred.

I have had several patients in whom frontal headache was almost immediately relieved by the application of adrenalin chloride to the nasal cavities.

CASE VI.—J. H., aged 45, had been suffering from chronic conjunctivitis for the previous three months. She had used various lotions with temporary relief. Guttæ adrenalin chloride, 1 in 10,000, instilled thrice daily for ten days, produced an improvement which was rapid and permanent.

CASE VII.—A. W., aged 85, had been suffering for a long time with inflamed eyes and lids with lachrymation; the margins of the lower lids were everted and red. Guttæ adrenalin chloride, 1 in 10,000, were instilled twice daily. At the end of a fortnight great improvement was noticed, especially in the condition of the lids, which now looked quite healthy.

CASE VIII.—A. D., aged 5 years. This patient came to me for interstitial keratitis, after having been under treatment elsewhere for three months. He had marked photophobia, and would hide himself in any dark corner. Both eyes were affected in the usual way, and circumcorneal injection was very well marked; in addition he had a purulent nasal discharge with some necrosis of the vomer, and enlarged submaxillary glands. He was ordered hydrarg., hydrarg. c. creta, gr. i. ter die; guttæ atropæ, 1 per cent., and boracic acid lotion. As there was very little improvement, after a month's treatment I instilled 1 in 10,000 adrenalin chloride in the right eye only. At the end of a week there was very marked improvement in this eye, especially in the photophobia, but the left eye was more injected. Adrenalin chloride was therefore used in both eyes, and the left almost immediately commenced to improve, and at the end of three weeks the injection had disappeared, he could bear the sunlight, and his vision was improving.

CASE IX.—J. W. was sent to me on October 8th by Dr. Trumper, Market Rasen, with the following history. On October 4th he was standing behind a man who was shooting at a gallery and something from the rifle struck him on the right eye; it was not until the following morning that he went to Dr. Trumper, who removed some grains of gunpowder from the surface of the eye and instilled atropine drops; the lens was then becoming opaque. When I saw him there was marked iritis, circumcorneal injection being most intense at the inner and outer ends of the horizontal meridian. There was a small scar on the cornea in the outer part of the same meridian 3 mm. from the limbus, and opposite this was a posterior synechia. I examined him with the fluorescent screen and also took a skiagraph, but no foreign body could be seen, nor could anything be discovered with the ophthalmoscope. V. = fingers at 12 in. The atropine was continued and pit. hydrarg. grs. 4 ter die ordered. On the 17th the eye was more inflamed; V. = movement of hand; three leeches were ordered for the temple and belladonna fomentations to be applied every four hours. On the 18th there was a considerable exudation of lymph round the outer half of the ciliary body. On the 18th the eye was intensely injected and very painful. Gutt. adrenalin chloride 1 in 10,000 were instilled and ordered to be used thrice daily, and two leeches were given him to put on when he got home. On the 21st the eye was much quieter and less injected (the drops had given him such immediate and lasting relief from the pain that he had not applied the leeches), and he has had no pain since the adrenalin chloride was instilled. From this time on the eye made rapid improvement, and is now free from inflammation. The patient says that the relief from the drops was most marked.

CASE X.—J. G., a farm labourer, had had inflamed eyes for fourteen days. The conjunctivæ of both eyes were velvety, with scabs along the lids and also around the nostrils. Gutt. adrenalin chloride (1 in 10,000) were ordered thrice daily, and ung. acid bor. to be applied along the lids at night. In seven days the eyes were quite well.

CASE XI.—P. M., aged 18, came with a history of sore eyes of twelve months' duration; the margins of the lids were inflamed and most of the lashes had fallen out. Ung. acid bor. was ordered to be put on the lids at night, and adrenalin chloride (1 in 10,000) to be dropped in thrice daily. In four days a great improvement was visible, and at the end of a week the lids were cured.

CASE XII.—A. S. was suffering from a polypus in the middle ear, and had had double otitis media suppurativa for many years. In March, 1901, I performed the radical mastoid operation on the right ear, grafting the cavity on the fourth day. The left ear continued to discharge off and on, and she came to me on October 28th with great pain in this ear, and on examination I found a large polypus blocking the perforation in the membrana tympani. As she was an extremely nervous patient, it would have been necessary to anaesthetize her for the removal of this growth, so I instilled adrenalin chloride (1 in 5,000). At the end of ten minutes the polypus had shrunk to one-third of its former size, and I was able to relieve the pain by syringing out the pent-up pus. She has now been using the solution for three weeks; the polypus has disappeared; there is very little discharge and no pain. She will eventually require a mastoid operation, but the adrenalin chloride has given temporary relief.

Dr. W. H. B. Brook has kindly given me permission to

publish the notes of the following case, which shows in a very striking manner the effect of adrenalin chloride in relieving photophobia.

CASE XIII.—A. B., aged 68, was admitted into the Lincoln County Hospital on October 28th, 1901, suffering from acute conjunctivitis, of six weeks' duration, for which she had been under treatment. On admission there was intense photophobia of the right eye, so much that until cocaine was instilled it was impossible to examine the eye; the conjunctiva was inflamed, red, and swollen, and there were the remains of a phlycten on the cornea. Adrenalin chloride solution, 1 in 10,000, was instilled into the eye, with relief in less than a minute, the injection of the conjunctiva disappeared, and the photophobia was entirely relieved. There was no ciliary congestion. The signs returned in the course of a few hours, but in a less marked degree, the drops were repeated three times daily, and the eye irrigated with lotio hydrag. perchlor., 1 in 5,000. In the course of a few days the eye was well.

P.S.—Since writing the above I have had several very marked instances of the relief afforded by adrenalin chloride in photophobia due to conjunctival and corneal affections, but must utter a word of warning against its use in corneal ulcers as in these cases it does harm. I have also proved its great value in acute and chronic iritis, when combined with atropine the relief of pain being very rapid.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

TWO CASES OF PARTIAL CRETINISM WHICH DEVELOPED SWELLING OF THE THYROID ON CESSATION OF TREATMENT BY THYROID EXTRACT.

THE two following cases appear to have a practical bearing on the treatment of simple goitre by thyroid extract. It is known that some of these cases of simple goitre improve under treatment with iodine, and also under treatment by thyroid extract. The inference is that some of these cases must be very closely allied to cretinism, an inference the more likely because it is also recognized that, in some instances, the condition relapses on cessation of this treatment. The two following cases may supply a link in the chain of evidence.

CASE I.—A girl, aged 8½ years, had been under treatment for partial cretinism at the Hospital for Sick Children, Great Ormond Street, for four years and a-half. Though backward, no one, I think, latterly could have recognized her as a cretin, but in the summer of 1901 she contracted diphtheria, and while she was being treated at a hospital for this disease the treatment by thyroid extract was omitted for five weeks. Her mother brought her back to me to recontinue the treatment, and said that the child had become more dull, slower in speech, and that the tongue had swollen. She had also noticed that the neck had swollen. With the history of the patient before me the explanation was quite clear, but had I seen the child for the first time I hardly think that I should have recognized her as cretinous. The swelling of the neck was a slight but quite obvious swelling of the entire thyroid gland, which at once subsided on renewal of the treatment.

CASE II.—A girl, aged 8, who had been under observation for five and a-half years for partial cretinism, was attending the hospital for thyroid treatment. All cretinous symptoms had disappeared, and I thought it possible that the thyroid gland might have developed with the growth of the child. With caution the dose was diminished, and finally no thyroid was given. Two months after cessation the mother brought the child to me, with the history that she had become a little dull and rather slow in her speech, and that a large swelling had appeared in the neck. Again, had it not been that I knew the previous history, I doubt whether the diagnosis of cretinism could have been made. The thyroid swelling was very definite, and formed an obvious goitre. The swelling was a general one, and both lobes were equally affected. Treatment was promptly resumed, and the goitre rapidly disappeared. Since then the family had moved to the north, and the mother has told me that the treatment had been again intermitted. In February of this year they again returned to London, and I found that the gland was once more very easily palpable, though not large enough to be called a goitre.

I have but little doubt that such cases as these have been observed before, but in most of our textbooks the value of the treatment of simple goitre by thyroid extract is alluded to as a fact, without any very definite reason for the fact. These two cases cannot fail, I think, to increase our confidence in the trial of this method, especially in those cases in which perhaps iodine might have been used in preference. In both instances it will be noted that the diagnosis of simple goitre would probably have not been made had not the former history been known; and it is very possible that some of these cases of simple goitre may show slight symptoms of cretinism, which would be easily overlooked or misconstrued as signs of general ill-health.

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CASE OF PROLONGED LACTATION.

WE were consulted in January, 1902, by M. E. S., with regard to her child, who was at that time suffering from bronchitis and constipation. An inquiry into the nature of the child's diet elicited the fact that "she still had the breast," although she was 5 years and 2 months old. The mother is 47 years of age, and well nourished, but somewhat sallow. She had been married 24 years, and of nine conceptions eight children have been born at term, and there was one miscarriage at five months.

Of the children, three—one male and two females—are living; three males and two females died of diseases common in children. The youngest child (a female) is now 5 years and 4 months old, and up to the time we first saw her was fed at the mother's breast three or four times every day, but for the past two years has had some additional food. The mother "always had plenty of milk." She commenced to menstruate at 16, but during the period of lactation under discussion had menstruated twice only (in August, 1901, and February, 1902). The breasts were full, and milk could be readily squeezed from them. The microscope showed this to contain nearly as large a quantity of fat as a specimen of fresh cow's milk with which it was compared. We advised that the child be weaned, and suggested a more suitable diet. This was done, and after seven days the secretion of milk ceased.

At the beginning of March the breasts were found to be small; the nipples and areolae deeply pigmented; and the child doing well. For permission to report this case—which in our experience is unique—we are indebted to Dr. Archibald Donald.

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THE COAGULATING POWER OF THE BLOOD IN PLAGUE.

DURING the last few weeks of my stay in India I was carrying on investigations as to the bactericidal and sedimenting power of the blood of plague patients, and was struck by a feature in this blood which I do not remember to have seen noted elsewhere.

I venture to publish my incomplete observation as I shall probably have no opportunity of continuing it, and hope that someone else working in the plague-infected districts will think it worth while to carry on the investigation.

The point that I allude to is the failure to coagulate of the blood taken during life from patients suffering from a virulent form of the disease, and I was led to observe it in the following way. From 32 patients who were at different stages of the disease I collected blood in the capsules recommended by Professor Wright of Netley. The blood was in each case drawn from the finger, and the capsule immediately sealed in the flame and kept in the erect position. Of these 32 patients 12 died within forty-eight hours of the examination, and of these 12 rapidly-fatal cases, the blood of 10 showed absolutely no coagulation at all. The capsules were kept for varying periods up to three weeks (one, in fact, is still in my possession), and at no time was a clot observed in them. With normal blood a well-defined clot suspended in a perfectly clear straw-coloured serum is observed in a short time. In the 10 cases alluded to there was no separation of the constituent parts of the blood at all. It remained a dark-red