being 180 seconds. Conjunctival anaesthesia under borocaine usually lasted well over five minutes with the 2 per cent. solution, and over ten minutes with the 4 per cent. solution. With cocaine anaesthesia the conjunctiva was always insensitive for at least five minutes.

After-effects.—To test the after-effects the anaesthesia was induced with 5 per cent. cocaine and with 4 per cent. borocaine, and the eye was inspected the next day. Borocaine was used in 31 cases and 16 returned. Cocaine was employed in 31 cases and 18 returned. The accompanying tables record the results, and so far as they go point to cocaine, even in 5 per cent. solution, as being less harmful to the corneal epithelium than borocaine. Removal of a foreign body appears to be more likely to be complete in the case of cocaine than in that of borocaine. The effect upon the tension is shown in Table III (some of the cases tested had glaucoma). It would appear that the effect of the two drugs is much the same, but borocaine appeared to cause a rise of tension in a greater number of cases than cocaine.

TABLE I.—5 per cent. Cocaine.

Subjective Condition.	Condition of Conjunctival Vessels.	Condition at Site of Removal.
Irritable	Injected	Irregular peeling of surface epithelium.
Irritable	Marked injection	Circumscribed ulceration.
Irritable	Marked injection	Irregular peeling of superficial epithelium.
Comfortable	No injection	Area circumscribed; no staining with fluorescein.
Comfortable	No injection	Area circumscribed; no staining.
Painful	Injection	Traces of foreign material; slight staining.
Comfortable	No injection	Area circumscribed; no staining.
Comfortable	Slight injection	No spread; no staining.
Comfortable	Slight injection	Slight staining; some ulceration.
Comfortable	Slight injection	Area circumscribed; no loss of substance.
Comfortable	No injection	Area circumscribed; no loss of substance.
Comfortable	Slight injection	No spread; no staining.
Comfortable	Slight injection	No loss of tissue; no staining.
Comfortable	Slight injection	Staining at site, but no spread.
Irritable	Injection	Circumscribed ulceration.
Irritable	Intense injection	Loss of substance; some spread.
Painful	Much injection	Circumscribed ulceration.
Comfortable	No injection	No loss of substance.

TABLE II.—4 per cent. Borocaine.

Subjective Condition.	Condition of Conjunctival Vessels.	Condition at Site of Removal.
Comfortable	Slight injection	No loss of substance; no staining.
Comfortable	" "	Staining; tendency to spread.
Irritable	" "	No loss of substance; no staining.
Irritable	" "	No loss of substance; no staining.
Irritable	Injection	Circumscribed loss; staining.
" Aching "	" "	Staining; loss of substance; trace of foreign matter.
Comfortable	" "	No loss; no staining.
" Aching "	" "	Circumscribed loss of substance; staining.
Comfortable	" "	Loss of substance; some spread; staining.
" Aching "	" "	Trace of foreign matter; staining.
Irritable	" "	Irregular loss of substance; staining.
Irritable	Injection, palpebral oedema	No loss of substance; no staining.
Painful	Injection	Widespread loss; staining.
Irritable	" "	No staining; no loss.
Irritable	" "	No loss; no staining.
Comfortable	" "	Circumscribed ulceration.

TABLE III.—Effect upon Tension.

No.	Age.	Method.	Tension.	Tension after 15 minutes.	Mydriasis.
			Schiötz units	Schiötz units	
1	19	Borocaine 4%	19	19	No.
2	42	" 4%	19	22	No.
3	62	" 4%	26	27.5	Yes.
4	68	" 2%	22	22	Yes.
5	42	" 2%	20	20	No.
6	51	" 2%	26	18	No.
7	74	" 4%	16	16	?
8	40	" 2%	22.5	22.5	Yes.
9	18	" 2%	65	67	Yes.
10	70	" 4%	16	22	No.
11	66	" 2%	24	26	Yes.
12	52	" 2%	12	10	?
13	21	" 2%	16	12	Yes.
14	60	" 2%	56	54	Yes.
15	56	" 2%	10	12	?
16	77	Cocaine 2%	10	12	Yes. +
17	75	" 2%	22	20	No.
18	39	" 2%	19	17	Yes.
19	39	" 2%	19	16.5	Yes.
20	74	" 2%	24	20	Yes.
21	63	" 2%	22.5	20	Yes.
22	32	" 2%	22.5	19	Yes.
23	52	" 2%	32	27	No.
24	59	" 2%	51	51	No.
25	56	" 2%	17	20	No.
26	52	" 2%	12.5	13.5	Yes.
27	26	" 2%	22.5	18	No.
28	26	" 2%	19	19	No.
29	63	" 2%	20.5	24	No.
30	32	" 2%	16	14	No.

The conclusion of the two authors is that borocaine is greatly inferior to cocaine as regards its surface anaesthetic effect. Cocaine is perfectly reliable, whereas the effect of borocaine is variable.

The cost of borocaine makes it an impossible drug for hospital use, the more so as it appears to have no advantages.

THE CLINICAL USE OF BOROCAINE BORATE AND BETA-EUCAINE BORATE FOR URETHRAL ANAESTHESIA.

BY

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BOROCAINE borate and beta-eucaine borate have both been used at All Saints' Hospital for Genito-Urinary Diseases to provide urethral anaesthesia before the passage of various instruments. In the cases here remarked two injections of half an ounce were given at an interval of five minutes. After waiting for three minutes the selected instrument was passed.

BOROCAINE BORATE.

In two cases 0.5 per cent. solution was used; in both of these 0.5 solution of cocaine hydrochloride was used as a local anaesthetic at previous instrumentation. The first case was for the passage of a cystoscope, and the second for a No. 20 French gum-elastic bougie. These two patients

reported that anaesthesia was not quite so good as it had previously been with the cocaine solution.

In 5 cases, all of whom had been previously anaesthetized with 0.5 solution of cocaine, 1 per cent. solution was used. In the first it was for the passage of a Kollmann's dilator, and in the second of a cystoscope; the remaining three were cases of gonorrhoea in which silver nitrate solution was being instilled into the posterior urethra. All the patients reported that borocaine gave them better anaesthesia than the 0.5 per cent. solution of cocaine.

In 3 cases 2 per cent. solution was used before the passage of a Kollmann's dilator. All these patients had had frequent previous injections of cocaine. It was also used for two cases of cystoscopy where there was no history of previous instrumentation. In the first three of these cases the patients reported perfect anaesthesia and relaxation was improved, as evidenced by the fact that dilatation was higher than usual. In the two cases of cystoscopy anaesthesia and relaxation were perfect, and I consider decidedly better than it would have been with a 0.5 per cent. solution of cocaine. A 5 per cent. solution was tried in the three cases of urethral stricture, with perfect results as far as anaesthesia and relaxation were concerned, but really there was no advantage over the 2 per cent. solution. One of these three patients complained for about two or three minutes of a feeling which he described as rather like a lump in the throat, but this passed off, and there were no further symptoms.

In two cases 2 per cent. solution of norocaine hydrochloride was used as a control. These patients had both had frequent injections of 0.5 per cent. solution of cocaine hydrochloride for the passage of a Kollmann's dilator. They reported that anaesthesia was not so good as before, and relaxation was less, in that dilatation fell short of the point reached on previous occasions.

Conclusions.

A 2 per cent. solution of borocaine borate was a considerable improvement over 0.5 per cent. solution of cocaine in respect both of anaesthesia and relaxation, and there was no sign of toxicity.

The 2 per cent. solution of norocaine hydrochloride fell short of a 0.5 per cent. solution of cocaine. A 1 per cent. solution of borocaine borate gives better anaesthesia than a 0.5 per cent. solution of cocaine.

A 0.5 per cent. solution of borocaine borate has no advantage over a 0.3 per cent. solution of cocaine.

The cocaine solution used at All Saints' Hospital is made up with 0.5 per cent. sodium bicarbonate and 1 in 40 camphor water. A 1 per cent. solution of cocaine has not been tried owing to the risk of toxicity.

BETA-EUCAINE BORATE.

This was used on patients who had previously had frequent injections of 1/2 per cent. cocaine hydrochloride solution. The following results were obtained.

Beta-Eucaine Borate 1/2 per cent.—This was used in two cases for dilatation of urethral stricture with a Kollmann's dilator. Both patients reported that they had never had such perfect anaesthesia, and relaxation was also very good.

Beta-Eucaine Borate 1/4 per cent.—This was used in two cases of urethral stricture before the passage of a Kollmann's dilator. Both patients reported that they saw no difference between this and their previous injection, and relaxation was the same.

Beta-Eucaine Borate 1/8 per cent.—This was used in two cases of urethral stricture, for the passage of a Kollmann's dilator in one case and a gum-elastic bougie in the other. Both patients reported rather more pain than they usually got with 1/2 per cent. cocaine.

Conclusions.

Beta-eucaine borate in 1/2 per cent. solution is a perfect urethral anaesthetic, and relaxation is also perfect. In 1/4 per cent. solution it is equal in its action to 1/2 per cent. cocaine hydrochloride. In 1/8 per cent. solution it is not so good as 1/2 per cent. cocaine.

A 1 per cent. solution of this borate was not used owing to the perfect result of the 1/2 per cent. solution.

THREE CASES OF MIDDLE-EAR DISEASE WITH INTRACRANIAL COMPLICATIONS.

BY

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It often happens that patients who have suffered from chronic suppurative otitis media imagine themselves to be cured because all discharge from the ear has practically ceased. They then return to their normal way of life, giving their condition no further thought; so that one or two striking instances of the risks so run may not be out of place. Instead of keeping their ears under the occasional observation of an aurist, they lull themselves into a state of false security until some disaster occurs and they are found to be in imminent danger of death, when nothing but prompt and drastic surgical intervention can save them. A typical pathological condition under which this occurs is cholesteatoma formation. Under local conservative treatment of the nose and ear all discharge ceases; but the irritation of infective matter still remaining in the attic or antral regions causes proliferation of epithelium, until an amorphous cheesy mass is formed in which cholesterol crystals are thickly deposited. Gradually the bone becomes eaten away until the dura mater is exposed, when the invasion of lateral sinus or brain is only a matter of time.

An ear which is dry but foul-smelling should always be suspect, and if a few fibres of cotton-wool twisted closely on a carrier are introduced through the perforation (often in the attic region) and come away coated with thick nauseous matter the diagnosis of cholesteatoma formation may be made with confidence and a radical mastoid operation advised. Unfortunately, as discharge ceases, patients often take matters into their own hands and disappear; but they should previously be warned that the ear requires occasional supervision, unless it is so obviously healthy that the patient can be dismissed with a clear conscience on the part of the aurist. Every aurist knows of cases where patients have neglected or have failed to understand such advice and paid the penalty of death. In the cases I have selected the patients were somewhat more fortunate; each case presents certain individual features which are interesting of themselves apart from any moral to be drawn therefrom.

CASE I.—Cerebellar Abscess with some Unusual Features.

A young agricultural labourer had for some weeks been suffering from bad headaches, and after a short time became increasingly drowsy. He was accordingly admitted to the Romford Infirmary under Dr. O'Loughlin.

After an initial rise of temperature lasting three days the fever subsided and the body heat became if anything subnormal and remained so. The pulse also after a short period of increased rate became normal and of good quality. Meanwhile the mental condition progressively deteriorated and the patient was almost continuously in a state of coma, from which he could with difficulty be aroused to take a little food at intervals. He gradually lost weight and became very emaciated. His limbs were flaccid and no definite reflex responses could be obtained. There was a vague history of his having, some years previously, suffered from middle-ear disease, but there was now no discharge from either ear and he had for a long time been considered cured of that trouble. The condition seemed to warrant a diagnosis of encephalitis lethargica, and after a second concurring opinion the patient was treated from this point of view.

He gradually became worse, could no longer be roused from coma, and on Saturday night, August 30th, 1924, profuse discharge started from the left ear and a little from the right ear; the next day I was called to see him.

Examination showed the patient to be in the last stages of emaciation—resembling a case of cholera. All the bony prominences of his face were clearly defined, with deep hollows between them. He was quite unconscious and his mouth lay open, with sordes on both lips and tongue. He had lost his left eye in infancy, but the right was half closed, with the pupil turned upwards. All his limbs were flaccid and his knee-jerks absent, while Babinski's and König's signs were negative. The pulse (76) was of good volume and pressure; the temperature was subnormal; the respirations were only four to the minute, and the patient appeared to be moribund.

A diagnosis of left-sided intracranial abscess was made owing to the profuse discharge from the left ear, and an immediate