

been inoculated (208 men) except those who had already contracted influenza (40 men). After the 6th September, there were 24 cases of influenza with 1 death amongst those inoculated, and 4 cases with 1 death amongst uninoculated men newly admitted into the jail. Of the 40 early cases amongst the uninoculated, 7 eventually died. For purposes of finding the results of inoculation, men are not considered as inoculated until the day following inoculation; for example, the inoculated population on the 4th would be considered as nil, on the 5th as 60, on the 6th as $60 + 70 = 130$, and so on.

Results.—If inoculation and the lack of it be compared over the whole period of the epidemic irrespective of the fact that there were no inoculated men present for the first few days of the epidemic when it was apparently at its worst, then the results are as follows:—

	Mean daily population.	Cases.	Deaths.	Percentage of cases	Percentage of deaths to cases.
Inoculated ..	128	24	1	18·8	4·2
Uninoculated ..	120	44	8	36·6	18·2

These would appear to be a proof of the value of inoculation and give a good example of the inaccurate results that can be produced by false comparison. Inoculated and uninoculated men may not be compared over different periods without producing fallacies as above, for if they are compared over the same periods, the results, as we shall see, are quite different.

	Mean daily population.	Cases.	Deaths.	Percentage of cases.	Percentage of deaths to cases.
Inoculated ..	27	Nil	Nil	Nil	Nil
Uninoculated ..	223	40	7	17·9	17·5

The figures for the mean daily population of the inoculated are too small to allow the results to be comparable, and further they do not in any way represent the number of men actually present every day, but only the calculated figure for the 60 and 130 men present on the 6th and 7th days, respectively. If inoculation be considered not to produce effects until the 2nd day, as is quite likely, then in this first period the inoculated would be represented by only 60 men on the 7th day, giving a mean daily population of 9 and

still further reducing the comparability of the results in the two groups.

	Mean daily population.	Cases	Deaths.	Percentage of cases.	Percentage of deaths to cases.
Inoculated ..	186	24	1	12·9	4·2
Uninoculated .. (Those who had influenza previous to 7th September have been excluded)	24	4	1	16·6	2·5

These results are comparable, except that the figure for the mean daily population of the uninoculated is small.

The 1 death in the inoculated was in a man who went sick 36 hours after inoculation, so that he can be grouped as an early uninoculated case, and since the 1 death in the uninoculated was in an old dysentery case, it too may be disregarded.

This report is based on an analysis of a paper sent by, and of subsequent correspondence with, Dr. S. L. Sarkar, Civil Surgeon of Khulna, to whom we are indebted for his trouble. In a few cases a therapeutic use of the vaccine in small 0.1 c.c. doses was tried. The course of the disease does not seem to have been influenced at all.

Conclusion.—There are no comparisons available, which are both logically and statistically sound. The best is that of the incidence rates in the last 12 days of the epidemic—12·6 per cent. for the inoculated and 16·6 per cent. for the uninoculated. The difference between these is not sufficient to prove anything in favour of inoculation particularly, as the results are based on a small figure for the mean daily population of the uninoculated.

EXTIRPATION OF THE LACHRYMAL SAC.

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In the Archives of Ophthalmology, Vol. L, No. 3, May 1921, there is a practical article by Dr. Allan Greenwood, of Boston, entitled "Lachrymal Sac Extirpation Simplified," pointing out that the usual descriptions of the operation are poor, and that its difficulties are exaggerated. For these reasons he considers it timely to publish a description of the simple method which he has practised with success for some years, and he gives a few useful hints which are worth the attention of ophthalmic surgeons.

There is no doubt that the difficulties of the operation have been exaggerated in the past, but there are at least two excellent accounts of it in easily accessible standard works. I refer to Meller's Ophthalmic Surgery, and Elliot's Tropical Ophthalmology. The former gives a very clear and detailed description of the Vienna operation with the minute anatomy of the parts concerned. The latter does not pretend to be an operative treatise, but gives numerous practical improvements based on a large experience, which the surgeon familiar with Meller's operation will have no difficulty in adopting. Dr. Greenwood's operation is very similar to that originated by Colonel Elliot in the Government Ophthalmic Hospital, Madras, and which is still practised with certain modifications introduced by Colonel Kirkpatrick. These modifications, together with one or two points in technique which I consider helpful, will be touched upon below.

In Dr. Greenwood's article, it may be noted that he demarcates the anterior lip of the lachrymal fossa by placing the finger on the canthus and pressing on the lachrymal crest with the finger nail. He incises over the curved line thus delineated. I frequently use this method of demonstrating approximately the position and shape of the incision, but as I consider the most important step in the operation is to avoid the angular vein, I always make my incision external to the vein, no matter what the surface marking of the crest. It is surprising in what a number of patients the angular vein is obvious at a glance. Its position varies, but it is seldom so near the canthus that one has not 5 to 10 m.m. between the two, at the level of the internal tarsal ligament. In making the infiltration (2 per cent. novocaine in 1/10,000 adrenalin, approx.), care is taken to insert the needle to the temporal side of the vein. The vein is now obscured by the swelling due to the infiltration; this is dispersed by firm pressure against the bone over the site of the injection. The parts having resumed their normal appearance, the position of the vein is kept in view. The skin is now put evenly on the stretch with the canthus as centre, by a divergent drag with the fingers of the left hand. This gets the vein out of the way and aids in making a clean section. The short (2 c.m.) slightly curved incision is now made with the point of a very sharp small scalpel held like a pen but more vertically, with the blade cutting away from the operator as he sits at the patient's head. A short sawing motion is imparted to the knife, insuring a clean incision through the delicate skin which is on the stretch. The incision must be between the canthus and the angular vein and in the natural line of cleavage. It may be within 5 m.m. of the canthus, if necessary; that does not matter; the great point is not

to wound the vein, and this goes a long way towards securing a bloodless operation. The incision, at present in vogue here, differs somewhat from Colonel Elliot's, in that its upper extremity is carried slightly above the ligament. The incision is only carried through skin and subcutaneous tissues, so that when the Meller's retractor is inserted a quadrilateral field is exposed with the internal tarsal ligament white and prominent crossing its upper third, whilst the oblique fibres of the orbicularis occupy the lower two-thirds.

Here our technique differs from Dr. Greenwood's, in that we do not cut down directly on the periosteum immediately to the nasal side of the crest, except in difficult cases (e.g., extensive suppuration, discharging sinus, periostitis, erratic haemorrhage). In such cases the crest is an invaluable guide as he points out, and enables one to finish the operation by touch, if necessary. We, on the other hand, aim at Meller's technique, splitting the orbicularis and then the fascia which, stretching between the anterior and posterior crests, ensheathes the sac externally. This is carried out by inserting the back of the point of the knife between the orbicularis fibres just below the internal tarsal ligament, and pushing downwards in the line of the fibres. The fascia immediately appears in the gap, and it is treated similarly, being split by the knife point.

The sac is now seen lying inside the fascial sheath, and is detached from its bed by means of an Elliot's dissector, the ideal instrument for the purpose. The edge of the dissector is inserted into the gap, and by moving it up and down, the outer side of the sac is first freed. The movement is continued posteriorly and downwards and then the instrument is carried across the front of the sac and separation is effected internally and downwards deep into the canal. Lastly, using it like an egg spoon, the dome is separated. At this stage, as Dr. Greenwood points out, one may have to use the scissors. In connection with this blunt dissection, he lays stress on an important point, namely, the fragile and frequently perforated nature of the lachrymal bone; this only needs mention; there must be delicacy of manipulation all through.

With regard to dividing the internal tarsal ligament, it is as often cut as not. Colonel Elliot did not sever it as a rule. Dr. Greenwood points out that it makes very little difference, and as this seems to be the case, I sever it in those cases where it is helpful. The severance should be at its attachment to the bone. All that remains after thorough separation is to seize the sac, divide the canaliculi with scissors, push the blades down the canal and cut off the duct as low as possible. Cauterisation of the canal has now been given up; our procedure at present is

to pass a large-size lachrymal probe down the bony canal as a guide and, if necessary, to force it through into the meatus. This is followed by a few short strokes of a curette, turning the instrument as these are made with its face against the bone, so as to invaginate the sleeve of mucous membrane from the point of its severance downwards.

Occlusion of the canaliculi is advocated by Dr. Greenwood, and this certainly seems a sound piece of technique. I intend to adopt it, not by ligature as he advises, but by clamping the canaliculi with Halstead's mosquito forceps before cutting them. The closure of the wound is largely a matter for the individual surgeon. Two or three points of silk suture are used here for the sake of speed and convenience. There is no reason why one should not use subcuticular horse-hair and avoid puncture scars.

It is important to eliminate dead space when dressing the wound. This we do by applying a small rounded pad squeezed out of a saturated watery solution of picric acid. A larger pad is placed on top of this and the whole tightly bandaged and left for three or four days.

The simple operation of extirpation, as practised in the Madras clinic, is very rapid, taking five or six minutes in straightforward cases. It is practically bloodless, and this fact is much appreciated by post-graduates from other parts of the world, to whom we have had the privilege of demonstrating the operation. It is on this account that I have gone into considerable detail.

In conclusion, it may be remarked that there are two points mentioned above, which it is well worth while for the ophthalmic surgeon to dwell upon, should they not be familiar to him.

1. Occlusion of the canaliculi, as practised by Dr. Greenwood.

2. Location of, and respect for, the angular vein.

seen in the Adams-Wylie Hospital. A brief description of these cases is given below. Of these, Case No. 4 was the most interesting one from the diagnostic point of view. He had high fever for four days; on the fifth day, jaundice appeared and the liver was enlarged and tender; on the sixth day, the jaundice was deep and at the same time the bulbar conjunctivæ were congested, but the temperature began to subside. On the seventh day, the eyes were blood-shot, the jaundice deep; there was a purpuric eruption on the upper extremities and the abdomen, but the temperature was normal. The combination and sequence of the symptoms left no doubt as to the clinical diagnosis of epidemic jaundice or Weil's disease. Examination of blood smears showed no spirochaetes or any other parasites. The urine was then centrifugalised and smears were made from the deposit and stained by Fontana's method for spirochaetes. Out of five smears made, three

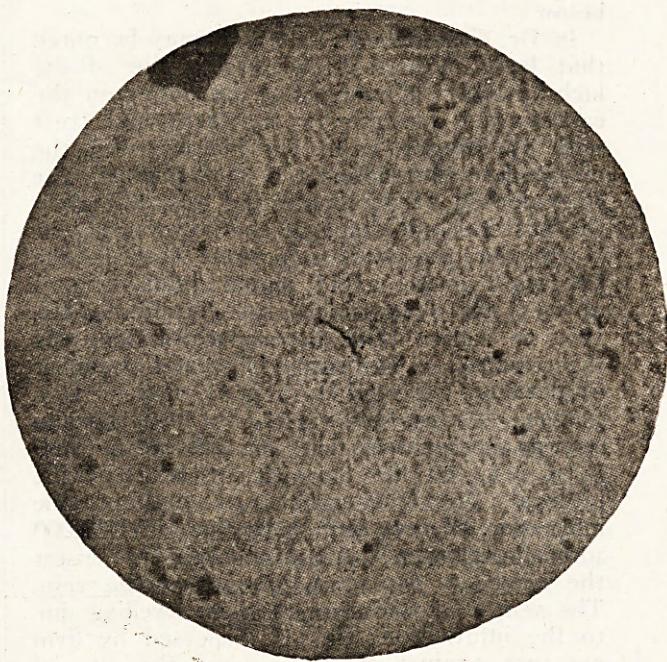


Fig. showing spirochaete in the centrifugalised deposit of urine of a case of epidemic jaundice.

THE PRESENCE OF INFECTIOUS JAUNDICE IN BOMBAY.

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SINCE the early part of this year, there have been occurring sporadic cases of fever in which jaundice supervened after the fever had lasted for from three to eight days. I have had the opportunity of observing these cases and noting their progress from time to time in the wards of the Adams-Wylie Hospital. My attention was particularly attracted to this disease, when in a period of about a month and a half I came across seven of these cases with very suggestive features. Three of these cases were met with in private practice, while the remaining four were

showed spirochaetes. Unfortunately, by the time the diagnosis was settled, the period during which the spirochaetes appear in the blood, viz., the febrile period, was already past. Hence I had no opportunity of reproducing the disease experimentally in guinea-pigs by inoculating them intraperitoneally with the patient's blood. The spirochaetes in the urine, too, disappeared on the third day, after they were first discovered. However, the findings of this case led me to examine the urine of my case No. 2, who was well on the way to recovery but still had jaundice. Out of a dozen smears made from the centrifugalised deposit of his urine, only one showed spirochaetes in scanty numbers.