case is to be seen the metal plate holding the thermometer, hypodermic syringe and tablets need only be taken. 1

The case seems to me to answer all the purposes of a regulation case, and although its size and weight are slightly more than the present one, it is immeasurably superior to it both for service and station work.

Report.

TRANSACTIONS OF THE BOMBAY MEDICAL CONGRESS, 1909.

BY MAJOR W. S. HARRISON.

Royal Army Medical Corps.

(Continued from p. 659, vol. xiv.)

Hygiene: Water Supplies.—Cummin advocated the compulsory use in ships’ water-tanks of air-pipes which open to the deck and not over the bilge, as is usual at present, with the object of preventing the absorption by the water of foul gases from the bilge.

Mathew suggested the use of acetic acid for the purification of wells suspected to be infected with cholera. He adds enough acetic acid to make the water faintly acid to litmus, but gives no experimental proofs for his method and no statistics.

Nesfield described methods for disinfecting drinking water by addition of chemicals, of which he advocated perchloride of mercury 1 in 1,000,000; permanganate of potash 1 in 70,000; iodine or chlorine 1 in 70,000, followed by neutralization with hyposulphite of soda 1 in 70,000. He gave a description also of his cylinder for the sterilization of water on a large scale by means of chlorine.

The Haj.—Clemow discussed the sanitary regulation of the Haj, and described the steps which were being taken to prevent the carriage of plague and cholera by pilgrims; he urged the Indian Government to establish a five days’ quarantine for pilgrims in India before embarkation.

Cummin objected strongly to the infliction of further quarantine on Indian pilgrims, and described the procedure with pilgrims to prevent carriage of disease—viz., destruction of rats on ships, disinfection of clothing, &c., nine days observation on the ship. Also sanitary inspection at Perim, with quarantine if disease had occurred on the voyage.

1 Since writing this description the manufacturers have sent me a rubber case which will carry one or two trays of instruments on such occasions. It is made of material that can be boiled, or treated with strong antiseptics, without affecting it. It lies conveniently inside the steriliser when not in use. The additional cost of this case I understand is only 1s. 6d.
Blackmore considered that the Mahomedans of India had a distinct grievance against the Turkish Government in the matter of their regulations for the Haj, and he thought that the Turkish authorities might be asked to take some steps to remove breeding places for cholera and plague from within their own borders. The insanitary condition of Mecca and Jeddah, &c., was notorious.

Tropical Disease in the Navy.—Clayton read a paper on the "Incidence of Tropical Disease in the Navy." He showed that mosquito-borne disease was very rare except among men stationed ashore, even when boats were anchored a quarter of a mile out. Filariasis was practically unknown, and in one instance where a party of 121 men were employed ashore in a place where Culex fatigans was abundant, and many of them infected, none of the sailors contracted disease; he suggested that prolonged residence in an infected locality was necessary to contract the disease.

Carriage of Plague by Sea.—Blackmore dealt with the carriage of plague by sea. He pointed out that plague had almost invariably been introduced into a country by sea, but that in no case was it traced to the introduction of a plague-infected man: the carrier was the rat. He made the somewhat surprising statement that, although Bombay was the great plague-distributing centre of the world, so far no attempt to deal with ship rats systematically had been made at that port. He strongly urged the systematic destruction of rats about the docks, so that there would be none to get on board the boats. The usual methods of preventing rats getting on a ship were ineffective.

Cummin, in the discussion, detailed the steps which were now taken in Bombay to prevent rats gaining access to ships. They consisted in keeping the ships 3 feet from the dock wall, putting rat guards on all hawser and freshly tarring all gangways, and, in addition, the use of the Clayton apparatus was offered to all ships free of charge.

Bawa referred to the immunity of Colombo from sea-borne plague, which he attributed principally to the absence of docks and wharves at that port. In a later paper Dr. Bawa drew attention to the almost entire absence of means of isolation on board ships, and urged the adoption of regulations compelling the provision of such accommodation. He suggested that a collapsible canvas cabin capable of being erected on deck was the most suitable arrangement for ships in tropical waters.

Sanitation of Troopships.—Jones (United States America) described the sanitary conditions on American troopships. The air space worked out at 100 cubic feet per man, and the fans effected a change only three times in an hour, so that men on board habitually got only one-sixth of what was considered the minimum amount of fresh air needed for health. He attributed the prevalence of tonsillitis on the ships to this, and had noted that sore throats were much more frequent in rough weather, when the hatches were battened down, and especially if the troop-decks got damp from leaky deadlights. As regards water, he said bacteriological examina-
tion of water showed that by exposing it to 220°F. for a few seconds in the condensers the micro-organisms were reduced from 2,000 or more per cubic centimetre to under 100 per cubic centimetre. But they very rapidly multiplied afresh in the pipes and storage tanks; he advocated the abolition of storage tanks, and suggested arrangements for sterilization of the water as it was required from day to day.

**Sewage Disposal.**—Maxwell opened the discussion on this subject. He condemned the septic tank, and recommended a "preliminary preparation tank," where average town sewage remained six hours, followed by distribution on percolating filters of vitrified clinker.

Gilbert J. Fowler discussed the treatment of sewage under tropical conditions. His experiments (made with a concentrated sewage) led him to recommend preliminary treatment in septic tanks (which at the commencement were inoculated from another satisfactorily working tank), followed by filtration through percolating filters of furnace clinkers, and final sterilization of the effluent by hypochlorites, or in other cases use of the effluent for flushing latrines. The gases from the septic tanks could be used for power or lighting on the works.

Dibdin described the action of his slate beds. In the discussion which followed, the general opinion was that it did not follow that methods of sewage disposal which were satisfactory in Europe were likely to be equally satisfactory in the tropics.

**Disinfection.**—Ramchandria described some experiments to test the pulicidal action of 1% (1 in 100) and of heating an infected house to above 60° C. by means of braziers. Neither method was effective.

He also did some experiments on the vitality of fleas, and found that in the presence of earth and cow dung, moistened with urine, they would live for eighteen days without feeding.

**Surgery.**—Smith (Jullundur) described his treatment for trachoma, pannus, and corneal ulcer depending on trachoma. For trachoma he scraps the lid if granulations are exuberant, then paints with nitrate of silver solution 60 grains to the ounce, neutralising with saline as soon as complete whitening of the surface occurs. In the after-treatment the eyes are not bound up, the pain is relieved by sponging with hot or cold water, and by opium ½ to 1 grain. The silver solution is used every second day, and cure takes six to fourteen days. For pannus he injects under the conjunctiva 15 to 20 minims of 1—4,000 solution of cyanide of mercury; this is followed by œdema and chemosis, which subsides after a week, leaving the conjunctiva fixed down to the sclera. The operation is painful, and should be done under 10 per cent. cocaine anaesthesia and followed by a dose of 1½ grains of opium.

If the case is a bad one, the injection should be repeated on the sixth or seventh day. He has had no accidents. For corneal ulcer he dispenses with bandages; he cuts the outer canthus to prevent pressure from spasm and to allow free exit for discharge, and avoids cocaine,
atropine and eserine if possible, considering that atropine especially aggravates the condition. He douches the eye with 1—2,000 sublimate solution from a height of 6 ft., then touches with nitrate of silver solution 60 grains to the ounce, neutralizing immediately. In some cases he gives the subconjunctival injection of cyanide of mercury solution as for pannus. He especially recommends this for phlyctenulae, which he billows up on the injected material, scrapes the ulcer, and touches it with a stick of nitrate of silver.

**Intra-capsular Extraction of Cataract.**—McKeechne, Gidney, Jamieson, Oxley, Bhandari, Matra Das, and Lister, all pupils of Smith (Jullundar), read papers on the intra-capsular extraction of cataract, which Smith has brought so much to the fore of late years. They all speak enthusiastically in favour of the operation, which is not one, however, to be done by the inexperienced. The advantages claimed are that a cataract can be extracted at any stage of maturity; that unless the capsule bursts, as happens only in about 5 per cent. of cases, the entire lens in its capsule is extracted, that iritis is comparatively rare as compared with its frequency after “capsule laceration” operations; that there is no need for secondary discussion operations; that post-operative inflammation due to retained cortex is absent; that there is no impaction in the incision of capsular tags; that convalescence is markedly shorter; that the resulting acuity of vision is much better, with a high proportion of good vision (between $\frac{2}{3}$ and $\frac{5}{6}$ with spherical glasses); that atropine is unnecessary in the after-treatment. The following table compares the numerical results obtained by the intra-capsular method with those by the usual capsule laceration operation:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Total No. of cases</th>
<th>Vitreous escape, per cent.</th>
<th>Successes, per cent. ($V. = \frac{x - \bar{x}}{s}$)</th>
<th>Partial successes, per cent. ($V. = \frac{x - \bar{x}}{s}$)</th>
<th>Failures, per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra-capsular</td>
<td>...</td>
<td>...</td>
<td>3,806</td>
<td>21·31</td>
<td>87·12</td>
</tr>
<tr>
<td>(Smith's own cases)</td>
<td>...</td>
<td>...</td>
<td>2,616</td>
<td>6·8</td>
<td>99·27</td>
</tr>
<tr>
<td>Capsule laceration</td>
<td>...</td>
<td>...</td>
<td>2,755</td>
<td>3·81</td>
<td>92·07</td>
</tr>
<tr>
<td>(Herbert's cases)</td>
<td>...</td>
<td>...</td>
<td>1,262</td>
<td>3</td>
<td>92·1</td>
</tr>
</tbody>
</table>

In Jamieson's paper there is a description of the operation, too detailed, however, to epitomise; essentially it consists in expressing the lens by pressure on the cornea after the corneal incision. A highly trained assistant is of the first importance, and the operation is one which should not be undertaken until the operator has had considerable personal instruction in the method.

Lister gave the after-results of escape of vitreous, which is the chief objection raised to the method. His figures showed that a small escape of vitreous was of little consequence, and it was only where a large amount was lost that any serious accident happened; the fears of remote
deterioration of vision after escape of vitreous were, in his opinion, unfounded.

McKechnie discussed the most suitable incision for cataract operation, and recommended an incision approaching a radial one, in preference to the more usual corneo-scleral flap.

The puncture and counter-puncture being at the edge of the cornea, the knife held with the plane of its blade at an angle of 60° makes an incision which forms an arc of a circle of wide diameter, the upper portion of the arc being distant from the margin of the cornea, about one-third of the length from the periphery to the centre. Gidney also described the incision for cataract extractions in great detail, and for most cases recommended a corneal incision similar to the one described by McKechnie.

Stone in the Bladder.—Smith read a paper on the treatment of stone in the bladder. He gave the mortality from various operations in the Punjab in 1907:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Cases</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litholapaxy</td>
<td>2,051</td>
<td>4.5 per cent.</td>
</tr>
<tr>
<td>Lateral lithotomy</td>
<td>185</td>
<td>11.8</td>
</tr>
<tr>
<td>Median perineal lithotomy</td>
<td>12</td>
<td>Nil</td>
</tr>
<tr>
<td>Vaginal lithotomy</td>
<td>14</td>
<td>1 case</td>
</tr>
<tr>
<td>Lithotritry</td>
<td>8</td>
<td>Nil</td>
</tr>
<tr>
<td>Perineal lithotritry</td>
<td>15</td>
<td>Nil</td>
</tr>
<tr>
<td>Dilatation of female urethra</td>
<td>43</td>
<td>Nil</td>
</tr>
<tr>
<td>Suprapubic lithotomy</td>
<td>50</td>
<td>20 per cent.</td>
</tr>
</tbody>
</table>

In his opinion dilatation of the female urethra for the removal of a stone is a barbarous operation, almost always followed by persistent incontinence of urine; he preferred litholapaxy or, if needed, vaginal lithotomy. Suprapubic lithotomy was unjustifiable under Indian conditions. Litholapaxy was the operation of choice, with perineal litholapaxy for very large or hard stones. Lateral lithotomy was only indicated where there was stricture, or where there was severe cystitis.

Stevenson advocated perineal litholapaxy for those cases where there was stricture, or where the stone was too large, or too hard for the urethral operation. He pointed out that even in boys one might get a veritable stricture from their continually rubbing the urethra against the pubic arch to relieve pain and irritation. Smith did not agree as to the causation of the tight place referred to by Stevenson, and said that it was a normal condition in boys up to 4 years of age.

Evans discussed a modification of the operation which had for its object the certainty of always entering the urethra behind the narrow membranous urethra. He illustrated his views by reference to the anatomy of the parts, the details of which are too numerous to epitomise here.

Gastric and Duodenal Ulcers.—Wanless gave his experience of chronic gastric and duodenal ulcer in India. He thought that they were much
more common than was generally supposed, seeing that he had performed seventy operations for the disease in two years. He attributed this frequency to the use of coarse, ill-cooked food, often with hot condiments, and to infrequent bulky meals. Of the seventy cases, sixty-four occurred in males. In many cases it was quite impossible to distinguish between gastric and duodenal ulcer before operation. Pain was the most constant symptom, coming on, not immediately after food, as is often described, but two to five hours after food, and generally temporarily relieved by a fresh meal or by drink. Vomiting occurred in fifty-eight cases, but nausea was infrequent; constipation was present in sixty-one cases. Anorexia was not common, but fear of eating was frequent; emaciation was marked, and might be extreme. Of the cases, fifteen gave a history of hæmatemesis and two of melena. He considered operation to be indicated in all cases of ulcer which were not relieved after ten days' medical treatment with lavage, especially when food taken overnight is returned in the morning wash; also in all cases of long-standing gastric distress with occasional vomiting and progressive emaciation. The operation he used was a posterior gastro-jejunostomy; he had a mortality of seven deaths in seventy cases.

Elephantiasis.—Gabbet described the operation for elephantiasis of the scrotum; he preferred spinal analgesia to a general anaesthetic, and had found the method specially acceptable to Indian patients.

Kangri Epithelioma.—Neve discussed the epithelioma in Kashmir which is caused by constant irritation of the skin from the heat of the "Kangri" (a small charcoal brazier, which Kashmiris carry under their clothes in cold weather). Of 1,729 malignant growths, 1,189 were epitheliomatous, and of these 848 were situated on the abdomen or thighs, while 117 more were distributed on other skin surfaces—viz., leg, 46; chest, 21; face, 19; hand, 16; foot, 10; ear, 5. Along with these only 5 cases occurred on the lip, and 4 on the tongue.

Probably 963 cases out of the 1,189 were due to Kangri burns. Scars and mottling of the skin, due to the Kangri, are all very common among Kashmiris, almost universal; but the epithelioma is rarely found before the age of 40, and the average age was 55. Two types of the disease are found—the raised and the excavated. The raised form consists of patches of thickening, the surface of which usually ulcerates and gives rise to cauliflower excrescences, and the tumour may attain to 2 or 3 lb. in weight. The excavated form consists of small or large ulcers, with thick overhanging edges; these two forms are often mixed, one part of the tumour showing the raised type and another part the excavated form. Glands are slow to become infected, unless there is marked excavation, and Neve has never come across visceral metastases. Microscopically, the tumours consist of typical squamous-celled epithelioma. Treatment consists in free excision, with removal of all glands in the drainage area, if any are found to be affected. Radical cure was obtained in the majority
of cases. Statistics are difficult to get, but Neve thinks that recurrence occurs in about 20 per cent. of cases.

**Excision of the Jaw.**—Smith described his method for excision of the upper jaw; he objected to a preliminary laryngotomy and to ligature of the common carotid, as it lengthened the operation and increased the risk. As soon as the patient is well under chloroform the anaesthetist stands aside. The skin incision is made along the border of the nose, then along the lower eyelid, and out along the zygomatic arch. The soft parts are stripped off the bone, but the mouth is not yet opened. A blade of the bone forceps is driven into the spleno-maxillary fossa, the other blade lying on about the junction of the malar bone and superior maxilla in the orbit. The bone is crushed here, and by a twist of the forceps is partially dislocated; the forceps are then passed up the nose and the maxillary attachments to the nose divided. The mucous membrane of the mouth is then opened as far as required, an incisor tooth extracted, and the palate cut with the bone forceps; the soft palate is separated with one sweep of the knife; the jaw is then grasped in the region of the last molar tooth with the lion forceps and wrenched out.

Meanwhile the assistant is clamping bleeding points and controlling hemorrhage by sponge pressure, but no arteries need tying or twisting, and hemorrhage practically ceases as soon as the jaw is cut.

Oozing is controlled by application of steel cauteries, kept in boiling water. The whole operation up to the insertion of stitches takes five minutes, and Smith has done forty-three cases with no deaths.

The same author described an operation for removal of the Gasserian ganglion; also his method of dealing with tuberculous glands in the neck and axilla. He went on the principle that if any glands in the series were involved the whole must be cleared out, just as one does in cancer.

**Spinal Analgesia.**—Chalmers gave his experience in 31 cases of spinal analgesia, using Barker's solution. Perfect analgesia was obtained in 25 cases, partial in 5, and none at all in 1 case. Of complications, he had 3 cases of faintness, 2 of nausea, and 1 of vomiting. Among the sequelae headache occurred 6 times, nausea once, severe vomiting once, while one patient had severe pains in the legs (requiring morphia) for twelve hours after.