a percentage of success of 85·94. The operations for stone in the bladder were 1,811 divided as follows:—

| | 1897. | 1896. |
|---|---|---|
| *Lithotomy*— | | |
| Suprapubic ... ... ... | 9 | 11 |
| Lateral ... ... ... | 249 | 327 |
| Median ... ... ... | 12 | 9 |
| Vaginal ... ... ... | 11 | 8 |
| On females by dilatation ... ... | 8 | 15 |
| *Crushing*— | | |
| Lithotrity ... ... ... | 1 | 3 |
| Litholapaxy .. ... .. | 1,521 | 1,665 |
| Total ... | 1,811 | 2,038 |

The deaths from the crushing operation were 51, or 3·3 per cent; from lithotomy 36, or 12·4 per cent.; and from stone operations of all sorts, including the cases remaining from 1896 (32), there were 87 deaths, or 4·7 per cent. Compared with the previous year, the results on the whole were better, although lithotomy, taken by itself, shows a higher percentage of deaths. The success obtained in litholapaxy (crushing) is most creditable. Only 4 operations for ovariotomy were performed in 1897. Two of the cases were cured, 1 died, and 1 was discharged otherwise. In addition to this work in the district hospitals, Major Perry performed during the year 124 operations for stone in the bladder, of which 113 were litholapaxy cases, with a mortality of 2·6, and 11 lithotomy, with one death. In all the cases of lithotomy unusual conditions were present, necessitating the selection of this operation. He also performed 636 operations for senile cataract, with a percentage of nearly 92 of successful cases. Six cases of hernia were also treated for radical cure, with successful results in all of them, and amongst other interesting cases dealt with were three cases of penetrating wounds of the abdomen with injury to the intestine, in two of which the operation of enteroraphy was successfully performed, and in the third the injuries were of so desperate a nature that the man was brought into hospital moribund.

The Madras surgical operations numbered 150,766, on 145,528 persons, of whom 93·16 per cent. were cured, 5·52 temporarily relieved, and 0·13 died after operation. The operations for cataract and stone are remarkably few compared with those in the Punjab. There were only 400 extractions of lens, of which 347 were cured, 32 cases of stone were treated—2 by lithotrity, and 30 by lithotomy—the latter having 3 deaths. There seems to have been no litholapaxy. Of 4 ovariotomies 3 proved fatal. This excludes the work done in Madras City, where Major T. H. Pope himself performed 1,150 extractions of the lens, showing that cataract is not uncommon. In Madras City 13 additional cases of vesical calculus were operated on, of which 3 were successful lithotomies, 1 a lithotrity in which the patient died, and 9 litholapaxies with 1 death; but of 14 ovariotomies 12 were cured, and only 2 died.

In Bengal, excluding Calcutta, the surgical operations amounted to 135,505, with the result that 125,454 of the patients were cured, 6,542 relieved, and 1,880 otherwise discharged, and 216 died. The more important operations numbered 3,596, of which no less than 2,718 were extraction of the lens, an operation of which eight officers, of whom four were Native Assistant-Surgeons, each performed over 100. In this cataract operation 2,206 were cured, 248 relieved, and 292 discharged 'otherwise.' For the removal of stone in the bladder, there were 62 litholapaxies, with 6 deaths, 1 lithotrity successful, and 163 lithotomies, with 17 deaths. Of 15 ovariotomies, 10 were cured, and one-third terminated fatally. Other important operations were:—

| | |
|---|---|
| Trephining or removing portions of the skull ... ... | 5 |
| Tracheotomy ... ... ... ... ... ... ... | 3 |
| Abdominal section ... ... ... ... ... ... | 14 |
| Colotomy ... .. ... ... ... ... ... | 1 |
| Removal of spleen ... ... ... ... ... ... | 1 |
| Abscess of liver ... ... ... ... ... ... | 101 |
| Internal urethrotomy ... ... .. .. ... | 6 |
| Removal of tumour and elephantiasis of scrotum ... | 75 |
| For strangulated hernia ... ... ... ... ... | 50 |
| Excision of joints ... ... ... ... ... ... | 18 |
| Amputations—Shoulder, arm, forearm, elbow, hand, wrist, thigh leg, ankle-joint, knee and foot ... | 254 |
| Oöphorectomy ... ... ... ... ... ... | 1 |
| Abdominal hysterectomy ... ... ... ... ... | 1 |
| Vesico-vaginal fistula ... ... ... ... ... | 9 |
| Delivery by forceps ... ... ... ... ... ... | 40 |
| Delivery by turning ... ... ... ... ... ... | 24 |
| Delivery by craniotomy ... ... ... .. ... | 26 |
| Delivery by cephalotripsy ... ... ... ... | 2 |

It is interesting to observe that 97 of the major operations in Bengal were performed by four "female doctors," one of them being a Native lady. These operations included 17 excisions of tumours, 9 operations on bones, 1 amputation of the leg, and 48 extractions of the lens.

## THE PREVENTIVE TREATMENT OF INFECTIVE SURGICAL DISEASES.

FIFTEEN years ago tetanus contributed much more largely to the annual death-rate than it does in the present day. At that time the wards of the large presidency town hospitals were seldom without cases of tetanus, and a

very large proportion of those who were admitted on account of lacerated and contused wounds ultimately succumbed to this disease. At the present time tetanus is much less commonly seen, and the majority of the patients treated for this disease are either those who have acquired the disease prior to admission to hospital or who have not had themselves properly attended to immediately after the receipt of their injuries.

The reason for the diminution in the incidence of this disease is two-fold. In the first place, at the period to which we allude, the microbic origin of the disease had not been established, and in the second place the antiseptic treatment of wounds was not carried out in the effective manner that it is at the present time. Although the principles of "Listerism" were well understood and generally practised, yet reliance was placed upon antiseptic solutions that are now known to have been too weak to destroy many of the pathogenic organisms and their spores. At that time most surgeons relied chiefly on the use of carbolic acid, but the strength of the solutions was much less powerful than those at present in use. The evils of strong antiseptics were considerably exaggerated, and much of the inflammation to which they were supposed to give rise was in fact due to other causes.

At the time we speak of solutions of carbolic acid of the strength of 1 to 60 or 1 to 40 were used for the purpose of cleansing wounds. Modern experience has taught us that solutions of that strength are powerless to destroy the organisms that produce diseases like tetanus, and that all wounds that have been contaminated in any way, more especially those into which dust and dirt from the roads have been introduced, must be purified with solutions of much greater strength, and in many cases pure carbolic acid is required. It is doubtful whether, even at the present time, the importance of this subject is fully recognised, and whether those who are engaged in teaching surgery are in the habit of laying sufficient stress upon the necessity of thoroughness in the cleansing of wounds. It is quite common to meet with advanced students of surgery possessing extremely lax ideas regarding this subject, and that being the case it is not surprising that the laity also should be extremely ignorant of the practical uses of antiseptics. Many such persons imagine that so long as a wound is cleansed with a carbolic lotion the strength of the preparation is a matter of minor importance, or perhaps the strength of the antiseptic is left to the will and pleasure of the chemist who prepares the solution and who is probably as ignorant of the matter as the purchaser, and yet it is so important that the laity should have accurate knowledge on the subject that it is the duty of the surgeon, whenever the opportunity arises, to instruct his patients in the most efficient manner of using antiseptics. In many a case of injury, where tetanus has subsequently developed, the disaster might have been prevented had those who first attended to the injured person been cognisant of the proper method of cleansing wounds. In the case of those wounds so commonly met with in our large cities in this country, where the wheel of a heavily laden cart passes over some part of the unprotected limbs of a native, and where particles of dust or mud are ground into the tissues with great force and firmly embedded, efficient cleansing of the wound is difficult to accomplish. In many cases of this description an anæsthetic should be administered, and those portions of skin and muscle, from which it is not possible to remove all particles of foreign matter, should be excised, then, after washing, pure carbolic acid is applied to the whole of the wound. The use of solutions of carbolic acid of lower strength than one part to twenty is not permissible in the case of any wound that has been contaminated with dirt. The death-rate from tetanus could be still further reduced if all wounds were treated with thoroughness and with antiseptics of sufficient strength.

In spite of the elaborative cases adopted by most surgeons to preserve absolute surgical cleanliness during the conduct of operations, yet we occasionally hear, in this country, of cases of tetanus following operative procedures. It is possible that in a certain proportion of these cases the infecting organisms have gained entry into the wound through the medium of the atmosphere, and the possibility of such an event taking place renders it imperative to exclude all dust-laden breezes from theatres or rooms in which operations are conducted. The exclusion of breezes in India often entails extreme torture to the operator and his assistant, but the importance of the matter renders it essential that this precautionary measure should always be rigidly enforced. It often happens that the surgeon is compelled by circumstances to operate in the open

air or under conditions practically equivalent to the latter. In such cases it is essential that the operative wound should be washed out with strong antiseptic solutions before the sutures are inserted; in fact such wounds must be treated as if they were accidental and in the assumption that they have been contaminated.

The remarks that we have made in regard to the preventive treatment of tetanus apply equally to the case of rabies. It is quite certain that the ancient practice of "touching the wound with caustic," the caustic used being nitrate of silver, is still carried out by many medical subordinates in charge of dispensaries as well as by other persons. Many persons amongst the laity still consider this to be the orthodox method of treatment of all cases of dog-bite. Such being the case, it becomes the duty of all surgeons whenever opportunities arise to remove the erroneous ideas which prevail upon the subject, and to explain the proper method of dealing with wounds caused by rabid animals or those suspected to be rabid. Whenever surgical aid is not at hand, the wound should be thoroughly swabbed out with pure carbolic acid, and in cases in which the lesion is superficial and of small extent it may be possible to destroy all the poison within it in this manner. When the bites are at all deep or extensive an anæsthetic must be administered and the whole of the injured area, if possible, excised, and pure carbolic acid then applied.

Another point of importance in regard to the preventive treatment of hydrophobia is the necessity of operating—no matter what period of time has elapsed since the infliction of the bite—provided that efficient treatment was not carried out at that time. There is strong reason to suppose that the poison remains for a long period latent in the wound or its immediate neighbourhood, and that it is not until a few days before the onset of constitutional symptoms that the poison becomes elaborated and discharged into the system. Assuming this to be the case it is the duty of the surgeon to operate, no matter how long a period has elapsed since the bite was inflicted. Whether this theory be correct or not, it is certain that experience has justified the practice.

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## OBSERVATIONS ON TROPICAL DISEASES AT THE U. S. CAMP IN CUBA.

IN spite of the alleged breakdown of the Medical Department of the United States Army in Cuba, the members of that department seem to have had appliances and opportunity to make many microscopical examinations of malarial blood and other pathological material on a fairly large scale. An interesting account of some of this work is given by the special Commissioner of the *New York Medical Journal.*

Of 9,000 sick, 95 per cent. were due to acute malarial infection. It was rare to find any one from Cuba who had not fever while on that island. At one spot called Bloody Bend, near Santiago, every one of a body of soldiers who slept on the ground died of pernicious malaria. The mosquitoes were a constant pest, as they also are at unhealthy Fashoda on the Nile. The negroes tolerated malaria better than the white troops. Ninety per cent. of Cuban malaria was of the æstivo-autumnal variety, tertians were rare. Of several hundred cases examined there were only two cases of quartan. Chills (ague) were rare, chiefly in tertian cases. The attacks lasted a week and two similar relapses were usual.

A striking group were of the cerebral type, deep stupor or coma vigil, most of which responded to quinine hypodermically. They showed ring-shaped parasites, often associated with older crescents. In over 100 such cases these organisms were never absent from the circulation. In some cases doses of the hydrochloride of quinine (100 grs. or more) were given with success. Sudden relapses of coma were noted.

The gastric type was very frequent, with severe and uncontrollable vomiting, usually they responded readily to quinine. The majority of æstivo-autumnal cases were of the irregular remittent type. A few cases of true remittent, all of which had histories of previous malarial attacks, and as usual these were refractory to quinine.

There was plenty of genuine typhoid and many cases of mixed typhoid infection, *typho-malaria.* Many cases began with distinct quotidian or tertian rigors, abdominal symptoms developing later. In 100 such cases the plasmodium was not discovered till *after recovery* from the typhoid as in Laveran's and A. Crombie's cases (*B. M. J.*, 24th Sept., 1898, p. 864). The malarial parasite was found in many fatal cases of typhoid in the bone marrow and spleen as rings and crescents. The writer is convinced that such mixed infection *does* exist, but he says that when typhoid develops in a malarial subject, the progress of the malarial infection is largely