A YEAR IN NEPAL

Major A. L. GULATI
M.B., L.R.C.P. F.R.C.S.

Introduction

ONE of the Sisters summed it up neatly when she said "Nothing's quite the same in Dharan as it is anywhere else." Perhaps this could be said of any hospital, but is particularly true at Dharan with its wealth of clinical material rather like a pathological textbook come to life. Working in this unique hospital is an unforgettable experience that relatively few doctors obtain. For this reason and to record the modifications found necessary in the usual approach to disease, it is thought justifiable to discuss the impressions gained during a year at Dharan in Nepal, one of the most underdeveloped countries in the world today. (World Health Organisation 1963). In an article such as this it is impossible to convey more than a rough idea of B.M.H. Dharan and the primitive nature of the rest of Nepal. Even if it only serves to underline the importance of the work done there to the Nepalis and to British prestige, a way will have been paved to an understanding of the many facets of Dharan.

Until just over 10 years ago, the Kingdom of Nepal was forbidden to westerners. Squeezed as it is between the highest mountains in the world and one of the world's worst belts of malaria, it might also be described as forbidding. Since the recent establishment of the British Gurkha Recruiting Depot in Nepal however, the villages on the neighbouring plain, previously shunned because of the high risk of malaria, have become boom towns. There is now a fine macadam road, built by the Royal Engineers, covering the 30 or so miles from the Indian border to Dharan cantonment. The traveller from Calcutta, 400 miles to the south, can conveniently reach this point on the border by air. During the monsoon when the small airfield is unusable there is no real choice but the train journey from Calcutta.

About 150 miles to the west of the cantonment lies Khatmandu, the capital of Nepal. A tourist visit to Nepal invariably means a trip confined to Khatmandu, with its temples and palaces as well as slums, and reasonably modern roads. The tourist smiles at the contrast between old and new. At the Mercedes impatiently overtaking the bullock cart and the peasant hillman gawking at the suavely dressed townsman. If our tourist happened to be medically minded, he would find too that there were four hospitals with regal looking exteriors but with grimly primitive conditions inside. Two hospitals are an exception as modernisation has been as complete as possible. The maternity wing of the B.I.R. hospital under U.S. auspices and the newly constructed Kanti Hospital with Russian aid and staffed by seven Russian doctors. As he climbed into his plane at Gaucher airport (Nepal has had an air service since 1947) he might well be favourably impressed with his visit.

The story of the rest of Nepal, unseen by the tourist, is vastly different. No roads penetrate the steep sided valleys of the serried ranges of hills. There are no railways, as all Indian lines end at the border. What paths there are, are tortuous, steep, even hazardous at times and impassable in the wet season; so that communications cease
during the summer months. The ways of agriculture have remained unchanged for centuries and the peasant behind his wooden plough drawn by two buffalo, probably owes more than he can ever pay for a debt incurred by his father or grandfather, for the moneylenders rate of interest is in the region of 70%. His sons learn to plough and mend the mud and wattle house, and his daughters to hew wood and draw water at a very early age. Even toddlers often have a miniature replica of a carrying basket on their backs. They soon get used to the headband which takes the main weight of the basket. Up to 160 lbs. can be carried, and as this is the only form of transport in the hills, it often happens that the sick and injured and infirm are carried in the same way. Conditions are easier, but not less primitive on the southern strip of Nepal which is flat plain (the Terai). Thus the hillman and his basket give way to the bullock cart and the occasional motor vehicle as methods of transport. Here, the houses are raised high above the ground, leaving room for cattle and buffalo underneath, and keeping the occupants safe from the attacks of snakes, jackal and tiger.

The isolated hill villages create a problem in medical evacuation, for even a message has to be taken on foot. Unless helicopters are introduced, they are likely to remain isolated for road building is wellnigh impossible, although attempts are being made round Kathmandu. Thus an injured man, the obstetric emergency and the child with osteomyelitis may be carried for many days in a basket before reaching hospital. A local doctor, if there be one, is unlikely to tackle much more than an abscess.

In Nepal as a whole, a country with a population of about 9,200,000, there are an estimated 35 government hospitals excluding mission hospitals and about 4 Indian Army hospitals. Typically, these hospitals in the hills have 10-15 beds and stand in their own grounds, but may be indistinguishable from other houses in the street. To one doctor, almost certainly trained in India, falls the whole practice of the hospital. His staff of about eight, includes a compounding (or pharmacist of 2 years training), ward assistant, water carrier and menials. The surgery done is a bare minimum and the tempo of the whole hospital is such that only annual indents for drugs and supplies are submitted. No pathological facilities exist, and as there are no generators in the hills (apart from Kathmandu, of course) X-ray facilities are absent too. In communities under 2,000 there may be a health centre, run by a compounding alone who does his best with the limited means at his disposal. Drug supplies for such centres are pitifully small, but the fortunate few who can afford it may purchase antibiotics ad lib in the local bazaar. In general it may be said that (a) the severe shortage of anything and everything medical and (b) the difficulties of communication bedevil the medical services of Nepal.

Medical background to Nepal

To view B.M.H. Dharan in its true perspective, the medical background must be considered in more detail. Much the same endemic diseases exist throughout Nepal, but broadly speaking West Nepal and the higher altitudes are healthier than East Nepal and the plains. E.g. malaria is not contracted over 4,000 feet. The contrast between the plainsman and those living in highest Nepal is in fact striking, even among members of the same tribe. (Perhaps clan is a better translation of the Nepali word “jat,” than tribe).
The quadruple scourges of Nepal may be listed as:

1. Tuberculosis.
2. Malaria.
3. Kala Azar
4. Ankylostomiasis

Trauma and all other diseases can therefore be superimposed on any combination of the above. It is as well to remember that extra stress, surgical or otherwise, can light up a latent malarial infection. Similarly, some stormy postoperative abdominal cases are almost certainly due to gross intestinal parasitic infestation, for *Ascaris* and *Strongyloides* and other worms are usually associated with hookworm. It is important to avoid giving vermifuges during the early postoperative period and to the patient in electrolyte imbalance. In a patient already severely anaemic from hookworm, haemorrhage or an attack of malaria for example, can produce a serious problem. The lowest haemoglobin percentage recorded at Dharan was just over 10%. It is a startling fact that the plainsmen (Tharu) living in the worst area for malaria show an amazing immunity to it, a clinical attack or the disease being a rarity. The hillmen on the other hand are susceptible. For this reason all patients (and staff) take a daily tablet of Paludrine as suppressant. There have been reports of Chloroquin resistant falciparum Malaria from Malaya (Montgomery *et al* 1963) but as far as I am aware, no failures have been experienced using a three to five day course of Chloroquin for any type of acute malarial attack in Nepal.

During the monsoon, with high temperature and humidity, septic skin lesions and the gastro-enteritides are common, while in the dry season, respiratory infections both upper and lower are more common, particularly in children. In the absence of a chimney, the Nepali house is more often than not filled with smoke, and this, taken with the heavy smoking habits of most Nepalis predisposes to bronchitis. This is a problem when considering operation and for this reason many hernias are done under local anaesthesia.

To western eyes perhaps the most striking point among many is the late presentation of cases, each of them an object lesson in the natural history of the disease. When a patient comes down from the hills after one or two weeks journey, the delay is unavoidable. Delay over and above this is the rule, even after accidents. It is due not only to procrastination on the part of the patient, but to attendance at perhaps “herbal” centres which are even more poorly equipped than the hospitals. These herbal or Ayurvedic centres are incidentally state aided. Further delay occurs if a “Dhami” is consulted, who seeks to charm away disease by propitiation of offended Gods after entering a trance. Although this magic or Tantric system of medicine with which the hills are seeped is probably practised more than orthodox medicine itself, there is absolutely nothing resembling the cult of ju-ju which is such a stumbling block to the practice of medicine in Africa. In fact western science and in our experience, western medicine are welcomed eagerly and without hesitation. On trek in the hills, the doctor Sahib, particularly if he produces a few remedies from his pocket, is a privileged person. Any westerner for that matter is regarded as something of a doctor and will often be requested for “Dabai” or medicine.
The Nepali has been compared with well known aboriginal native types. It is quite true to say that the Nepali, and for example African, have certain common beliefs such as illness being the result of the influence of an evil spirit and the belief in the transmigration of souls. Both also have a horror of blood transfusion. It goes too far to say that both have rites (or “Puja” in Nepal) and even sacrifice if one takes into account the October festival of Dashera or Dasain. The underlying reasons are very different.

Before passing on to the hospital and aspects of its surgery, it is worthwhile considering briefly tuberculosis in general which probably takes up the majority of any doctor’s time in Nepal. Tuberculosis has three names in Gurkhal, one of which strangely enough means “The King’s disease” which is similar to the well known title for scrofula in Queen Anne’s time. All too often, cases of tuberculosis present nine months to a year after initial symptoms. Nepali doctors even today diagnose pulmonary tuberculosis by stethoscope. Treatment, even of bone and joint tuberculosis, is only for three months to a year due to short supply of drugs and lack of funds on the part of the patient. Relapse and emergence of resistant strains of bacteria is consequently very probable. The Nepalis have the faith in injections common to all primitive races. This is one of the reasons why streptomycin is used in preference to other drugs and unfortunately probably accounts for the frequent use of parenteral calcium gluconate by some doctors. As far as non-respiratory tuberculosis is concerned, glandular, tuberculous hips and other joints, Potts disease (Fig. 1) and

Figure 1. Example of advanced Psoas abscess in a young man. Note the “thread” denoting a high (Brahmin or Thapa) caste.
cutaneous tuberculosis are met with commonly and in that order. Unusual presentations such as tuberculous fistulae in ano or ulcer of the tongue may be met, but one never sees the bizarre tuberculous manifestations that occur in the African native, probably because of their higher immunity.

**British Military Hospital, Dharan**

Enough has been said to give a background to Dharan. The cantonment with its hospital (Fig. 2) is completely self contained, and is rather like an oasis in a medical desert. The nearest hospital of any size is at Biratnagar just on the Nepalese border and 30 miles away. The local government hospital in Dharan Bazaar itself has 12 beds and is inadequate to deal with major problems. The cantonment has frequent visitors from the highest to the lowest, some of whom find wonder merely in its electric light and piped filtered water.

To the north of the cantonment, which is at about 1,000 feet above sea level, lies a complete semi-circle of tree covered hills, 4,000-6,000 feet high. Behind the panorama of these hills lie successive ridges, each a few thousand feet higher than the one before, until the snow line and Everest itself is reached 80 miles to the north west of Dharan. Truly a mighty backdrop (Fig. 3).

The hospital deals with a ridiculously small number of entitled patients for its size, and its claim to fame, in Nepal at any rate, lies in the large number of native Napalis...
that are treated. The 70 bedded hospital was first opened on 3rd October, 1960. The three wards named “Families,” “Officers” and “Gurkha Other Rank” open off a long covered corridor. Each has also a two bedded air conditioned side ward. The labour ward, also air conditioned, opens off “Families” ward and there are two “lying in” beds whose occupants change almost daily. Two T.B. wards are attached to “Gurkha Other Rank” ward. As this is a purely male ward, there are no female T.B. beds as such—the verandahs are used for isolation on “Families” ward. The well equipped theatre and X-ray department have their own air conditioning plant.

On the Establishment of the hospital are three R.A.M.C. officers, one of them being the S.M.O. Gurkha L. of C. and Officer Commanding. The duties of Physician/Anaesthetist and Surgeon/Obstetrician are divided between the other two. The very
A Year in Nepal

varied nature of the work at Dharan means that specialties overlap to a considerable extent, and the surgeon should not be surprised to see say a case of leprosy or malaria in his outpatients. There are four Q.A.R.A.N.C. officers (Matron, Theatre Sister and 2 ward Sisters) and four R.A.M.C. sergeants in charge of Medical Stores, X-ray department, Pathology laboratory and Theatre. All ward assistants, about 30 in number, are recruited locally. With the notable exception of 4 State Registered Nurses, trained in India, most have had no previous nursing experience.

At the outset, the hospital started with a readymade clientele from the temporary camp hospital at Phusre, nearby Dharan, which was in operation while the Royal Engineers were building the road from Jogbani on the Indian border to the camp. Initially, the function of this small hospital was to care for British personnel in charge of road construction. Local civilians employed on road work and in the camp were also treated free as is the practice today. Needy non-entitled local civilians (or "villagers" as they are called) began to attend and the increase in work since then can be seen from Table 1 which summarises total turnover for the two years 1961 and 1963.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Total Annual Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1961</td>
</tr>
<tr>
<td></td>
<td>Outpatients</td>
</tr>
<tr>
<td>Soldiers and Families</td>
<td>3,050</td>
</tr>
<tr>
<td>W.D. Civ. and Families</td>
<td>6,480</td>
</tr>
<tr>
<td>Villagers</td>
<td>4,336</td>
</tr>
</tbody>
</table>

Briefly, the present work of the hospital falls under six headings:—

1. Medical cover for all British and Gurkha personnel and their families in the cantonment and in charge of the road and water pipeline. A case for evacuation can be flown to Singapore from the civil airstrip at Biratnagar 35 miles south, weather permitting.

2. All Gurkhas and their families in transit to and from the hills on leave.

3. W.D. Civilians and their families.

4. During the recruiting season between 500-1,000 recruits are medically assessed. Any with defects are automatically rejected, but if any improvement is possible are treated before returning to the hills.

5. Supervision of tuberculous pensioners and soldiers with temporarily restricted P.E.S.
The above work can be termed obligatory to distinguish it from the sixth and largest group, the so-called "villagers" which provides a wealth of the most interesting work in every branch of medicine and surgery. The bulk of both obligatory and non-obligatory attendances however, are strictly speaking, non-entitled persons. This is because the largest group in Out Patients is the W.D. civilian and his family (e.g. minor injuries and antenatal care) and the largest group obtaining In-Patient care is the villager and his family with perhaps a major or complicated injury from some distance away. It is only to this last group that the following remarks will apply.

The greatest difficulty is to know how to limit the amount of work. There are so many deserving cases that accommodation, if not time, places a limit on the number accepted. Bearing in mind the chronic ill health and anaemia of most of these patients, investigation and procedures are as direct and as simple as possible. This certainly applies in the surgical management of cases where sophisticated surgery or operations requiring much postoperative co-operation on the part of the patient may do more harm than good. The motto is at all times "Never do one operation where two might do!" The worst is always anticipated, e.g. tetanus following burns which are often dressed with cow dung. Application of dung presumably with some bovine sanctity still adhering to it, is widely used for lesions of all sorts. It is surprising tetanus is not more prevalent. Three cases were treated during the year by tracheostomy and massive doses of A.T.S. and penicillin without success.

Apart from a very large number of abscesses both superficial and deep, in which it has been suggested subclinical scurvy may play a part (Ashken and Cotton 1963), one of the common serious infections is that of the foot since all Nepalis go barefoot over the roughest terrain. Even with severe abscess formation it is surprising how a foot can recover using drainage, antibiotics and conservative surgery. If amputation does become necessary, it is resisted vigorously by the patient who would rather lose an arm than a leg. This is not really strange as legs are vital in earning a living as a porter in the hills. An arm is not so important. A provisional amputation is always done first after some days on antibiotics. A few days preparation for operation, if this is possible, makes a great deal of difference in these cases. Not infrequently maggots have already partly cleaned up a gangrenous limb.

Undoubtedly the most striking fact about Dharan is the advanced stage that diseases have reached when first seen. Often patients (especially women) have gone on working when it would seem a physical impossibility. It can be depressing to find the recovery of such patients after weeks of care attributed more to the conscientious prayers of relatives than to any medical reason. Often, however, one had to harden one's heart and turn away advanced malignant or tuberculous cases knowing that time would be better spent on several other cases.

The incidence of disease was found to be considerably changed. The well known example of a low incidence of appendicitis in primitive communities holds true in Nepal. Only five cases of appendicitis were seen during the year, all in male "villagers" over 20 years of age. Two were operated upon. No cases were seen in children or soldiers (Aird 1957). Most cases of right iliac fossa pain were due to other causes, such as illo-caecal tuberculosis (3 cases, two with sinuses), tuberculous ileitis, ureteric calculus, ambulant typhoid and other forms of entero-colitis.
Reflecting the almost complete absence of perinatal care in Nepal, one is confronted with innumerable cases of procidentia and also vesico-vaginal fistulae. The procidentia, some of which were recurrent posed a problem which was dealt with in ancient Korea I am told, by passing a flaming brand into the vagina. The resulting adhesions often cured. The same effect can be brought about in a more civilised manner by Le Forts operation and this, in the right sort of case, worked well.

There are remarkable differences in cancer incidence in Nepal and developed countries, bearing in mind that the average life expectancy is about 40 years. The "classical" carcinoma due to chewing betel nut was not seen in spite of its being widely used. No cancer of breast presented and during the year only one doubtful case of bronchial carcinoma was seen. The heavy smoking habits and environment of the Ghurkhas has already been mentioned and although causing a large amount of chronic bronchitis, did not produce the expected high incidence of bronchogenic carcinoma. Petrol and diesel exhaust fumes are absent in Nepal and may well play a larger part in the causation of cancer than is at present suspected. Female genital cancer was more common, four cervical cancers and three malignant ovarian tumours presenting. The incidence of female cancer may well be higher but masked by the reticence of Nepali women to come forward to be examined. There were three orbital tumours and one recurrent malignant melanoma of upper eyelid. The only tumour of the maxilla seen (Fig. 4) was treated by close intra-arterial injections of nitrogen.

Figure 4. Manbahadur Rai, aged 37. The only tumour of the jaws seen during the year. (Adamantinoma). History of one year.
mustard with little effect. It was later proved to be an adamantinoma. During the year, three primary carcinomas of liver presented.

Urinary calculi are common, with the emphasis on the lower urinary tract, particularly bladder. Suprapubic removal was usually easy and uncomplicated. Veneral disease was negligible, and the few cases seen were all contracted in India. Mental illness and neurosis were practically non-existent.

Distance itself selects the type of emergencies seen, obstructed labour and postpartum haemorrhage being a frequent cause of death in the hills. Caesarian section was the most frequently performed urgent major operation. The severe impaction and prolonged labour in many cases demanded a classical operation, helped by pushing up from below in the difficult extraction. Sterilisation after section was performed relatively early on in a woman’s obstetric career to avoid a subsequent confinement thousands of feet up in the hills and some days journey from hospital.

One also sees the whole spectrum of surgical urgencies and emergencies much as one is used to at home. It is said that every surgeon will once in a lifetime open the abdomen of a case of malignant malaria. In fact, cases of malaria were quite straightforward, but it is important to always bear in mind the possible abdominal manifestations of tropical disease. To obtain blood for emergencies and for the calculated cold case (e.g. splenectomy) is one of the problems of Dharan, for no blood bank exists. As in pre-Blood Transfusion Service days in England, blood is drawn from donors when required. Even relatives are reluctant to act as donors, and strangers positively refuse, even with cash inducements. Caesarian sections were often done on women with a macrocytic anaemia of 50-60% (Metz 1963). In cold cases some weeks had to be spent getting patients fit for operation. The poor quality of donated blood frequently made little difference to the patient anyway, and febrile reactions were common. There was marked improvement when a pint of British blood was used. In emergencies the response from donors in the camp was wonderful.

I was repeatedly impressed by the toughness of the Gurkha. Seemingly impossible cases pulled through and their high resistance to shock was remarkable. This was repeatedly illustrated in burns cases following for example, a sari catching fire (Fig. 5). Even children had something of this resistance. The most common late contracture seen was across the popliteal fossa with severe flexion deformity of knee and sometimes hip.

**Difficulties with Patients**

It is difficult to obtain a satisfactory doctor-patient relationship when one speaks through an interpreter. A great deal is to be gained by learning only a smattering of Gurkhali even if it runs to little more than “Let your tummy go loose” (“Ek dum lulu”). An excellent phrasebook has been devised by Capt. Fairburn R.A.M.C. One discovers early on that the villagers’ history is so unreliable as to be of little use in diagnosis. Time relationships are particularly difficult. One reliable symptom seems to be fever.

When a choice has to be made between admissions, children usually come first and breadwinners next. The hospital also obviously has to try to do the greatest good for the greater number, so that long stay cases are not admitted. Fractures of the tibia and
Figure 5. A not uncommon type of burns contracture with hyperextension of wrist and flexion of elbow.

Figure 6. Pathological fracture following osteomyelitis with sequestrum formation. Sequestrectomy and osteotomy performed.
fibula for example regardless of type, were mobilised and attending as outpatients within days. (Fig. 6).

In the case of numerous children with tuberculous spines the above two principles conflict and some sort of compromise had to be evolved. The practical answer was found to admit all cases for a period of approximately two weeks to initiate triple therapy. Any neurological signs were an indication for a longer stay in a plaster bed. With Chemotherapy under way and E.S.R. settling they were then transferred to specially constructed padded litters on which they remained recumbent for 24 hours a day. The parents received suitable instructions and the child was brought up at first daily for streptomycin and then thrice weekly. In many cases oral therapy alone was found sufficient after 6-12 months. This routine left a great deal to be desired but combined with occasional readmissions worked fairly well in practise for all lumbar and thoracic lesions. The use of plaster as an outpatient was not found satisfactory in these cases. We were in need of extra cot space more than any other accommodation.

The Influence of Climate

The use of plaster of Paris was kept to an absolute minimum. In winter a plaster jacket would be just tolerable, but during the hot humid monsoon the most that could be used was a long leg plaster. As a result fractured spines were treated by early active movements and ambulation without plaster, tuberculous hips were put on traction during the monsoon and dressings in children were never plastered.

In summer 95°F and 95% humidity was possible. This together with the large number of nurses in training explains the high rate of cross infection that can easily occur. For this reason not a single internal fixation operation was carried out during the year in spite of some open reductions. Many of these patients were under eight or nine however, in whom exact anatomical reduction of the forearm is not required.

It was noted that wound infection was very much less in those wounds exposed or with improvised suction. This led to two golden rules: (a) Air expose all burns within 24 hours of grafting; (b) Wound suction for all operations on bone. The adoption of these rules led to satisfactory improvement with skin grafting and orthopaedic procedures even with some unavoidable dead space present.

Yes, it was an interesting year and gave great satisfaction. The work, as I have tried to indicate in a short space, was subtly different and frequently frank reconsideration of accepted principles was necessary. For example, the optimum position for an arthrodesed knee turned out to be 130-140°, for you can't climb hills with a straight leg! I left Dharan with the thought that here was a place where great clinical research could be done if only there was time and a uniform hospital policy for treatment and follow up. Above all, however, I left Nepal with great respect for its hillmen, the Gurkhas.

Acknowledgment

I wish to thank Major-General R. A. Stephen for kindly reading through the manuscript and for several helpful suggestions.
REFERENCES


JOURNALS RECEIVED

Archives of Surgery; Annals of Tropical Medicine and Parasitology; Annales Medicinae Internae Fenniae; Annales Chirurgiae et Gynaecologiae Fenniae; Australian and New Zealand Journal of Surgery.

British Medical Journal; Bulletin—Geneva; Bulletin of the Johns Hopkins Hospital; Bulletin—South America; British Journal of Surgery; Bulletin of the Calcutta School of Tropical Medicine; Broadway.


East African Medical Journal.

Giornale di Medicina Militare.

International Review of the Army, Navy and Air Force Medical Services; Indian Journal of Medical Research; Indian Journal of Malariology.


King’s College Hospital Gazette.

Lancet; Le Medecin de Reserve; Lister Institute of Preventive Medicine; London Hospital Gazette; Leprosy Review.

Medical Bulletin of the U.S. Army; Medical Digest; Medical Officer; Medical Journal of Australia; Medical News; Militar Halsovard; Medicine Today and Tomorrow; Medecine Tropicale; Military Review; Military Medicine; Medico-Legal Journal; Medical Research Council Special Report Series No. 299; Manchester Medical Gazette; Medicine, Science and the Law; Midland Medical Review.


Proceedings of the Royal Society of Medicine; Polish Medical Science and History Bulletin; Practitioner; Pakistan Armed Forces Medical Journal.

Quarterly Journal of Medicine.

Register; Revue des Corps de Sante des Armees; Royal Society of Health Journal; Revista de la Asociacion Medica Argentina.


Tropical Diseases Bulletin; Transactions and Studies of the College of Physicians of Philadelphia; Transactions of the Royal Society of Tropical Medicine and Hygiene.

Vierteljahrsschrift fur Schweizerische Sanitatsoffiziere.

W.H.O. Chronicle.

Yale Journal of Biology and Medicine.

PAMPHLETS RECEIVED