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THE EVILS

OF THE

Military Medical Service Monopoly.

BY

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ANNEXURE I.

SHORT HISTORY OF THE ROYAL ARMY MEDICAL CORPS.

BEFORE the year 1872, the medical services of the British Army were entirely constituted on a regimental basis, that is, every regiment had its 'quota' of medical officers, generally three per battalion, its own hospital, and nursing orderlies drawn from the regiment itself. The senior of the medical officers in a battalion did not command the regimental hospital, nor were the medical officers responsible for the equipment or dieting, the command being vested in the officer commanding the battalion and the supplies in the quartermaster. There were also no female nurses beyond a few soldiers' wives who were occasionally employed.

After the failure of the medical services in the Crimea the matter was taken up in Parliament, and a Commission of inquiry was appointed in 1859, under the Presidency of Lord Herbert of Lea. This Commission recommended many changes, including the abolition of the regimental system, the institution of station hospitals, the formation of a hospital corps, and the introduction of nursing sisters in military hospitals. Nothing very much was done till the year 1872, owing to the opposition of the combatant officers and a disinclination on the part of many regimental medical officers to cut themselves adrift from their regiments.

In 1872, a unified medical service was introduced and called the Army Medical Department, and all medical officers in the army, with the exception of those in the Guards, both foot and horse, were placed on one list for promotion, appointment, etc. Station hospitals were introduced, and a corps to undertake the nursing, clerical and other subordinate work was instituted and called the Army Hospital Corps. This corps was officered and commanded, not by medical officers, but by special officers called Lieutenants, Captains and Majors of Orderlies, who were also responsible for the supplies of its hospitals as well as the discipline of the other ranks of the Army Hospital Corps.

From this date the unpopularity of the Army Medical Department commenced to make itself apparent. The loss of social status resultant on being taken away from regiments, and the fact that medical officers were no longer any body's children, the lack of substantive rank, the indifferent pay and prospects, the want of proper recognition by the combatant officers, and the divided administration of the hospitals, all had their effect, with the consequence that in a few years it was found most difficult to obtain candidates for commissions. The medical schools, especially those of London, all set their faces against the Army Medical Service, and the War Office were obliged to "scrape the pot" to get any candidates at all. This culminated, in 1887 to 1889, in the service being entirely closed, no candidates at all being obtainable. The British Medical Association had interested itself in the question for some time and were able now to insist on some amelioration of the conditions in the Army Medical Department. These resulted in the granting of compound titles to the officers: Surgeon-Captain, Surgeon-Major, etc., the change of the designation of the service to Medical Staff and Medical Staff Corps, with complete command of the latter, and also of the station hospitals, by officers of the Medical Staff. This was followed by a substantial increase of pay and better prospects of promotion and pension. However, the Army Medical Department had been so thoroughly discredited in the medical schools that even with these concessions it was found difficult to obtain candidates of a good stamp for commissions. The Indian Medical Service and Royal Navy invariably had the first choice. The British Medical Association and the medical schools still continued their campaign with the War Office, fighting a difficult battle against much prejudice and vested interest, till the time of the South African war, when one medical corps for the army was formed, giving the officers military titles and complete and absolute command of the other ranks of the corps, and a further increase of pay and a betterment of prospects. The corps was called the Army Medical Corps, and shortly afterwards the title of "Royal" was conferred by the late Queen Victoria.

From now commenced an era of increasing prosperity for the Royal Army Medical Corps, its rehabilitation in the eyes of the medical schools and its gradual appreciation by the rest of the army. Co-incident with these was the institution of a far better system of training for the officers after joining, and of examination before promotion, which ensured at least that each officer had devoted a portion of his time to learning his trade and keeping himself abreast of modern methods. The introduction of specialists in all branches of medical science, after a long post-graduate course and examination, opened an avenue of attraction to men who were desirous of devoting themselves to particular branches of medicine, with the happiest results. All this was made possible by the building of the Royal Army Medical College at Millbank, with its close connection with the great London hospitals and medical schools. The attractions of the Royal Army Medical Corps now became established, and instead of, as formerly, it being difficult to obtain the right sort of candidate, competition became strong, and the pick of the medical schools presented themselves for the entrance examinations. This was influenced to a certain extent by the increasing unpopularity of the Indian Medical Service and also that of the medical service of the Royal Navy, but the fact remained that the Royal Army Medical Corps offered an attractive career to the young man who desired an adventurous life, as well as to those who wished to devote themselves to research but had not sufficient means to support themselves while doing so. The final step in popularising the corps was the grant, in 1918, of the ranks of major-general and lieutenant-general instead of the old title of surgeon-general.

Previous to the institution of the Royal Army Medical College at Millbank, in about 1902, all successful candidates were sent to the Royal Victoria Hospital, Netley, for courses of instruction in military medical affairs. From its isolated position, and disconnection with the centres of medical education, as well as from its lack of clinical material, this institution was considered obsolete, and with the reconstruction of the Royal Army Medical Corps the College at Millbank was built. This college houses all the research departments of the Royal Army Medical Corps, and instruction on these subjects is carried out there, but clinical work is done at the Queen Alexandra Hospital, Millbank, which is the military hospital for the whole London Command, and at the special Military Venereal Hospital, Rochester Row, as well as the great London general hospitals.

The instruction is carried out by a combination of special officers of the Royal Army Medical Corps and professors chosen from the teaching bodies of London. The examinations at the completion of the courses are also conducted by the same combination of examiners.

The social point of view is not lost sight of, as the Royal Army Medical Corps London Mess is situated there, and all bachelor officers going through the classes live in the college.

There are two special points connected with admission to the Royal Army Medical Corps which are worthy of note: (1) that each candidate signs a declaration that he is of unmixed European parentage, and (2) that he has to appear at a personal interview with the Director-General, Army Medical Service, before he is allowed to compete. The competitive examinations for the Royal Army Medical Corps and Indian Medical Service differ entirely in their character and are not comparable.

After successful competition all young officers proceed to the Royal Army Medical College, Millbank, where they undergo a course of study in special military medical subjects, which lasts for two months. At the completion of this they are examined in those subjects. They are then sent to the depot of the Royal Army Medical Corps, where they undergo a course in military subjects, drill, equitation, field work, etc. This lasts for three months, and on its completion they are again examined in those subjects. The combined marks obtained at the entrance examination, at Millbank, and at the depot, determine their final position in their batch.

Between the seventh and tenth years of their service all Royal Army Medical Corps officers proceed to Millbank for a post-graduate course. This course lasts altogether for nine months, and is divided into three periods of

three months each. At the completion of these periods examinations are held and it is possible for an officer, by the results of these examinations, to accelerate his promotion by from six to eighteen months, as well as to qualify for a specialist appointment. The examinations are conducted by a mixed board of examiners as above. Officers who fail at this examination are re-examined after six months, but do not attend any further course at Millbank. If they fail a second time they are retired with a bonus.

The functions of the Royal Army Medical College, as will be seen, are educational, disciplinary and social, in addition to which it is also the centre for the great work of research that is always in progress there.

ANNEXURE II.

NOTE ON THE INTRODUCTION OF THE STATION HOSPITAL SYSTEM FOR INDIAN TROOPS.

History.

FROM time to time it had been proposed to introduce into the Indian Army the station hospital system, which had proved so satisfactory in the case of British troops. In 1880, sanction was actually accorded to the establishment in each station of a combined hospital for the treatment of all the sick of the Indian garrison. Effect was, however, never given to this sanction. The question came up again for consideration in 1883, but was negatived on account of the expense that was anticipated. The Secretary of State next suggested, in 1886, the possibility of effecting a reduction in the cadre of the Indian Medical Service if station hospitals were introduced. His query was met by the answer that there was no prospect of the system being adopted owing to its alleged unpopularity with officers and men. It is interesting to record that on the next occasion when the question was mooted, in 1890, its reconsideration was due to a suggestion made to the effect that the adoption of the station hospital system would allow of an interchange of Indian Medical Service and Royal Army Medical Corps officers, and so permit of the freeing of Indian Medical Service officers for civil employ. The system was tried at Calcutta and Rawalpindi in 1891, and, although it failed to produce evidence on the point that gave rise to the experiment, it brought to light the very indifferent medical, nursing and clothing arrangements under the regimental system, and it conclusively showed that no reduction in officers or establishments would be possible. The introduction of the system was not favoured by Lord Roberts, who held the opinion that it was not suited to the Native Army.

Although, in 1900, a proposal to try the station hospital system in the late Hyderabad Contingent was submitted and accepted, and Lord Curzon's Government expressed the opinion to the Secretary of State "that the advantages that might be anticipated from the proposed system outweighed the arguments against its adoption," it was not until 1906 that any real progress was made. In that year, combined regimental hospitals for Indian troops were introduced. Under this system, which was a compromise designed to make good, as far as possible, the defects of the former system, but at the same time maintaining its essential features, the sick of all regiments in a station were treated in a central hospital, retaining their regimental customs and arrangements. Administration was placed under the senior of the regimental medical officers, but the disciplinary control over medical officers and subordinates remained, as before, in the hands of officers commanding regiments. This system resulted in anomalies, in that at times it was impossible to avoid all the medical officers doing duty at a station being very junior in rank, while at other times all might be men of standing and experience. It afforded no opportunity of ensuring that the most capable officers were selected for the higher and more responsible positions. It did not allow efficient co-ordination between the regimental hospitals constituting each combined hospital, nor was it economical in personnel and equipment, as each regimental hospital was still separately maintained.

In 1910, a committee, with the late Surgeon-General Sir C. P. Lukis as president, was appointed to examine the question anew. This committee presented a report which recommended the abolition of the system of regimental hospitals,

the raising of an Indian Army Hospital Corps and of a Corps of Ward Orderlies to take the place of regimentally enlisted men, and the retention of the existing establishment of Indian Medical Service officers. After a careful examination of the proposals the Government of India decided that it was unable to accept them, for financial reasons.

The question of giving effect to the recommendation of the Lukis Committee was again raised in 1912, but no decision had been reached when war broke out in 1914, and the further consideration of the case was deferred.

As a result of the report of the Mesopotamia Commission, and at the instance of the Secretary of State, the question was once more considered. The Government of India proposed to introduce the station hospital system as recommended by the Lukis Committee, and, further, to carry out other suggestions made by it, for the dieting of the sick, the provision of clothing and bedding, and the equipment of the hospitals with such furniture, medical and surgical equipment, staff and buildings as modern requirements demand. The Secretary of State approved of the proposals and the Government of India issued orders for the introduction of the new system with effect from the 1st December, 1918.

The changes effected by the introduction of the station hospital system may be briefly stated as follows:—

- (i) the abolition of regimental and followers' hospitals, and the substitution for them, in each station, of a single hospital, or sections of a single hospital, in which all the Indian sick of a garrison, both troops and followers, are treated;
- (ii) the hospitals are commanded and administered by Indian Medical Service officers;
- (iii) all junior officers, medical subordinates, and menials engaged in the care of the sick, instead of being under the control of regimental commanders, are under the orders of the officer commanding the hospital;
- (iv) the hospital establishment is recruited directly for the purpose, instead of being passed through regimental channels;
- (v) the sick in hospital are dieted by the State, in addition to the extras that were formerly provided, and they are given appropriate clothing and bedding;
- (vi) the effect on the Indian Medical Service officer is that, instead of his being one of the officers of a regiment, he is now an officer in what is becoming a "corps";
- (vii) the general effect will be the more efficient treatment of the sick in a single hospital, better staffed and equipped, and with an organization assimilated to conditions which prevail in war.

ANNEXURE III.

MEMORANDUM, DATED FEBRUARY, 1918, BY SIR G. H. MAKINS, K. C. M. G., C. B.,
PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN ENGLAND.

IN India the close relation existing between the civil and military elements of the medical profession should form the ideal. If this relation be disturbed, the military element would suffer in medical experience, since either British or Indian soldiers—a body of carefully sifted, sound, healthy young men—offer comparatively small opportunities for practice, except in so far as such endemic diseases as malaria, the minor ailments common to soldiers in camp, and a small number of emergency cases due to acute disease or occasional accidental injuries are concerned. The civil element, on the other hand, practising amongst the mass of the population, beyond such cases as those enumerated above, is called upon to deal with every form of disease, and has abundant opportunity of acquiring practical experience. A close and intimate relation is therefore to be desired between the two branches of the service in order that the ideal should be fully realised.

Certain reasons appear to have interfered with this desirable result, some of which may be indicated:—

(1) a want of sufficient interchange between the civil and military elements ;

(2) the maintenance of a purely military element ;

(3) the indiscriminate employment, in time of war, of officers who have been engaged in special forms of work, and during many years have gained experience of the greatest value, in purely administrative military posts. These officers are suddenly switched off to perform duties to which they are unaccustomed, with the result that, while valuable experience is sacrificed, yet an inferior administration only may be obtained.

The question of interchange is not one of any great apparent difficulty if the service be treated as a homogeneous whole. The custom prevailing of attaching officers on their arrival in India to a regiment, and continuing them as regimental officers for a period of five years or more, seems to be the first step in the wrong direction. As already mentioned, military service offers few opportunities for acquiring practical experience in medicine and surgery, yet these young officers, but recently qualified, are at the outset of their careers placed in this unsatisfactory position, which is moreover exaggerated by the fact that some of the diseases they are called upon to treat are of an unfamiliar nature to them. The whole position would be reversed were the newly-joined officer sent directly to a civil hospital and kept there doing duty for at least one year, as a junior resident medical officer. During this period he would acquire invaluable experience of the forms of disease met with in India, and when sent to a military hospital later he would not only be more capable, but he would also have already acquired interest in his work and be far more likely to utilise such material as would come under his charge.

The proposition that has been made that officers during their period of military duties should attend " post-graduate courses dealing with X ray work, bacteriology, malaria technique, serology, and tropical medicine, " and further should have *systematic access* to neighbouring station and civil hospitals, in *their leisure* hours, is unpractical. Such courses could only be arranged for successfully by the institution of an Indian Medical Staff College, a *practical necessity* not yet provided, while casual attendance on hospital practice, unaccompanied by the assumption of any practical work and individual responsibility, is of very slight educational value. A preliminary two years' civil work followed by three years' military duty would be a far better method of procuring a highly-trained medical officer at the termination of his first five years of service.

The question of post-graduate instruction can only be successfully solved by the establishment of an Indian Medical Staff College. It may be pointed out that such a college not only provides for scientific study, but also allows the heads of the service to take stock from time to time of the officers at their disposal, to become acquainted with the capabilities and individual character of every officer, and thus become enabled to make a better distribution of the officers to posts suitable to their individual attainments and personal disposition. When necessity arises to transfer specially capable men in any branch of medicine from civil to military duty, it should be possible for a highly trained physician or surgeon to be utilised as such and yet attain the same rank and receive the same pay and allowances as a purely administrative medical officer.

The scope of the work performed by the Indian Medical Service is perhaps hardly realised in India itself, and certainly not without its borders. To the service is confided :—

- (a) the medical charge of the European members of the Government and of the Indian Civil Service, also a leading part in the medical treatment of the whole Indian community ;
- (b) the inception and regulation of measures relating to the public health and sanitation of the whole country ;
- (c) the management of jails and asylums ;
- (d) the medico-legal work of the whole community ;
- (e) regimental duties and the care of the hospitals of Indian troops ;

- (f) the exertion of a certain political influence directly dependent on the close relation which medical duties establish between the officers of the service and individuals of the Indian population ;
- (g) the medical education of the country.

It may be well, in view of the present unpopularity of a service entrusted with such important duties, to first ask what position the medical service holds with regard to the executive Government of the country. The duties are second to none, so far as the well-being of the entire Indian community is concerned, yet such a thing as an Indian Medical Department cannot be said to exist. The service as a whole is represented by a Director-General with a ministerial staff, who makes indirect recommendations to a Council on which he has no seat or opportunity of refuting criticism which may be made, while his recommendations often relate to matters which it is difficult for the civilian to grasp or fully understand. Again, even in the internal management of the service something in the way of a dual control exists, as in time of war officers employed in civil work are handed over from the department and pass under the control of military officers not fully cognisant either of their professional capacity or their individual characteristics. To the outside observer, in fact, the Indian Medical Service appears to be a congregation of individuals, held together by the common tie of similar duties, but possessing no proper central administrative department to correlate and combine the various paths of work, or to which the members of the service can look to for advice, direction or support.

In England the multifarious duties fulfilled by the Indian Medical Service are controlled and directed by no less than three important bodies, the Privy Council, the Local Government Board, and the General Medical Council, a tripartite arrangement which it would be easy for the Government of India to improve upon. In India it is not easy to appreciate what obstacle can exist to the formation of a single Board to undertake the duties, and to, on the one hand, facilitate the work of the Director-General, Indian Medical Service, and on the other, control effectively the whole medical organisation of the country, including sanitation, medical research, and medical education. Such a Board should consist of both medical and civil representatives and be itself represented on the Executive Council of the country by medical and civil members.

ANNEXURE IV.

SPEECH BY THE HON'BLE MAJOR-GENERAL W. R. EDWARDS, C.B., C.M.G.,
DIRECTOR-GENERAL, INDIAN MEDICAL SERVICE, IN THE IMPERIAL
LEGISLATIVE COUNCIL, ON THE 10TH MARCH, 1919.

"SIR, my illustrious predecessor, the late Sir Pardey Lukis, when he addressed this Council two years ago, pointed out that scientific investigation and preventive medicine could never again be relegated to the background. Medical research is now admitted on all sides to be a vital part of government activities. The appalling pandemic of influenza which swept over and ravaged the whole of India has drawn attention in an acute form to the urgent necessity, not only of developing all our existing arrangements for research, but also of applying the knowledge, so acquired, by means of efficiently organized public health services. I wish to say something further on these points, but before doing so, I will give a brief review of our activities during the last two years.

"The exigencies of the war demanded the reversion of the majority of the officers of the Bacteriological Department to military duty, where they formed the major part of the staffs of the central laboratories in Mesopotamia. Those remaining in India were engaged almost entirely on war work, that is in the preparation of vaccines, intended to protect the troops, in India and overseas, from typhoid and para-typhoid fever and cholera. I am proud to be able to say that, in spite of the enormous demands for vaccines, we have been able to meet such demands without indenting on the Home authorities, and we supplied His Majesty's forces in Mesopotamia, East Africa, Egypt and Palestine, as well as in India. The Central Research Institute at Kasauli developed its vaccine production to an almost incredible extent. The yearly average before the war

was eighteen and a half thousand cubic centimeters. During the war it rose to over 2½ million cubic centimeters, and included anti-typhoid, cholera, pneumonia and influenza vaccines. From a monetary point of view alone the value of this Kasauli vaccine, for the period of the war, was about half a million sterling. In addition to turning out these vaccines, Kasauli also equipped three laboratories, two of which were sent overseas. I am sure the Council will agree with me that the greatest credit is due to Lieutenant-Colonel Harvey, Director of the Institute, and his staff, for their excellent and most successful work.

"The Bombay Bacteriological Laboratory at Parel has also enormously developed its production of vaccines, other than plague, which latter is their speciality and the manufacture of which continued. The total vaccines issued from this laboratory to the troops in India and abroad was over 1½ million doses and, in addition to this, the Director, Lieutenant-Colonel Glen Liston, from June, 1916, undertook the supervision of the bacteriological work in the base hospitals of Bombay.

"The Pasteur Institute at Kasauli also assisted in the war. For it treated no less than 2,177 soldiers sent from the war areas overseas.

"To all medical officers connected with the medical laboratories of India, and who, in consequence, were denied the privilege of proceeding on active service, I now take this opportunity of offering my thanks, for their unselfish devotion to duty and for their loyal co-operation.

"In spite of the war and the absence of so many of our officers, we have nevertheless succeeded in carrying out a considerable amount of research.

"An inquiry into diabetes was continued by Major McCay and his co-workers in Calcutta, and a series of papers which are of great scientific value are being published in the Indian Journal of Medical Research. A report has just been submitted by the same officer on the treatment of diabetes, which is also, in my opinion, of very great importance, and I propose to approach the Governing Body of the Indian Research Fund Association for funds with which to continue these investigations.

"The Research Fund has continued to finance the inquiry at Poona on the subject of plague prevention, and Dr. Chitre, under the advice of Lieutenant-Colonel Hutchinson and Major Kunhardt, has made numerous experiments concerning the best methods of rat destruction. This inquiry has yielded good results which will shortly take practical shape.

"At Karachi, Lieutenant-Colonel Greig, working under the Indian Research Fund Association, continued his valuable work on cholera carriers, and he also investigated the anti-beriberi value of certain foodstuffs. His expert advice has been of constant value both to me and to the military authorities. Recently he has submitted a most valuable paper on influenza written in collaboration with Captain Maitra. From his laboratory at Karachi we have also had valuable studies on the curative values of certain drugs, such as chenopodium oil, and thymol, used in the treatment of ankylostomiasis. These were contributed by Captain Wrench, R.A.M.C. Lieutenant-Colonel Greig has just been deputed by the Government of India to proceed with Major Norman White to the Inter-Allied Conference at Paris in connection with influenza.

"Lieutenant-Colonel McCarrison is on special duty in charge of an inquiry into beriberi, and is investigating other so called 'deficiency diseases.' A very important paper on his initial results appeared in the January number of the Indian Journal of Medical Research. Three further papers from his pen are in the press and will be published in April.

"The study of 'hookworm disease' has been pursued by Lieutenant-Colonel Clayton Lane in Bengal and by Dr. Mhaskar in Madras. The results show that the incidence of hookworm infection is in many places nearly one hundred per cent. They have further shown that this disease can, not only be cured, but even eradicated, if only the people could be sufficiently educated in sanitary matters.

"Captain Knowles, who is Director of the Pasteur Institute at Shillong, is now engaged in an investigation as to the mode of infection of kala-azar; he also is being assisted by the Indian Research Fund Association.

" Mr. Awati has continued his investigation into the bionomics of house flies and has contributed papers regarding the specific differences of the genus *musca*. This work is of much importance, as we know that the house fly is a terrible carrier of disease.

" Another insect engaging our attention is the sand-fly, and an effort is being made to discover and destroy these pests in their larval state. This investigation is being conducted by Mr. Mitter at Lahore, who has done good work in this direction.

" Sir Leonard Rogers, among other activities, continues to conduct the general direction of an inquiry into the chemistry of chaulmoogra oil and other oils found useful in the treatment of leprosy. Meanwhile, the Mission to Lepers has instituted a trial, by qualified medical men and women, into the comparative effects of drugs thus prepared. These trials are under the general advice of Sir Leonard Rogers, and the Mission is being helped financially for this purpose by the Government of India.

" There are several other lines of research in progress in India; some of them are of a highly technical nature. For example, a study is being made regarding the best constitution of media, with reference to vaccine production on a large scale. This is engaging the attention of the staff at Kasauli, who are being assisted by Dr Norris.

" Dr. Annandale has undertaken surveys in Madras, Persia, Baluchistan and North India in connection with molluscs, with reference to the possibility of the spread of bilharzia. In the Bombay Bacteriological Laboratory valuable work has been done on molluscs by Dr. Soparkar. The staff of the Bombay laboratory has also been engaged in perfecting methods for detecting typhoid carriers. Captain Malone, who has come out with an excellent reputation for research, has recently been sent to investigate influenza.

" From what I have just said I am sure that all will agree that medical research work is of the utmost importance and further that it is most necessary that we should give the inhabitants of India every chance of getting a first-class training in medical research, in India. Thanks to the energy of Sir Leonard Rogers, a school of tropical medicine, with a special hospital of its own attached to it, will shortly be opened in Calcutta, and now I have the greatest pleasure in stating that there is every prospect of another school of tropical medicine and medical research being shortly opened in Bombay. This school will be based on the splendid Parel Laboratory, which Colonel Glen Liston has by his indefatigable labours brought to such perfection. It will also have a special hospital of its own attached to it. That well-known philanthropist, Sir Dorab Tata, has by a munificent gift of a lakh a year enabled the Bombay Government to proceed with their school, which will not only be well staffed, but also have a number of valuable scholarships, including travelling ones, attached to it. We shall thus shortly have means of giving the best possible training in medical research to Indians. This will enable them to aspire, not only to professorships, but also to the winning of worldwide reputations.

" In addition to these schools it is very necessary that we should have at least two institutes of medical research. I want to see an imperial institute comprising an imperial library and bureau of medical research opened in Delhi, and another institute opened in Southern India. For the first we must depend on the Government of India, and for the second I have reason to believe that we can rely on the munificence of the Tata family, and other wealthy philanthropists of that great presidency of Bombay. I have just been asked by Sir Dorab Tata if a first-class expert could be found to visit India, at Sir Dorab's expense, to advise on this matter.

" So much for research, but it must be remembered that without a Ministry of Public Health, such as is now being instituted in Great Britain, and well organised provincial health services, the knowledge that we thus acquire cannot be efficiently applied. This at least is my private opinion. In such public health services all the officers must be responsible, not merely to the members of a municipality or district board, but through their superior officers to Government itself. It is only by means of well-paid and pensioned services that officers of public health can act efficiently, without fear or favour.

" A third factor is, however, absolutely essential to the preservation of

public health, and that is the education of the masses. Without this the best organized preventive medical service in the world must work in vain. An ignorant populace not understanding the meaning of advice, or the value of orders, will not follow the former, and will actively or passively resist the latter. District visitors and magic lantern lectures cannot do more than touch the fringe of the dense ignorance of the masses. There is only one way to remove this ignorance. The knowledge of public health, like all other knowledge, must be imparted through the schools and colleges of India; this is essential. I know the difficulty; it is first necessary to educate the teachers. Unfortunately, too, in practically every country in the world, the rulers themselves have never received any education in public health. They therefore find it difficult to believe, even now, in the absolute necessity of giving this instruction in every school throughout the land. I would indeed go further than simply teach. I would, in order to impress the vital necessity of this knowledge on the educated classes, make public health, if not a compulsory subject, at least a highly marked optional subject, in the matriculation examination of every university in India.

"To bring the immense importance of this subject home, I can say without fear of contradiction that such teaching would, alone, without a single additional doctor, or a single drug, save India hundreds of thousands of lives and millions of money every year. To substantiate this last remark of mine I would like, as time permits, to mention a few diseases concerning which every inhabitant of India should have some knowledge.

"Take first hookworm, or ankylostomiasis. This parasite affects to a greater or less extent the rural population of the whole of India, in many parts infecting as many as 90 per cent. It causes anæmia and debility, it renders the sufferers unfit for hard work and an easy prey to other diseases. The means of infection is briefly as follows. Microscopic larvæ hatch out of eggs deposited with human excrement. These larvæ, attaching themselves to the feet or legs of the next comer, penetrate the skin painlessly, get into the blood current, and so go to the lungs; from the lungs they find their way through the air passages and working up to the throat are then swallowed and thus infect the intestinal canal. This debilitating disease, so universal in India, could be eradicated by the use of properly attended latrines. It is also not a difficult disease to cure. Another disease is Guinea-worm, which in parts of India is a veritable scourge. It is propagated by minute insects (the cyclops) which act as the intermediary hosts and are swallowed with drinking water. This disease may be entirely avoided by straining all drinking water through a cloth as the Jains have been taught to do. Of course boiling the water would also make it safe to drink. Then again take malaria itself. How many villagers know that this disease cannot be contracted except through the bite of an infected mosquito, and that the systematic use of mosquito nets and surface drainage would make an enormous difference in its incidence.

"Cholera, dysentery and typhoid are diseases due to germs derived solely from human excrement. These diseases can only be contracted by drinking water which has been fouled by such excrement or by taking contaminated food or milk. Flies which have been feeding on human excrement are the usual source of food contamination. These germs are killed by a temperature of 140°, and therefore by eating only freshly cooked food with clean hands and drinking only hot fluids you can live without danger in the midst of an epidemic of cholera. Typhus again, which has recently ravaged the United Provinces, is spread by lice and can be avoided by cleanliness.

"That terrible scourge bubonic plague is contracted from the bite of an infected rat flea. Obviously the way to eradicate it is to keep rats out of houses and grain stores, and to destroy them as far as possible. During an epidemic keeping the skin oiled will probably prevent a flea biting. Lastly, take tuberculosis. The knowledge we have of this worldwide disease, if acted on, would make an enormous difference in its incidence and so save untold misery and innumerable lives.

"I think I have said enough to show that, if the knowledge of even these few diseases alone was systematically imparted in every school throughout the land, the effect would be of enormous benefit to the entire population of India.

With regard to influenza we have, I regret to say, much to learn. The latest researches go to prove that we have not yet even discovered the germ, which is undoubtedly ultra-microscopic and filter passing. This and many other diseases call for and are receiving close investigation.

"I trust that I have not wearied the Council and that I have said enough to convince everyone of the immense importance of medical research, preventive medicine and the education of the whole people of India in public health measures."

ANNEXURE V.

PROPOSALS FOR EQUALIZING THE SENIORITY OF OFFICERS OF THE INDIAN MEDICAL CORPS.

IN transferring officers from the Royal Army Medical Corps to the Indian Medical Corps, it is essential to maintain equality between officers of the two services. We suggest that any officer of the Royal Army Medical Corps who transfers to the Indian Medical Corps should be placed in the list of the latter corps exactly as if he had joined the Indian Medical Service originally, dating his seniority in that list according to the length of his service. In those cases in which two corresponding batches of Royal Army Medical Corps and Indian Medical Service officers have different dates of first commission, we propose that, for purposes of seniority, it be assumed that each officer has the Indian Medical Service dates of first commission as lieutenant, promotion to captain, and promotion to major.

As regards the position of each officer in his respective batch, some difficulty is experienced, and there are two possible solutions of the problem: (1) to place each Royal Army Medical Corps officer at the top of the batch, because he originally belonged to the senior service; and (2) to place him at the bottom of the batch, as he is transferring from one service to another at his own option.

No difficulty need be experienced over the question of six months accelerated promotion given for study leave, as all officers transferred would come under the same rules, and if they had not already had any opportunity of taking study leave they would in course of time qualify exactly as Indian Medical Service officers do at present.

The real difficulty lies in arranging equitably the transfer of the Royal Army Medical Corps officers who have been granted the rank of lieutenant-colonel when they had not completed 20 years total service. It is obvious that if these officers are permitted to transfer to the unified service, they will supersede, by virtue of their rank, Indian Medical Service officers who do not receive promotion to lieutenant-colonel until they have completed 20 years service. The difficulty is a serious one and can only be overcome by the arbitrary expedient of placing the Royal Army Medical Corps officers in the unified list assuming them to be majors. Although we think that this should be their position as regards seniority in the Indian Medical Corps list, yet we cannot ask officers who have been granted the rank of lieutenant-colonel to revert to that of major. We therefore propose that they should retain this rank, but be regarded for all purposes of pay, position and seniority in the unified list according to their length of total service, that is, to say, although they are lieutenant-colonels, they would be paid according to the time scale of pay laid down for the Indian Medical Service. This procedure partakes of the same nature (but reversed) as the late practice in the Royal Army Medical Corps by which an officer who had completed 20 years service, but for whom there was no vacancy in the establishment of lieutenant-colonels, was paid as a lieutenant-colonel although he still was a major. Lieutenant-colonels who voluntarily transfer to the Indian Medical Corps will obtain the benefits of an Indian pension. This may be considered as a set off to the loss of pay entailed by their being treated as majors until they have completed 20 years service. Such difficulties that arise through the difference in army rank will have to be surmounted by careful postings of officers. The difficulty will not last for more than 3 or 4 years at the longest, as officers of the Royal Army Medical Corps who would transfer have over 16 or 17 years service.

Officers of the Royal Army Medical Corps who have been superseded or passed over for promotion to the rank of lieutenant-colonel should certainly not be allowed to transfer.

The problem is however so difficult that it seems probable that, if equal treatment is to be secured, each individual case will have to be considered on its merits.

ANNEXURE VI.

PROPOSED ORGANIZATION OF THE INDIAN MEDICAL CORPS DEPOT, TRAINING SCHOOL AND RECORD OFFICE, AND SKELETON SYLLABUS OF INSTRUCTION.

L—ORGANIZATION.

A.—*Commandant and Staff*:—

Commandant—Colonel—graded as an Assistant Director, Medical Services.

Second-in-Command (who will also be Chief Instructor).

British.

Adjutant
Quartermaster
Regimental sergeant-major
Quartermaster sergeant

Indian.

Jemadar Adjutant.
Jemadar Quartermaster.
Regimental havildar-major.
Quartermaster havildar.

Orderly room clerks.

B.—*Depot Staff*:—

Officers Commanding Companies and Platoons (who will also act as Officer Instructors).

British.

Company sergeant-majors
Sergeants
Corporals
Lance-corporals
Buglers

Indian.

Company havildar-majors.
Havildars.
Naiks.
Lance-naiks.
Buglers.

C.—*Instructional Staff*:—

Officer Instructors (company and platoon commanders—see under B above).

Assistant Instructors (assistant surgeons and sub-assistant surgeons).

Non-commissioned officers (British and Indian).

Instructor in equitation (not necessarily a whole-time appointment).

D.—*Record Office*:—

Officer-in-charge of records.

Assistant to the officer-in-charge.

Staff of clerks.

II.—SKELETON SYLLABUS OF INSTRUCTION.

A.—*Officers* :—

1. Indian army organization.
2. Elementary principles of Indian military law.
3. Discipline.
4. Caste and racial differences of Indians.
5. Military hygiene and sanitation as applicable to India, in both peace and war.

B.—Assistant surgeons and sub-assistant surgeons :—

As above*, with the addition of the following :—

1. Drill and physical training.
2. First aid.
3. Equitation and stable management.
4. Field service training.
5. Care and custody of medical mobilization stores and equipment.
6. Duties in military hospitals.
7. Principles of sick nursing.

C.—Other ranks :—

On first entering the depot every recruit should receive primary instruction in his vernacular and in English to the extent considered necessary in each individual case. (If subsidiary depots are established this instruction would be given there.) Concurrently with the above there should be instruction in drill and physical training. During this period of preliminary training each man's individual capacity should be watched, so that on its completion he may be drafted to specialized training in accordance with his aptitude. The specialized training should be under four heads :—

I.—Nursing—including—

1. First aid.
2. Duties in wards, as laid down in appendix 2; Standing Orders for the Royal Army Medical Corps, modified to suit the intelligence of the men.
3. Massage.
4. Duties of attendants in skiagraphy and electro-therapeutical departments.
5. Duties of operating room attendants.

II.—Clerical.—General duties in connection with accounts, correspondence, completion of forms, etc.

III.—Store Keeping.—1. Care and custody of stores.
2. Quality of supplies.
3. Preparation of store returns and connected forms,
etc.

IV.—Ambulance.— 1. First aid.
2. Stretcher drill including ambulance transport, and improvisation, etc.

ANNEXURE VII
EXAMINATION PROPOSED FOR CANDIDATES FOR THE INDIAN MEDICAL CORPS.

I. Written papers—	Marks.
1. Surgery—General	100
2. Surgical Anatomy	50
3. Medicine—General (including therapeutics)	100
4. Obstetrics—Midwifery and diseases of children	100
5. Bacteriology and Pathology	100
II. <i>Viva Voce</i> and practical—	
1. Clinical Surgery	100
2. Surgical Pathology with specimens	100
3. Operative Surgery and Surgical Anatomy	100
4. Clinical Medicine	100
5. Medical Pathology with specimens	100
6. Gynaecology	100
7. Midwifery and Instruments	100
8. Bacteriology and Pathology	100

* *NOTE.*—It is realized that the instruction in caste and racial differences of Indians need not be complete for these classes as for officers.

ANNEXURE VIII.

ORGANIZATION OF THE INDIAN MEDICAL CORPS.

The organization of the proposed Indian Medical Corps must provide for all the needs of British and Indian station hospitals as regards personnel. It should, therefore, consist of the following categories :—

1. Officers.
2. Assistant medical officers.
3. Sub-assistant surgeons.
4. Other ranks :—
 - (a) Nursing section.
 - (b) Clerical section.
 - (c) Ambulance section.
 - (d) Storekeeping section.
 - (e) General section.

The sections must be divided into two classes, British and Indian, as will be explained hereafter, in order to provide for the different needs of British and Indian hospitals.

Officers.

2. The cadre of officers of the corps should be calculated as follows :—

- | | | |
|---|---|--|
| <ol style="list-style-type: none"> (1) Actual military peace requirements including those on study duty. (2) Leave and casualty reserve. (3) Ordinary reserve for the army. (4) Special reserve, consisting of officers in civil employment who are considered as normally lost to the military side. | } | <p>These officers will be in military employment.</p> <p>These officers will be in civil employment.</p> |
|---|---|--|

The actual strength of the Indian Medical Corps, under (1), should be calculated at 3 per mille for both British and Indian troops and followers, the strength for study duty being taken at 4 per cent of officers in addition. The strength under (2) should be 25 per cent of (1). It is impossible for us to suggest any figures for (3) and (4) as they will depend entirely on the numbers considered necessary, (a) to bring the army up to its highest expansion on mobilization for all ordinary wars or expeditions, and (b) in the event of a grave national emergency. The numbers under (1) and (2), above, do not include officers of the administrative grades. The number of the latter must obviously be determined by the future organization and geographical distribution of the army in India. The officers under (3) are included in the cadre of the Indian Medical Corps, but those under (4) should be considered as supernumerary to it.

Assistant medical officers.

3. It has been suggested in the main body of the report that the status of the present military assistant surgeons should be considerably improved, and that in future they should be employed solely on professional duties, and not as at present. As this will involve an improvement, not only in their qualifications, but also in their status, we consider that their cadre will bear reduction. It is impossible to say at what figure their future cadre should be fixed, but, assuming that their value will be doubled, we are of opinion that a cadre of some 200, in place of the 400 odd at present in military employ, should prove sufficient. As these men will now be highly trained doctors we consider that they can be employed in lieu of commissioned medical officers, and that the strength calculated for (1), above, can be correspondingly reduced.

Military sub-assistant surgeons.

4. The conditions of service of this class have recently been much improved. In order to increase their military value we would give them a course of training, when they join, at the proposed depot and school.

Other ranks.

5. These five sections of the corps will consist of all ranks up to warrant officer, or, as may be found necessary in the case of Indian ranks, up to Indian officer.

6. These sections should be divided into two classes, British and Indian. The British division should be recruited from the Anglo-Indian community and should be trained in the duties pertaining to the sections, at the proposed corps depot and school. In addition there should be a skeleton cadre of volunteers from the Royal Army Medical Corps, in order to provide, at any rate in the early existence of the corps, an element of trained and disciplined men. There is under the consideration of Government a scheme for the formation of an Indian Hospital Corps. From details of this scheme which we have seen we consider that no difficulty should be experienced in incorporating it into our proposed Indian Medical Corps.

**Nursing,
clerical and
storekeeping
sections.**

7. This section must consist entirely of Indians.

**Ambulance
section.
General
section.**

8. This will also consist entirely of Indians, and will include those of trade designations, such as dhobies, barbers, cooks, water carriers and sweepers.

Should it be desirable to employ members of the Anglo-Indian community as cooks in British station hospitals, a special section will have to be formed for this purpose.

9. For the officer personnel of the Indian Medical Corps the conditions of entrance and promotion should be on the same basis as those of the Royal Army Medical Corps, including selection for promotion to the rank of lieutenant-colonel to fill an establishment. We may here explain that our 4 per cent for study duty has been provided in order that every officer of the Indian Medical Corps may, between the seventh and tenth year of his service, undergo the post-graduate course at the Royal Army Medical College in England.

**Conditions
of service—
officers.**

It is recommended that, as all officers are not desirous of becoming purely administrative officers, each, on attaining the rank of lieutenant-colonel, should decide on one or other of the following careers :—

(a) military administration,

(b) specialists, namely, consulting surgeons and physicians to the army, or

(c) permanent civil employment.

In (a) officers will be eligible for promotion to the highest ranks and, after being selected for the rank of lieutenant-colonel, should be required to undergo a special course at a staff college, either Quetta or Camberley.

In (b) they will be promoted to fill a cadre of specialists and consultants, the numbers being decided later. They will not be promoted beyond the rank of colonel, but will be eligible for such administrative extra pensions as may be admissible from time to time in that rank.

The cadre for (c) has been dealt with in the main body of the report, but we would here emphasise that no officer after promotion to the rank of lieutenant-colonel should be considered eligible for transfer from military to civil employment, or *vice versa*; in other words, that on promotion to that rank every officer must select definitely for one or other branch of medical employment.

10. It is proposed that, on first arrival in India, after undergoing the courses at Millbank and the Royal Army Medical Corps Depot, which a young officer of the Indian Medical Service has now to undergo, the young officer of the Indian Medical Corps should proceed to the proposed depot and school, where he would receive further instruction, an outline of which will be found in annexure VI. After this he should undergo a course of training in tropical medicine, as indicated in paragraph 46 of our report.

**Training of
officers.**

11. The future status of the military assistant surgeon, the proposed designation for whom is assistant medical officer, will be so changed that it will be necessary to draw up entirely new conditions of service. We would suggest that this can best be done in consultation with the heads of the medical colleges.

**Assistant
medical
officers—
conditions of
service.**

12. On leaving his medical college the assistant medical officer should proceed to the Indian Medical Corps Depot and School for a course of training analogous to that of the commissioned medical officer.

**Assistant
medical
officers—
training.**

Other ranks—
conditions of
service.

13. As regards the Indian ranks of the corps, we understand that this question has already been fully examined. The conditions of service of the proposed skeleton cadre of the Royal Army Medical Corps, other ranks, must of necessity be considered in consultation with the War Office. Those of the Anglo-Indian community present many difficulties and we suggest that they be further considered, if and when the general scheme is accepted.

Other ranks—
training.

14. We have indicated, in our annexure dealing with the formation of the proposed school and depot, the courses of training which these other ranks should undergo.

Governance.

15. The military side of the Indian Medical Corps, the constitution of which is outlined above, should be administered by the Commander-in-Chief in India, through the Director of Medical Services, who should in future be selected from the corps. In order to provide for the selection of the fittest officers for promotion, and to fill the various military appointments, we would suggest that a selection board be established. The Director of Medical Services, the head of the Civil Medical Service, and the Sanitary Commissioner with the Government of India should be *ex-officio* members of this board. With them would be co-opted, as occasion required, the surgeons-general with the major provincial governments and the Deputy Directors of Medical Services.

Dental
service.

16. It is also considered desirable to have a cadre of dental surgeons and assistants, attached to the military side of the Indian Medical Corps. They should be recruited in the United Kingdom by the Secretary of State, and should be eligible for promotion up to the rank of lieutenant-colonel on a time scale. The terms of service, pay, etc., can only be decided by the Secretary of State in consultation with the British Dental Association.

ANNEXURE IX.

REPORT OF THE SUB-COMMITTEE APPOINTED TO EXAMINE THE QUESTION OF THE RE-ORGANISATION OF THE GOVERNMENT MEDICAL STORE DEPARTMENT.

History of the
Department.

In the year 1894 all government medical store depots in India were first brought under the control of the Government of India in the Military Department and directly under the administration of the Surgeon-General with the Government of India (subsequently Director-General, Indian Medical Service), Surgeons-General with the Governments of Bombay and Madras acting under instructions from the Surgeon-General with the Government of India in respect of all matters connected with the management of the medical store depots at Bombay, Madras and Rangoon.

In Military Department letter no. 3991-D., dated the 14th August, 1896, it was decided that the surgeons-general with the governments of Madras and Bombay should cease to have any connection with the management of the medical store depots at Madras, Rangoon and Bombay subject to the conditions that (a) the surgeons-general, Madras and Bombay, should retain the right to correspond direct with the medical storekeepers at Madras, Bombay and Rangoon, regarding matters connected with the issue of drugs and stores to civil charges under the control of the surgeons-general, and (b) that the present interests and rights enjoyed by the civil department in the supply of stores etc., should be maintained.

So far as is known no modification of these orders has been made and they are still in force.

From 1896 to 1910 the work of the Medical Store Department progressively increased and, in the latter year, the Government of India sanctioned a conference of medical storekeepers with a view to drawing up a scheme embodying various proposals for improvement in the working of the department.

This conference drew up and submitted to Government a report containing various proposals, but certain of these proposals had, for various reasons, not been carried into effect up to August 1914. The strain suddenly thrown on the

ill-equipped and understaffed Medical Store Department from the date of the outbreak of war was enormous, and the manner in which demands were met, and the work carried out, without a breakdown, reflects the greatest credit on the departmental staff.

Following the cessation of hostilities the Director-General, Indian Medical Service, considering that it was not in the best interests of Government that this large and important department should continue to work under difficulties due chiefly to inadequate staff and accommodation, proposed to Government that Lieutenant-Colonels Shaarp and Ross should visit each depot in turn, ascertaining the views of medical storekeepers on various administrative questions with a view to framing proposals for the re-organization of the department.

The Government of India agreed to this proposal, but considered that the enquiry came within the scope of the Medical Services Committee, and that Lieutenant-Colonels Shaarp and Ross should be appointed as a sub-committee with a view to their drawing up a scheme of reorganization for the consideration of the Medical Services Committee.

The sub-committee visited the various depots on the following dates :—

Lahore	... 6th to 8th February.
Calcutta	... 3rd to 7th March.
Madras	... 10th to 14th March.
Bombay	... 17th to 22nd March.

The Medical Services Committee visited the depot at Calcutta on 3rd March, Madras on 10th March, Bombay on 19th March.

Time did not permit of a visit to the Rangoon depot.

2. The Director-General, Indian Medical Service is, in conjunction with the Director, Medical Services in India, responsible to the Government of India in the Army Department, for the equipment and supply of all military medical stores, and with the Quartermaster-General in India for military veterinary stores. In addition he is responsible for the supply of medical stores to Government and Government aided institutions (both medical and veterinary) on the civil side. Since the outbreak of war, the supply of artificial limbs to disabled soldiers, dental equipment to army dentists throughout India, and the equipment of orthopaedic institutions has also devolved on the Medical Store Department.

**Functions of
the Medical
Store
Department.**

He also, at the request of other Government departments, assists in procuring or manufacturing, a great variety of articles urgently required for war purposes, which cannot, strictly speaking, be adjudged as coming under 'medical supplies.'

The stores required are obtained :—

- (1) By importation through the India Office.
- (2) From other Government departments, such as the Supply and Transport Corps, Military Works Department, Revenue and Agriculture Department, etc.
- (3) By purchase from business firms and contractors in India.
- (4) By manufacture at Medical Store Depots.

For storage, manufacture and distribution there are five Government Medical Store Depots, viz., Calcutta, Lahore Cantonment, Madras, Bombay and Rangoon, under the control of the Director-General, Indian Medical Service; of these, the depots at Lahore Cantonment, Madras and Bombay are manufacturing, as well as supply depots, those at Calcutta and Rangoon being mainly supply depots.

The Medical Store Department also undertakes the repair of surgical instruments, etc., returned by both civil and military institutions.

Prior to the outbreak of war, it was manufacturing pharmaceutical preparations to a considerable extent, and the fact that it was in a position to do so was of material assistance in meeting the greatly increased demands, not only from military hospitals in India, but from overseas forces.

Prior to the arrival of a British base depot of medical stores at Bombay in January, 1917, the Medical Store Department was responsible for the supply of all the medical and surgical stores required by the army in Mesopotamia; it still continues largely to supplement the requirements of this depot, in addition

to supplying all articles coming under the heading of Indian pattern field medical equipment. It has equipped all general hospitals, field ambulances, clearing and stationary hospitals, advanced depots of medical stores, and sanitary sections to meet the demands both for the army in India and for overseas forces, as from time to time required by the military authorities.

Owing to freight difficulties and in order to relieve strain on home resources, every endeavour has been made to develop the manufacture of medical requirements from Indian sources. It was recognised that many articles formerly imported could, and should, be manufactured in India.

Present accommodation provided for medical store depots.

3. *Lahore*.—The depot, situated in the centre of the cantonment, is located in a series of old bungalows enclosed by a wall, which have, from time to time, been supplemented by minor additions. The sub-committee are of opinion that the present buildings are most unsuitable and inadequate. Owing to lack of accommodation the compound of the depot is, of necessity, littered with valuable stock thus causing considerable loss, both from breakage and deterioration, as well as increasing enormously the daily work of the depot and rendering impossible a true, or even approximately true, verification of the stock. Owing to the fact that Lahore Cantonment will, in the future, become a large military supply base and that any frontier expedition will largely depend on it for supplies, the Medical Store Depot at Lahore will increase rather than diminish in importance. The location of two base depots of medical stores containing about 4000 packages at the Lahore depot has lately been decided upon.

We are of opinion that the erection of a new depot on modern lines on a new site is most necessary as it would undoubtedly result in the work being performed with greater efficiency and expedition, also greatly simplifying verification of stock, reducing losses from deterioration of stores, allowing for future expansion, and minimizing risk from fire.

Calcutta.—The depot is well housed and ample accommodation is available.

Madras.—This depot is accommodated in buildings formerly occupied by the Madras Gun Carriage Factory.

Ample space for expansion is available and with the exception of altering existing buildings to permit of expansion of the laboratory, and the provision of suitable accommodation for the analytical chemist to carry out research work, little in the way of new buildings will be required.

The godowns in which bulk dressings are stored are overcrowded. This can, however, be remedied by closing in the verandahs by 'expanded metal.' The medical storekeeper has been asked to submit his proposals.

Bombay.—It has, for a considerable time, been recognised by Government that complete reconstruction of this depot is necessary, and His Excellency the Commander-in-Chief, in January, 1917, issued instructions that the work was to be expedited in every way possible.

Since that date only one double-storeyed building has been erected and, at the time of our visit, work on the other buildings had not even been commenced.

It is most essential that this work should be completed at as early a date as possible, more particularly the construction of the proposed large three-storeyed block.

The present buildings are overcrowded and most unsuitable and it is with the greatest difficulty that the work of the depot is being carried out.

When No. 11 Base Depot Medical Stores is closed, presumably in the near future, it is probable that the Medical Store Depot, Bombay, will supply both the civil and military requirements of Mesopotamia.

Establishment.

4. *General*.—The establishment now employed has been sanctioned from time to time to meet the individual requirements of each depot. There is thus no uniformity, or interchange of staff between the various depots; each has its own promotion list and promotion is usually given by virtue of seniority and not necessarily according to merit.

The system does not commend itself and we suggest that all depot establishments (with the exception of menial establishment) should be borne on an all-India cadre subject to transfer from one depot to any other.

Controlling Establishment.—Each depot is in charge of an Indian Medical Service officer who is known as the Medical Storekeeper to Government. These are whole time appointments at the Medical Store Depots at Bombay, Madras, Calcutta and Lahore, the Rangoon depot being a collateral charge usually held by an Indian Medical Service officer on military duty in Rangoon.

The name Medical Storekeeper appears a misnomer and should, it is thought, be altered to Officer-in-charge, Medical Store Depot.

It is customary for officers once selected as medical storekeepers to remain in the Department throughout the greater part of their service. The cadre at present consists of four permanent appointments, no provision having apparently been considered necessary to provide either for leave, furlough or casualty vacancies. The duties, always extremely arduous, are becoming progressively more so, and these officers have to work continuously in such enervating climates as Madras, Bombay and Calcutta.

During the war 3 out of the 4 permanent medical storekeepers have been obliged to take sick leave for considerable periods, their places being filled by assistant surgeons owing to no trained reserve being available. It is obviously undesirable false economy to continue working with an undermanned cadre and medical storekeepers should be encouraged to take a reasonable amount of furlough.

5. Owing to the increase during the war in the work of medical storekeepers both in complexity and extent, it was found necessary to create temporary appointments as Deputy Medical Storekeepers at Madras and Bombay. The sub-committee consider that these appointments should be made permanent, as at these depots it is quite impossible for one man, no matter how energetic and hardworking, to carry out efficiently the manifold duties involved.

In addition, a junior Indian Medical Service officer should be permanently appointed as deputy medical storekeeper to the Lahore depot which will shortly include the Quetta division in its circle of supply. His duty would primarily be the charge of the mobilization reserves including the regular turnover of stocks in the two base depots of medical stores which will be located there; he would in addition assist in the general work of the depot which has become too great to be efficiently carried out by one man.

If it is decided to adopt the name Officer-in-charge, Medical Store Depot, in place of that of Medical Storekeeper to Government, Deputy Medical Storekeepers will be known as Assistants to Officers-in-charge, Medical Store Depots.

For the appointment of deputy medical storekeeper young Indian Medical Service officers of from 5 to 8 years service should be selected.

A deputy medical storekeeper must elect to serve in the Department for a minimum period of 3 years at the end of which time he will, if the Director-General considers him suitable, be asked whether he desires to be appointed permanently to the department. Once permanently appointed he will not be permitted to revert to other duty, except at the discretion of the Director-General.

The cadre of officers would thus consist of :—

Medical Storekeepers	...	...	...	...	4
Deputy Medical Storekeepers	...	...	...	...	3
			Total	...	7
Add for leave and casualty reserve	...	...	...	...	2
			Total	...	9

6. The pay drawn by medical storekeepers was fixed in Military Department notification no. 132, dated the 17th February, 1905. Three of the four permanent appointments are now held by senior lieutenant-colonels all of whom have served for many years in this department. Candidates are not forthcoming and, at the moment, there is only one suitable officer on the waiting list.

The reasons for the present undoubted unpopularity of service in this department are manifold, a few of the most important being that these officers

are underpaid and are required to live in expensive presidency towns, they are deprived of all opportunities of private practice, the work is of an extremely arduous and harassing nature and it is impossible for them to keep up their professional knowledge as medical men. It is extremely unlikely and will probably become more so in the future, that medical storekeepers can ever attain to administrative rank. With the increased attractions for senior officers offered by the station hospital system it will be more difficult than ever to get officers for these posts unless the emoluments are made sufficiently large to attract candidates.

In suggesting revised rates of pay and allowances the best basis to go on will be to take the case of each appointment separately, it being assumed that medical storekeepers will benefit in common with the rest of the service in the increased rate of pay lately sanctioned by the Secretary of State.

Bombay.—This is a large manufacturing depot which, owing to its geographical situation, will continue to be a most responsible and onerous charge.

The cost of living at Bombay has, of late years, increased to such an extent that the present pay is inadequate; house rents have gone up enormously and it is at present impossible to obtain even a small flat at a lower rental than Rs. 250 to 300 per mensem. Owing to the location of the depot at Byculla it is necessary for the medical storekeeper to live either on Malabar Hill, or in the Fort, and he is forced to maintain a motor car for the efficient performance of his duties. To obviate these disadvantages we suggest that the Medical Storekeeper, Bombay, should continue to draw his present staff pay at the rate of Rs. 500 per mensem and that this staff pay should be drawn irrespective of rank as the responsibilities are similar for all holders of the appointment. He should receive an additional Rs. 100 per mensem, manufacturing depot allowance.

The Medical Storekeeper, Bombay, does not come within the Bombay House Allowance Scheme *vide* Appendix XIII Army Regulations, India, volume I, although the appointment is a permanent military one; he should be allotted Government quarters at the usual rates or admitted to the Bombay House Allowance Scheme. To compensate the medical storekeeper for being debarred from private practice a local allowance of Rs. 200 per mensem should be granted.

Madras.—This is the largest manufacturing depot.

The cost of living at Madras is not nearly so high as at Bombay but the duties are equally arduous. It is suggested that the pay of this appointment should be fixed at grade pay *plus* present staff pay of Rs. 500 per mensem *plus* Rs. 100 manufacturing depot allowance *plus* Rs. 200 per mensem local allowance in lieu of private practice.

Calcutta.— { The pay of these appointments should be grade pay *plus*
Lahore.— { present staff pay of Rs. 500 per mensem *plus* Rs. 200 per
mensem local allowance in lieu of private practice.

The extra expense of living in Calcutta is to a large extent compensated by the existence of Government quarters for the medical storekeeper.

Pay of deputy
medical
storekeepers.

7. The pay of deputy medical storekeeper should be the pay of rank for officers in military employ now under consideration *plus* Rs. 200 staff pay rising to Rs. 400 per mensem after five years service in the department. In the case of Bombay, he should either be allotted Government quarters at the usual rates or admitted to the Bombay House Allowance Scheme.

Subordinate
establishment.

8. The cadre at present consists of 9 military assistant surgeons—3 each at Madras and Bombay, 1 each at Calcutta, Lahore and Rangoon.

At each depot the senior military assistant surgeon is placed in sub-charge of the depot and at the large manufacturing depots at Madras and Bombay an assistant surgeon acts as superintendent of the laboratory and another as superintendent in charge of the surgical instruments and appliances sections.

The duties carried out by military assistant surgeons attached to medical store depots are of a technical nature and a course of training in these duties is necessary to render them efficient.

At present owing to their being no leave reserve an inexperienced man is brought in to fill leave vacancies. This does not tend to efficiency and we urge the advisability of adding an additional appointment to permit of one assistant surgeon always being on leave. This would bring the strength of the cadre of military assistant surgeons to 10.

9. The present rates of allowances as laid down in Army Regulations, India, volume I; paragraph 398, are considered inadequate. Pay of military assistant surgeons attached to medical store depots.

The same arguments as those noted in the case of medical storekeepers apply, to a minor degree, in the case of these men. Their duties are of a responsible nature for which men of integrity are necessary. They are debarred from civil employment thus foregoing all chance of private practice. Furthermore, on retirement, they are no longer competent to add to their pensions by doing professional work.

Recruitment should only be made from the ranks of fourth class assistant surgeons as it is most advisable that men should be trained in their early years of service.

We recommend the abolition of the present allowances laid down in Army Regulations, India, volume, I, paragraph 398, and the substitution of the following inclusive allowances irrespective of the duties performed.

	Pay. Rs.	Allowances. Rs.
4th class assistant surgeon	100	plus 100 per mensem.
4th class assistant surgeon after 5 years in the Medical Store Department.	100	plus 125 per mensem.
3rd class assistant surgeon after 7 years in the department.	150	plus 125 per mensem.
3rd class assistant surgeon after 10 years in the department.	150	plus 150 per mensem.
2nd class assistant surgeon after 12 years in the department.	200	plus 150 per mensem.
2nd class assistant surgeon after 15 years in the department.	200	plus 175 per mensem.
1st class assistant surgeon after 19 years in the department.	250	plus 175 per mensem.

any of the above when acting as manager plus 50.

Permanent manager—pay of rank plus 250.

In addition they should be entitled, as at present, to free quarters (or house allowance in lieu).

Assistant surgeons should be on probation for two years after joining the department, at the expiry of which, if considered suitable, they should elect to remain permanently in the Medical Store Department.

10. Military sub-assistant surgeons are employed as stock holders at the smaller depots. In view of the fact that they are employed in stations where the cost of living is high and that they are, from the nature of their duties, debarred from any opportunity of private practice, we consider that the present allowance, viz., 25 per cent of grade pay, should be abolished and in its place substituted an allowance of Rs 40 per mensem for all ranks. Military sub-assistant surgeons.

11. This consists of (a) clerical (b) depot establishment and (c) laboratory establishment. Superior establishment.

As regards these establishments, no two depots are alike either in rates of pay, personnel or designation. In the case of each depot extra establishment has been entertained as required to meet increasing work and many of the present appointments are temporary, sanctioned only for the duration of the war. There is, in our opinion, no doubt that these establishments are both understaffed and underpaid, and that the administration of the department is considerably handicapped by these conditions. We have already suggested the advisability of having an all-India cadre, and, if this principle is accepted, detailed suggestions regarding the establishments to be entertained, including a reserve for purposes of furlough and leave, with proposed rates of pay, will be submitted for the consideration of Government by the Director-General, Indian Medical Service. This however will involve considerable work,

necessitating frequent references to the various medical storekeepers, and cannot, owing to lack of time, be embodied in the present report. We would point out, however, that certain proposals which we are submitting aim at effecting a considerable reduction in labour both in the clerical and depot work, and that the question of the strength of the establishment required will largely depend on whether these proposals are accepted or not. If the principle of having the superior establishment brought on to an all India cadre is accepted, all such establishment will be placed on equal rates of pay according to grade, and prospects will be improved by the grant of local allowances. As regards the designation of the various employees all depots should be the same. Establishments already engaged will be given the option of accepting service under the all-India cadre scheme.

Menial staff.

12. The adequacy or otherwise of the menial staff need not be brought within the scope of this report. Medical storekeepers will be asked to submit proposals which, when received, will be submitted to Government for sanction.

The menial staff need not be brought under an all-India cadre.

Depot assistants (compounders).

13. We consider it necessary to draw attention to the class of man employed as depot assistants (compounders). The duties consist in the retail issue of drugs, which in many instances are extremely valuable and poisonous. The rates of pay range from Rs. 15 to Rs. 40 per mensem.

The men are recruited from the more intelligent cooly boys, who have acquired a very haphazard smattering of English, in order that they may be able to decipher the printed labels, etc., handed to them. With this very moderate mental equipment these men are expected to be able to issue in retail preparations which are frequently poisonous. It appears quite unnecessary to emphasize the danger of this practice, and we consider that provision should be made for adequately trained men on suitable rates of pay. It is quite possible that the variation from book balances which are discovered at the daily and annual verifications of stock are largely due to the inaccuracy of these untrained men.

In order to ensure efficiency, all compounders employed should have passed the provincial examination for compounders employed under the civil department, and no promotion should be made until candidates have passed the examination prescribed for their contemporaries in ordinary civil employ.

We suggest three grades--

3rd grade compounders on Rs. 30 per mensem.

2nd grade compounders on Rs. 40 per mensem.

1st grade compounders on Rs. 50 per mensem.

In the case of Bombay a local allowance of Rs. 10 per mensem should be sanctioned in each grade.

It will not be necessary to include compounders on an all-India cadre and they should in future be classed as "compounders" and not as "depot assistants".

Scope of work undertaken by medical store depots.

14. (a) *Military*.—The Medical Store Department is normally responsible for the supply of all medical stores both to military medical and veterinary institutions of the army in India, as well as for the equipment of all field medical and veterinary units. Medical stores are also supplied to vessels of the British Navy in Indian waters as well as to the Royal Indian Marine. During the war the work increased enormously owing to the fact that the department had to meet very large unanticipated demands from overseas forces, in addition to undertaking supplies to army dental surgeons throughout India, the manufacture of artificial limbs, orthopaedic appliances, etc. Military charges indent annually for their requirements basing their demands on the scales authorised in Army Tables, Medical, for non-expendible stores, expendible stores being demanded on an "as required" scale. We found that much unnecessary work is being thrown on the Medical Store Department owing to the great number of emergent indents submitted by military hospitals.

The fact that many hundreds of emergent indents from military hospitals are submitted annually appears to shew, not only that military medical officers do not exercise sufficient care in the preparation of their annual indents, but

that Army Tables, Medical, are in urgent need of revision. Certain articles are being continually demanded in excess of authorised scale, and in such cases these scales should be revised so as to obviate the necessity for the submission of so large a number of emergent indents. If the military medical authorities instructed officers commanding military hospitals that this frequent submission of emergent indents means bad hospital administration, much will have been done towards reducing the work now being thrown on the Medical Store Department. M.-1216, Military Annual Indent Form, does not correspond with Army Tables, Medical, and should be made to do so.

Unauthorised articles are frequently demanded in annual indents for military hospitals and almost invariably passed for supply by the administrative medical officers concerned. This necessitates careful check of all military medical indents at medical store depots to ascertain if unauthorised demands are included and whether authorised stores are demanded in the authorised quantities as laid down at the end of paragraph 178, Army Regulations, India, volume II. It is considered that such check should be carried out in the office of the military administrative officer who should alone be held responsible for demands made.

When unauthorised articles are required, their supply should either be authorized by the Director, Medical Services in India, or he should delegate such authority to military administrative officers.

We suggest that the ruling referred to should be made applicable to officers countersigning such indents, thereby greatly decreasing the work now thrown on medical storekeepers.

If these suggestions are accepted the medical storekeeper would simply comply with all demands received without being held responsible for check, thus considerably reducing his work, speeding up compliance with indents, and freeing him from criticism as to delay which is now so often made.

(b) *Civil. (1).*—Although prior to the war a very large number of Government civil medical institutions indented on the Medical Store Department for articles included in the Depot Equipment List many institutions preferred to indent either on the Director General of Stores, India Office, London, direct, or on private firms in England. In 1917 the Government of India, Indian Munitions Board, drew attention to this fact and asked the Director-General, Indian Medical Service, whether it would not be possible for the Medical Store Department to undertake the supply of such stores as are normally stocked at medical store depots to all Government civil hospitals, medical colleges, Government schools, museums and similar institutions; also whether he would agree to include in the Depot Equipment List articles, not already in the list, for which a continued demand exists.

Following this reference orders were issued by the Government of India, Indian Munitions Board, *vide* their letter no. P.-44, dated the 26th February 1918, (enclosure no. 1) in which all the above classes of institutions were instructed to indent on the Medical Store Department with a view to obviating the waste of money and labour involved in piece-meal purchasing by the India Office. There can be no doubt that the introduction of this very necessary order will effect a considerable saving to Government, as, not only will it permit of wholesale, instead of piece-meal, purchasing by the India Office at correspondingly lower rates, but in many cases civil institutions will, from a monetary point of view, benefit considerably by purchasing drugs which are now being manufactured at medical store depots from indigenous products at prices much lower than those at which firms at home can possibly supply them.

There are grave indications that local governments are not altogether satisfied with their dealings with medical store depots, the chief complaint made by most of the witnesses summoned before the Medical Services Committee, being of undue delay in compliance with demands. A general speeding up of the depot work is undoubtedly desirable, and this is an administrative question which must be carefully examined by the Director-General, Indian Medical Service. In fairness to the department, however, it is pointed out that this delay is largely due to the chronic condition of overwork at all depots, owing chiefly to inadequately paid and undermanned staffs, also to lack of

sufficient suitable storage accommodation, and in addition to the fact that indents are frequently submitted which have been carelessly drawn up necessitating careful check at the depots.

The time taken by the India Office in complying with demands submitted in annual indents appears unduly long, supplies, on occasions, not being received in India within a year after date of submission. Such long delays should not occur and the India Office should be asked to endeavour to comply more rapidly with demands.

Civil hospitals are supposed to submit indents on due dates, but, in practice, they frequently fail to do so. This naturally results in delay in compliance as the depots are, on occasions, unable to deal with all the indents received as rapidly as is desirable. Every civil hospital is notified as to the date on which its annual indent should be sent in and administrative medical officers should be asked to issue strict injunctions to civil surgeons that failure to despatch their indents on due dates will be considered as reflecting on their administration.

(2) *Municipal and District Board Dispensaries.*—The Government Medical Store Department supplies the great majority of these institutions throughout the Madras and Bombay presidencies. In these presidencies this concession was continued when, in the year 1894, the administrative control of provincial depots was taken over by the military department, and it is considered by the local governments in question as a vested right, any attempt to do away with which would undoubtedly be strongly opposed. No attempt therefore should be made to discontinue the supply of medical stores to municipal and district board dispensaries in the Madras or Bombay presidencies. These institutions throughout India are, in most cases partly financed by means of Government grants-in-aid, and it is beyond question that the present practice of purchase, either through travelling agents, or direct from private firms in India, is an extravagant one and frequently involves the purchase of inferior drugs, a most grave danger and one which cannot be obviated until a Drugs Adulteration Act has been introduced into India.

Owing to war conditions the purchase in India of considerable quantities of medical stores by the Government Medical Store Department proved necessary and it was in many cases found that even firms which were generally considered reputable were not above supplying drugs of inferior quality.

The experience gained in the last few years goes to prove that municipal and district board dispensaries, which purchase in the market in India in preference to availing themselves of the concession of obtaining supplies from the Government Medical Store Department, not only pay very much higher rates for their requirements but, in many cases, obtain drugs of poor quality. As most of these institutions are assisted by Government grants-in-aid it follows that Government money is being wasted by this practice at the expense of the general public.

The Medical Store Department has at present as much work as can be carried out without considerable expansion and, all things considered, we do not think it advisable to press for any extension in the direction of supplying these State-aided institutions.

Apart from the question of overburdening the depots, opposition is to be expected from the trade, and it is desirable that private enterprise should be encouraged and that there should be additional sources of supply available in times of emergency. Until, however, a Drugs Act is brought into force in India the quality of drugs in the bazaar will continue to be below the standard required. We strongly urge therefore that a Drugs Act should be brought into force as soon as possible.

It should continue optional for district board and municipal dispensaries as to whether they obtain their supplies from the Medical Store Department or by purchase in the open market.

(3) *Native States.*—A few Native States are being supplied and many others would undoubtedly welcome the concession of being permitted to obtain supplies from the Government Medical Store Department, but extension in this direction would interfere with the interests of private firms and tend to retard

development of the drug industry in India. It is therefore thought that any extension in this direction is inadvisable.

(4) *Mission Hospitals*.—A certain number of these institutions in the Madras and Bombay presidencies are, on the recommendation of the local surgeons-general, supplied by the Government Medical Store Department.

It should not be forgotten that these institutions relieve Government of a large amount of its responsibility for the medical treatment of people often in otherwise inaccessible areas, and it seems reasonable that they be permitted to share the advantage as to economy, etc., which would result from their being permitted to indent regularly upon the Government Medical Store Department.

Owing to the present high cost of drugs, etc., which makes it difficult for missionaries to obtain their requirements in the open market while working within their budget allotments, and the difficulty of obtaining many drugs at the present time, a number of requests have been received asking for permission to obtain their requirements from the Government Medical Store Department.

If the concession of being permitted to deal with Government depots was extended to mission hospitals it would be greatly appreciated.

(5) *Supply to medical institutions independent of Government*.—With a view to lightening the work of the Government Medical Store Department it was decided in Home Department resolution no. ^{5. Medical} ₃₆₀₋₃₆₉, dated the 11th

June, 1888, that medical institutions independent of Government should no longer have the privilege of indenting on the Government Medical Store Department. In Government of India, Home Department (Medical) resolution, no. 380-393, dated 26th March, 1898, it was considered advisable, owing to the receipt of numerous applications from non-Government medical institutions asking for exemption from this ruling, to reconsider the above order, and it was decided that, subject to certain conditions, local governments and administrations should be empowered to authorise any medical institutions within their respective jurisdictions to obtain their supplies of medicines, etc., from the Government Medical Store Department.

We are aware that the Government of India (Home Department) in its letter no. 361-369, dated the 4th May 1912, decided on the continuance of the arrangement under which non-Government institutions and private bodies were allowed this privilege, but we consider that the question should be reviewed in the light of the recommendations made in the report of the Indian Industrial Commission, and that in view of the necessity of encouraging private enterprise and manufacture in India, the continuance of this practice is not advisable; we therefore suggest that no medical institution financially independent of Government should be allowed to indent on the Government Medical Store Department for their supplies of drugs, etc.

15. Although, prior to 1914, the Medical Store Department was manufacturing many pharmaceutical preparations on a considerable scale the strain of war led to a great development in the utilization of Indian resources. It was recognised that many articles formerly imported could, and should, be manufactured in India from indigenous products. Analytical chemists were engaged and are working at the manufacturing depots at Bombay and Madras and many preparations are being manufactured at these depots from indigenous raw materials which were, before the war, imported from home.

Every effort has been made to develop the manufacture of surgical dressings at the depots and, at the same time, to encourage reliable private firms to extend their output in this direction.

The Medical Store Department is a very large purchaser of surgical instruments and appliances, of which an important source of supply for many years has been the workshops at the Medical Store Depot, Bombay. Part of these premises has been handed over to a private concern which has established in it a factory that provides a considerable portion of the requirements of the Department. It employs several hundred workmen who have been trained to manufacture and repair instruments and appliances and the articles turned out are of excellent workmanship and finish, comparing favourably with similar

articles manufactured by the best known surgical instrument makers at home, both in quality and price. War demands have led to many new developments including the manufacture of shaped artificial limbs and orthopaedic appliances.

The question of ascertaining what raw materials are, or can be, made available in India and the best methods of obtaining supplies, both for immediate requirements and with a view to future developments, has been a subject of close investigation for some time. It is an undoubted fact that up to now the indigenous resources of India have not been utilized to anything like the extent possible. The practice, prior to war, was to purchase in England through the medium of the India Office not only manufactured drugs, but also most of the raw materials required for the manufacture of pharmaceutical products, many of which raw materials had actually been exported to England from India.

The general investigation as to the possibilities of obtaining Indian grown products has for some time been carefully gone into by the Director-General, Indian Medical Service, who in December, 1917, drew up and submitted a note to the Revenue and Agriculture Department pointing out the desirability of actively taking up the question of the organized cultivation of medicinal trees and plants. It has been decided that this question will come within the scope of a Drugs Manufacture Committee with the Director-General, Indian Medical Service, as President.

So far, the information available merely, as it were, touches the fringe of possibilities, and, owing to the almost complete lack of data in the form of any up-to-date literature or reliable information on the subject, the problem is an extremely difficult one.

Many of the medicinal plants required grow wild in the Indian forests and owing to the hitherto small demands are classified as minor forest produce, and no special attention appears to have been paid to them nor does there exist, as far as is known, any effective organization for collection. Within the last few years a considerable advance has been made in utilizing resources, and medicinal plants are now being grown in various parts of India for supply to the Medical Store Department. Much remains to be done, as many other valuable medicinal plants are known to grow wild in large quantities in the Indian forests, but until an organized survey is undertaken the problem of collection and utilization of these products cannot be satisfactorily solved. In order to demonstrate the great advance in the manufacture of drugs which has taken place in the laboratories of the Medical Store Department within the last few years we attach a list (enclosure no. 2) shewing the more important drugs, etc., of which the total requirements of Government are now being manufactured.

The necessity of encouraging, in every way possible, the manufacture of drugs in India so as to render the country, as self-supporting as possible, has been fully recognised, but a considerable amount of research investigation will be necessary before private enterprise can be expected to capitalize the drug industry on a commercial scale.

The Indian Industrial Commission in their report advocate the establishment by Government of "Pioneer" or "Demonstration" factories with a view to the inception by Government of industries on a small commercial scale in order to ascertain and overcome the initial difficulties, and discover if the industry can be worked at a profit.

In dealing with drugs the question of quality is so important that it is essential that Government should not discontinue any manufacture until reliable commercial firms have proved that they can manufacture drugs of the necessary quality on a sufficiently large scale as to render it absolutely certain that Government will be able to obtain all its requirements without difficulty and at prices comparing favourably with Government cost production. It has unfortunately, up-to-now, frequently been the experience of the Medical Store Department in dealing with firms in India that the difference between samples submitted and actual supplies subsequently delivered is liable to be considerable and much time must elapse before it will be possible to close down, or limit the scope of, our manufacturing laboratories at Madras and Bombay. These laboratories are already established and in full working order with up-to-

date machinery. Their output, already large, should be increased by the addition of an extra staff of permanent research chemists.

Extra machinery is required and proposals for this will, it is understood, shortly be submitted to Government by the Director General, Indian Medical Service.

They can be utilized as "Demonstration Factories" for educational purposes serving as schools for training Indian chemists. Commercial firms desirous of taking up drug manufacture would be advised to send men possessing a knowledge of chemistry for training under expert guidance in the processes of manufacture.

At the present time drugs and pharmaceutical preparations are being manufactured at three medical store depots, *viz.*, Madras, Bombay and Lahore, the laboratories at the two former places are very large that at Lahore being a small one poorly equipped with machinery. We are of opinion that the maintenance of this small laboratory at Lahore is both a waste of time and money. One power-driven tablet making machine, which we saw is obviously far beyond the necessities of Lahore and would be far more usefully employed in increasing the output of a large depot where it would be regularly, instead of spasmodically, used. The services of the pharmaceutical chemist now employed at Lahore, would be utilized to greater advantage if working with others similarly employed than in carrying out routine details.

We therefore recommend the closing down of the laboratory at Lahore, the establishment and equipment being transferred to Bombay with the exception of the pharmaceutical chemist who would be transferred to Madras.

16. In order to carry out the research work required to develop drug manufacture with a view to making India self-supporting, the services of highly qualified research chemists are necessary. In Europe the value of scientists in industrial work is being increasingly recognised with the inevitable result of raising their remuneration. India cannot afford to have second-rate men in her technical services, and in order to obtain the best she must be prepared to offer adequate inducements. **Research chemists.**

At the present time Captain MacCulloch, late Royal Field Artillery, who was temporarily attached as analytical chemist to the Madras depot, on 27th April, 1917, as a war measure, is the only chemist employed possessing the necessary higher qualifications. This officer before the war was employed at Edinburgh as a research chemist under the Medical Research Committee to investigate the chemical side of bacteriological problems under Professor Ritchie of Edinburgh University. On the outbreak of war his services were utilized for research work on the high explosive, tri-nitro-toluene. He is a M. A., B. Sc. (honours) of Edinburgh University and an associate of the Institute of Chemistry. The investigations into the possibilities of drug manufacture from indigenous products carried out by this officer during the past two years have led to the manufacture of many drugs and chemicals not previously manufactured in India.

We are strongly convinced of the advisability of the services of such analytical chemists being obtained permanently for research work under the Medical Store Department and suggest the following terms as regards the future recruitment and service of research chemists employed under the Government Medical Store Department:—

Pay on joining the department at the rate of Rs. 600 per mensem rising to Rs. 1,400 by annual increments of Rs. 50, pensionable on the completion of 20 years service. Leave and furlough to be based on the rules laid down in Civil Service Regulations for gazetted officers.

In view of the great importance of the research work to be undertaken, we would press strongly on Government the advisability of sanctioning the permanent employment, in addition to Captain MacCulloch (assuming that he will be retained in the department) of a well-qualified research chemist for the Bombay depot. These officers to come under any house allowance schemes ruling at Madras and Bombay.

The advisability of these research chemists being eventually absorbed into the Indian Chemical Service suggested by the Indian Industrial Commission, remaining seconded for employment in the Medical Store Department and being eligible for higher appointments in that service can be considered at a later date when the Indian Chemical Service has come into being.

We have reason to believe that an enquiry into the financial working of the Government medical store depot laboratories would now show a profit to Government of several lakhs of rupees annually after payment of all charges.

pharmaceuti-
cal chemist.

17. In addition to the above superior appointments we suggest that Private J. E. Bowen, now temporarily employed as pharmaceutical chemist in the laboratory at the Bombay medical store depot, be permanently engaged as pharmaceutical chemist at Bombay. Private Bowen, a member of the Pharmaceutical Society, came out to India in the Royal Army Medical Corps, and has been employed at the Medical Store Depot, Bombay, since May, 1917. The work which he has carried out while so employed has been most valuable and the retention of his services is desirable.

He has practical experience of the work required, having, before the war, been employed under a well known firm of manufacturing chemists in England. We suggest the following terms as regards his engagement :—

- (a) Pay Rs. 450—20—850 per mensem.
- (b) That for purposes of leave, furlough, and pension he should be under the Civil Service Regulations.
- (c) That during the period of his service he be granted two passages to England and back and a free passage on the termination of his contract.
- (d) That contribution by him towards a general provident fund be obligatory.
- (e) Engagement in England.—(1) That upon his discharge from military service he be engaged by the Secretary of State, if found to be physically fit, at as early a date as possible and sent out to India on a free passage.
(2) That his Indian service and Indian rates of pay count from the date of his embarkation for India.
- (f) Termination of service.—(1) That his first appointment be probationary for one year.
(2) After being confirmed, his services should be liable to termination on six clear calendar months' notice on either side.

assistant
chemists.

18. In addition to the above we consider the employment of assistant chemists desirable. These would be recruited as required from Indians, who have had a scientific training in India.

We suggest two grades :—

2nd grade on pay Rs. 75—5—150 per mensem.

1st grade on pay Rs. 150—10—300 per mensem.

renovation
of depots.

19. During our visit to the various medical store depots we were impressed with the fact that much of the work being carried out could either be simplified or done away with as not necessary, and with this in view we make the following suggestions.

reparation
of home in-
vents.

20. At the present time the annual home indent is priced by the medical storekeeper who prepares it, the prices being obtained from the home invoices. The latter are sent out by the India Office to the Senior Controller of Military Supply Accounts who, after noting the prices, proceeds to circulate them to the various depots. As each depot in turn has to copy out each invoice, the process of complete circulation may frequently take as long as two years. As there is a constant succession of home invoices with varying prices it follows that, at the time of the submission of the home indent, each depot has different rates available, with the resultant anomaly of an instrument for the Bombay depot being priced at possibly double the cost of an exactly similar instrument required for the Madras depot. This absurdity has, of course, been emphasised by war conditions, but inquiry would doubtless prove that similar instances could be found to have occurred before the war.

We strongly urge, therefore, that the Director-General, Indian Medical Service; who consolidates the home indent, should in future alone be responsible for its pricing, and that duplicate copies of the home invoices when despatched to the Senior Controller should be sent direct by the India Office, to his office. The centralization of this laborious work would relieve medical storekeepers of a large amount of work which, as now carried out, is entirely valueless owing to its inaccuracy.

The prices entered in the printed copies of the consolidated home indent, circulated to medical storekeepers from the Director-General's office, should form a sufficient guide to them when making local emergent purchases or for any estimate purposes.

The adoption of this suggestion has been approved of both by all medical storekeepers and the Senior Controller of Military Supply Accounts.

21. If the suggestion that the pricing of home indents will in future be carried out in the office of the Director-General, Indian Medical Service, is adopted, it naturally follows that the home estimates will be drawn up entirely by that office. **Home estimates.**

It would also considerably reduce the work at medical store depots if, in future, the office of the Director-General carried out the compilation of statements concerning all depots, as well as furnishing information asked for regarding the pricing of field equipment and furnishing estimates as to the cost of equipment required for both military and civil hospitals, and the preparation of estimates for new schemes.

22. As regards stocks to be held at medical store depots, in view of the extension indicated in Government of India, Indian Munitions Board, letter no. P.-44, dated the 26th February, 1918 (enclosure no. 1), we consider that no reduction should be made in the present practice of basing demands for non-perishable articles on a three years established proportion. We consider that any reduction would be unsafe, as in actual practice, there is rarely, if ever, more than a two years stock actually in the depots, and this three years stock of non-perishable articles is thought to be the irreducible minimum required as the margin of safety in the event of war. **Stocks of Europe stor to be held at medical stor depots.**

As regards perishable articles, demands should be based on an 18 months established proportion, but in the case of articles subject to rapid deterioration in India, such as bleaching powder, rubber gloves, rubber tubing, etc, arrangements should be made with the India Office to send out in monthly or quarterly consignments as demanded in the home indent.

In calculating the established proportion, abnormal expenditure of any articles in any one year should be carefully considered, by the medical storekeepers in working out the required quantity, and it should also be taken into account whether such abnormal expenditure represents actual issues to charges or includes transfer to other depots. Such should not be taken into account if unlikely to recur.

23. When a medical storekeeper indents on another depot to replenish stock the present procedure is to submit monthly a consolidated indent to the office of the Director-General, Indian Medical Service, for countersignature. **Inter-depot indents.**

This does not appear to serve any useful purpose, and it is thought that the signature of medical storekeepers is sufficient, a copy of such indents being however submitted quarterly by both indenting and supplying officers to the office of the Director-General for scrutiny.

The submission of vouchers for the Director-General's countersignature in the case of transfer of articles from quick to dead stock is also considered unnecessary and should be abolished.

24. There seem to be a large number of local forms in use which have been adopted to suit the convenience of each separate depot. This system is undesirable and standard forms should be drawn up by the Director-General, Indian Medical Service, in consultation with medical storekeepers for use in all depots. **Registers as forms.**

**Disposal of
obsolete
stores.**

25. A list showing stocks of obsolete articles should be submitted annually, on June 1st, by medical storekeepers to the office of the Director-General who will issue instructions as to their disposal.

**Disposal of
surplus
Europe stores.**

26. On the receipt of the home indent from medical store depots, the office of the Director-General, will arrange for the transference of stocks shown to be surplus to other depots, a corresponding reduction being made in the home indents of the depots in question. This procedure will lead to a reduction in the work at medical store depots and prevent accumulation of stocks. Any stores remaining surplus after the transfers proposed, should be intimated annually to other medical store depots by medical storekeepers in order that they may be brought into consumption as soon as possible.

**Revision of the
equipment list
for medical
store depots.**

27. The last revision of this list was carried out in 1915 and it is in urgent need of a further complete revision throughout. The absence of an up-to-date list must increase the work and correspondence of medical storekeepers very considerably. The present list should be scrutinized as regards sections 1 to 8 by acknowledged authorities in medicine, surgery, veterinary science, bacteriology, etc., with the object of obtaining suggestions for the exclusion of articles considered out of date or unnecessary and the inclusion of new articles likely to be useful.

It will be necessary for the actual work of compilation to be carried out in the office of the Director-General, Indian Medical Service. It will greatly assist in carrying out future revisions if military and civil administrative officers were instructed to submit annually a statement of such additions or deletions as they think desirable.

**Proposed
alteration in
the present
system of
placing
contracts for
local supplies.**

28. The present system is not satisfactory. Too great an interval elapses between calling for tenders and the actual allotment of contracts. Owing to the limited financial powers which medical storekeepers possess for the purchase of articles of local produce it has been necessary to include in the schedules a large number of items required in trivial quantities.

Much of the labour associated with the placing of contracts would disappear if medical storekeepers were granted moderate powers of purchasing Indian products.

The following illustrates the unnecessary elaboration of the present system.

The current year's requirement of cassia pulp for the Lahore depot was 10 lbs. at a total cost of Re. 1 annas 9.

To comply with the regulations in force the medical storekeeper had to include this item in his annual contract schedule ; otherwise he would have had to obtain the sanction of the Director-General to the purchase.

A large number of similar trivial orders are invariably included in the contract schedule which is submitted to the office of the Director-General for scrutiny and sanction. From a scrutiny of this year's contract schedule of the Lahore depot we found that 142 out of 192 items might be said to be of a trivial nature.

With a view to the elimination of what appears to be unnecessary work, we suggest the grant to medical storekeepers of contractual powers to purchase any article of local supply required (a) for depot use, (b) for laboratory use, or (c) for stock, up to a limit of Rs. 1,000 per annum in the case of any one article, and that the financial power of the Director-General, Indian Medical Service, be increased from Rs. 2,500 to Rs. 5,000 as in the case of divisional commanders, thus obviating unnecessary references to Government.

Again, the present system of calling for tenders in the month of October for contracts to supply in the ensuing financial year beginning from the 1st April means that tenderers have to forecast market prices a very long period ahead, with the result that, if the market price rises to any appreciable extent, contractors are unable to supply at tendered rates except at a loss and applications are received for enhancement of rates.

This unsatisfactory state of affairs will be largely remedied if our suggestion above is accepted, as the period elapsing between calling for tenders and their acceptance must be greatly reduced, owing to the fact that they have not to be referred to the office of the Director-General. An exception should be

made in the case of articles, the rates of supply of which are dependent largely on seasonal crops; tenders for the supply of such should be called for at the most suitable time.

29. The abolition of this depot was recommended in the report of the conference of medical storekeepers held in October 1910; medical stores to be supplied to charges direct from the Madras depot. **Abolition of the Rangoon medical store depot.**

We agree that Madras should supply the Rangoon depot but consider that the proposal to abolish the latter is not a well-advised one.

During the war, sea communication between Madras and Burma was at one time non-existent for months at a time, and, during the whole period of the war, ships sailed only at very irregular intervals.

Again Burma is a rapidly developing province and the number of medical institutions is increasing.

It is thought that considerable practical difficulties and delays would arise in supplying medical charges direct from Madras, which would only be partly obviated even if stores were sent through the medium of a local agent for Government consignments at Rangoon.

30. We would draw attention to the anomaly of the rules laid down in paragraph 122, volume I, Army Regulations, India, with regard to the leave rules for medical storekeepers. We consider that, as the Medical Store Department is a military department, medical storekeepers should be subject to military leave rules regardless of the rules, military or civil, under which they were serving at the time of their transfer to the Medical Store Department. **Leave rules for medical storekeepers.**

31. With reference to appendix, II, volume III, Army Regulations, India, we do not understand why no charge is made against the civil department for the repair of surgical instruments. We are of opinion that a charge should be made for such repairs, the percentage of cost being calculated in the same way as for the issue of drugs etc. **Repair of surgical instruments.**

32. At the present time there are two systems of stock-taking in force in medical store depots, namely, annual and daily. The annual stock-taking requires that the medical store depot shall be closed for all, except emergent, work for one month, namely, March, during the year. We have been told by all medical storekeepers that this closure involves no increase of work, but we are entirely at a loss to understand how such an opinion can be expressed when it obviously means that the work of twelve months has to be compressed into eleven. While we admit that this annual stock-taking may be of value as regards costly or poisonous drugs, we fail to see that the advantage gained by this dislocation of work in a store depot in ascertaining the actual balances of such items as feeding cups, urinals etc, is commensurate. **Verification of stocks.**

The daily verification is carried out by means of a clerk whose sole duty it is to ascertain balances, or reputed balances, of articles in the store. He works straight through a list and it is thus perfectly easy for any stock-holder by means of simple calculation to arrange that the balances of items which he knows will be shortly checked are correct. Were the system carried out by means of a surprise verification we could understand its value, but under the present arrangement it seems entirely unnecessary and a waste of establishment.

When in Calcutta we discussed this question of stock-taking and verification at some length with the Senior Controller of Military Supply Accounts. The Controller is in favour of discontinuance of the daily verification of non-expendible articles, the stock-holder being held responsible for deficiencies. He considers that a daily verification of expendible articles, *i.e.* drugs etc., should be carried out as a surprise verification by an officer, namely, the medical storekeeper or his deputy, this verification being so arranged that each item is checked once in three years. The Controller further considers that the annual stock-taking may be abolished, subject to the condition that any balance may be examined and verified at the time of the inspection of the depot by the local auditor. In addition to the above there is a verification which is carried out annually during two days by a senior Indian Medical Service officer, who is deputed specially for this duty. We fail to see the value of this further verification and recommend its immediate abolition.

We must admit that the medical store-keepers are, in the main, opposed to any variation of the present system, but it seems to us that the system of accounts at present in force in medical store depots is very largely the cause of the view that the present system must be continued.

Ledger system.

33. The present system of ledger posting in the depots seems to lead to a great waste of time in the preparation of the ledgers for the quarter during which they are to be used. These ledgers are written in duplicate by means of carbon paper, one of which is sent to the Controller for audit the other being retained in the depot for record purposes. As the circulation of the vouchers for stores being issued takes some time it is frequently a week or more before an issue is recorded in the ledger; even then it is recorded without showing the day on which the stores were actually issued. It is obvious, therefore, that this system of ledger posting renders it practically impossible for a correct balance of any item in the depot to be struck at any given moment. We therefore fail to see how the system of verification and stock-taking to which we have referred above can be of any value when it is impossible to ascertain actual balances.

By the courtesy of the Director, Royal Indian Marine, we were permitted to examine the system of storekeeping and ledger posting in force in the Marine Store Dockyard, Bombay. We append a note by Captain Constable, the marine storekeeper, as to the system there employed (enclosure no. 3), and are of opinion that this should be adapted to the Medical Store Department, retaining its essential features. We understand that this system has now been in force in the marine dockyard for the past year or more, and is about to be introduced into the dockyard at Kidderpore, Calcutta. We think that this would be an opportunity for an experimental trial of the system at the Medical Store Depot in Calcutta, where the storage accommodation available is such as to make it most readily applicable. We admit that the marine system requires special arrangements as regards storage, but with the alterations in the accommodation now in progress at the medical store depots we cannot see that this difficulty is insuperable. We may add that this method of storekeeping and ledger posting was discussed with the Senior Controller of Military Supply Accounts, who expressed himself as being entirely in favour of it.

Cost accounts.

34. The system of cost accounting at present in force in medical store depots appears to be unnecessarily elaborate. This has already been recognised by the Senior Controller of Military Supply Accounts, and he has put forward certain proposals for their simplification. We append a copy of Colonel Hudson's note on this subject (Enclosure no. 4), and are entirely in accord with him, as also we understand the medical storekeepers to be, and recommend that the system advocated therein should be adopted as soon as practicable.

We may add that the medical storekeeper, Madras, has suggested that the only system which would remove the present difficulties in matters of accounts which are experienced by medical storekeepers would be by the introduction of an accounting section detailed by the Senior Controller of Military Supply Accounts, to be attached to manufacturing depots. The inherent difficulties and possibilities of collusion, were such a system to be adopted, are to us so obvious as to make the suggestion not worthy of further consideration.

Percentages added to cost prices in the case of issues to the civil department.

35. In our examination of past budget figures relating to medical store depots we have found that in some years the cost of administration has been reduced or entirely wiped out, and possibly even a surplus realised, owing apparently to large receipts as profit from issues made to civil institutions. This is apparently the result of the present system of adding percentages on an arbitrary basis to the original cost of the articles. While admitting that this arbitrary percentage is necessary for the simplification of accounts, we consider that in practice they would appear to have been fixed at too high a level. We therefore recommend that the whole system of percentages for freight, packing, handling, etc., should be reviewed by the Senior Controller of Military Supply Accounts.

Standing Orders for Medical Store Depots.

36. The manual, Standing Orders for Medical Store Depots in India, has not been revised since 1911. An entire re-compilation is necessary and will best be carried out when decisions have been arrived at regarding the various proposals formulated in this scheme.

Enclosure No. 1.

LETTER NO. P.-44, DATED THE 26TH FEBRUARY, 1918, FROM THE SECRETARY, INDIAN MUNITIONS BOARD, GOVERNMENT OF INDIA, TO ALL LOCAL GOVERNMENTS AND ADMINISTRATIONS.

It has been brought to the notice of the Government of India that a large number of indents necessitating many small purchases are sent to the Director-General of Stores, India Office, London, every year from civil hospitals, medical colleges, Government schools and museums, and similar institutions. Although the demands from these departments are small in total value, they usually consist of many items which, under the present system, have to be purchased piecemeal. Practically all of the indents ask for small quantities of various descriptions of medicines, chemicals, surgical and scientific instruments and apparatus and accessories such as operation gloves, bottles, and specimen jars.

2. With the object of obviating the waste in money and labour involved in such repeated purchases, the Government of India have decided, with the approval of His Majesty's Secretary of State for India, that such medical stores and scientific apparatus as are on the Equipment List required by the institutions in question should, in future, be obtained from the Medical Store Depots at Bombay, Calcutta, Madras, Lahore and Rangoon, at each of which large stocks are maintained which are replenished from the bulk supplies demanded in the consolidated indents of the Medical Department.

3. There is no objection to indents being sent, as before, on the Director-General of Stores in respect of articles of a character not ordinarily stocked in the Medical Depots, but the Government of India will be glad to consider the question of the inclusion in the Equipment List of articles not already in the List for which a continued demand exists.

4. With regard to chemicals and scientific instruments which are of minor importance, or of stereotyped pattern, and which it is not considered desirable to include in the list, I am to invite attention to the resolution of the Government of India in the Indian Munitions Board, No. P.-44, dated the 26th February 1918, which authorises the direct purchase of such articles.

5. I am to request that, with the permission of His Excellency the Governor in Council His Honour the Lieutenant-Governor (in Council), necessary instructions on the subject may be issued to the authorities concerned.

Copy forwarded to the Home Department, with the request that the Director-General, Indian Medical Service, may be instructed to issue the necessary instructions on the subject to the Medical Storekeepers.

Enclosure No. 2.

LIST OF ARTICLES, WHICH WERE PREVIOUS TO THE WAR IMPORTED, NOW BEING MANUFACTURED IN THE GOVERNMENT MEDICAL STORE DEPOTS.

1. Absolute alcohol, from rectified spirit.
2. Aloes preparations, from Indian grown aloes.
3. Amylum B. P. (starch), from rice.
4. Anti-fly spray.
5. Argenti nitras induratus—made from argenti nitras crystals obtained from the Gujrat chemical works.
6. Bamber oil—an insecticide oil.
7. Belladonna preparations, from Indian grown belladonna.
8. Borated talc powder.

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9. Calcium carbonate precipitated, B. P., from calcium chloride and sodium carbonate.
10. Calcium sulphide solution.
11. Citric acid and citrates, from Indian limes.
12. Colloodium flexile—made from cotton, nitric acid, sulphuric acid, Canada balsam and oleum ricini, all of which are made in India.
13. Creta preparata, B. P., from a very pure limestone obtained in the Madras presidency.
14. Digitalis preparations, formerly manufactured from imported leaves, now manufactured from Indian leaves.
15. Electuary, cough (veterinary).
16. Extractum cascaræ sagradæ liquidum, made from pulvis cascaræ sagradæ and alcohol 90 per cent.
17. Extractum glycyrrhizæ liquidum, made from glycyrrhiza radix, Indian grown, and alcohol 90 per cent.
18. Extractum hyoseyami from hyoseyamus leaves obtained from the Government botanical gardens, Saharanpur, and from alcohol, 90 per cent, obtained from the Anmedabad distillery.
19. Ferrous sulphate, from iron filings (foundry waste) and sulphuric acid.
20. Fly oil (veterinary).
21. Keating's powder, an insecticide substitute for.
22. Liquor bismuthi et ammonii citratis—made from bismuth sub-nitrate, potassium citrate, potassium carbonate, nitric acid, and liquor ammoniæ.
23. Lysol, from cresol.
24. Magnesii carbonas levis, B. P., from magnesii sulphas made in India from crude magnesite and sulphuric acid.
25. Mannite, from manna grown in India.
26. N. C. F. powder (made from naphthaline, creosote, and iodoform).
27. Nux vomica preparations, from the Indian seeds.
28. Oleum anethi, from dill seeds.
29. „ crotonis, from croton seeds.
30. „ santali, from sandal wood.
31. „ anisi, from aniseed.
32. „ myristicæ, from nutmegs.
33. „ cedri, from shavings from the Madras Pencil Factory.
34. „ caryophylli, from cloves.
35. „ theobromatis, from cocoa beans.
36. Oxymel scillæ from acetum scillæ and honey, both obtained locally in India.
37. Paper, litmus, prepared from litmus, alcohol 90 per cent, hydrochloric acid and filtering paper; all except litmus are obtained locally.
38. Potassium carbonate, B. P., from nitre obtained as a soil efflorescence in India.
39. Sinclair's glue—a substitute for adhesive plaster.
40. Sapo mollis, B. P., from ground nut oil and caustic potash.
41. Sodium carbonate, B. P., made from soda ash, and used in the preparation of Benedict's solution which now replaces Fehling's solution.

42. Sodium chloride, chemically pure—the magnesium sulphate present is precipitated by barium chloride made from barytes obtained in abundance and in excellent quality in the Madras presidency.

43. Sodium nitrate.

44. Sodium phosphate, calcium phosphate and phosphoric acid, from char dust.

45. Sodii sulphas exsiccatus made from crude sodium sulphate—a bye-product from soda water factories.

46. Syrupus ferri phosphatis co.—made from iron wire, concentrated phosphoric acid precipitated calcium carbonate, potassium bicarbonate, sodium phosphate, coccus, sugar and glucose. The iron wire, calcium carbonate and sugar are obtained locally.

47. Talc, prepared from a suitable steatite obtained in abundance in the Madras presidency.

48. Talcum purificatum—a purified form of French chalk.

49. Tannic acid from divi divi and myrabolams—both Indian grown.

50. Thymol, B. P., from Indian ajwan seeds.

Enclosure No. 3.

NOTE ON METHOD OF STOREKEEPING FOLLOWED IN THE STORE DEPARTMENT, ROYAL INDIAN MARINE DOCKYARD, BOMBAY.

The store is divided into sub-heads, *i.e.* "A" comprises timber, "B" iron-mongery, "C" coal, etc. Each sub-head is in charge of a conductor assisted by a sub-conductor, storehousemen, and store lascars. General.

2. For every article in the Store there is a bin ledger for recording receipts, issues and the balance. Every article has a pattern number allotted to it, and when referring to an article it is usual to quote the pattern number with the full description of the article. The bin ledgers also show the ledger folio number of the main ledger (see remarks against main ledgers). Bin ledgers.

3. These are maintained in the Marine Store Office according to sub-heads by a separate staff named the Ledger Section. To each sheet of the ledger is allotted a folio number. Main ledgers.

4. Stores required by ships and outside Government departments are demanded from the Store Department on indent form in triplicate. Stores required by the manufacturing departments of the dockyard are demanded on demand note form. On receipt indents and demand notes are registered in the Marine Store Office and sent to the conductor concerned for compliance. Simultaneously with the issue of stores the relative indents and demand notes are completed by the conductor with details showing actual quantities issued and the ledger folio number is inserted. Indents and demand notes.

The vouchers are then stamped "Issued" and date of issue shown with conductor's signature. When stores are drawn at Bombay, receipt for them is passed on the indent or demand note by the officer drawing the stores.

The vouchers are then disposed of as follows:—

(a) For stores issued at Bombay.

INDENTS—

Original ...	} To be sent to office	...	} Disposal by conductor.
Duplicate ...		...
Triplicate ...	To be made over to party drawing stores ...		
(1) Original to be sent to the Chief Accountant for rating and transmission to the Controller of Marine Accounts.			} Disposal by office.
(2) Duplicate to be sent to ledger section at once			

(b) For stores despatched to outstations.

- | | | | |
|--|----------------------------|--------------------------|---|
| Original ... | } To be sent to office ... | } Disposal by conductor. | |
| Duplicate ... | | | } Original to be enfaced "Shipping" ... |
| Triplicate ... |  |  |  | To accompany relative package list and sent to shipping section for disposal. |
| (1) Original to be sent to shipping section for entering shipping details. On completion to be sent to Chief Accountant. | } Disposal by office. | | |
| (2) Duplicate to be sent to ledger section at once ... | | | |

DEMAND NOTES—

- | | | |
|---|---|--------------------------|
| Original ... | } To be sent to office ... | } Disposal by conductor. |
| Duplicate ... | | |
| Triplicate ... | To be made over to party drawing stores ... | |
| (1) Original to be sent to ledger section at once ... | } Disposal by office. | |
| (2) Duplicate to be sent to Chief Accountant ... | | |

The copy for the ledger section is on receipt in that section given a serial number. The register of the ledger section also shows for easy reference the number and date allotted to the vouchers when first received in the Marine Store Office. The copy is then passed by the register clerk to the posting clerk. He passes it on to the next man and it travels thus through the section till it comes to the man who has charge of the ledger to which it appertains. It is then posted by him and passed on till it has reached the last posting clerk, each posting clerk initialling the voucher whether it concerns him or not. The voucher is then made over again to the register clerk who files it.

(c) For stores received from England or out stations, made in the Yard for stock, surplus stores returned by manufacturing department or stores returned to store on survey report. A supply note in triplicate is prepared and disposed of as follows :—

- | | | |
|--|--|--------------------------|
| Original ... | } To be sent by receiving conductor to issuing conductor, who will receipt and immediately return the duplicate and triplicate to the receiving conductor who will send up to office the duplicate copy and retain the triplicate. The original to be posted by the issuing conductor and sent to office when completed. | } Disposal by conductor. |
| Duplicate ... | | |
| Triplicate ... | | |
| (1) Original to be sent at once to ledger section. | } Disposal by office. | |
| (2) Duplicate to be filed. | | |

(d) Local orders for stores. These are made out in quintuplicate and disposed of as follows :—

- | | | |
|-------------------|--------------------------------------|-----------------------|
| Original ... | } To be sent to receiving conductor. | } Disposal by office. |
| Duplicate ... | | |
| Quintuplicate ... | | |
| Triplicate ... | To be sent to vendor. | |
| Quadruplicate ... | Retained in office. | |

Original	...	} To be completed by receiving conductor and sent with stores to issuing conductor for receipting and posting. Original and duplicate to be sent to office. Quintuplicate returned to receiving conductor.	} Disposal by conductor.
Duplicate	...		
Quintuplicate	...		
Original	...	} To be attached to vendor's bill.	} Disposal by office.
Duplicate	...			} Sent to ledger section at once.

NOTE:—In all cases of supply note and local orders for the ledger section, the same procedure as regards registering them and posting them as in the case of indents and demand notes is followed.

Enclosure No. 4.

SIMPLIFICATION OF COST ACCOUNTS OF MEDICAL STORE DEPOTS.

The following proposals are offered after an examination of the accounts kept at the depots at Madras and Bombay.

Cutlers' accounts.—There are no cutlers' accounts at Bombay, the repairs being done there by Mr. Eyres. The remarks on the Madras accounts will doubtless apply to Lahore depot also.

2. The cutlers' accounts are hardly worth the trouble bestowed on them. At Madras a permanent clerk is employed all his time in the laboratory and on cutlers' accounts, the latter taking him about a week to complete each month. He maintains separately for the cutlers' accounts:—

- (1) abstract of material,
- (2) non-production account,
- (3) final abstract of material and percentage charges,
- (4) total output statement,
- (5) cost ledger, and
- (6) work order book.

He works out the non-production account to show non-production charges correct to annas and pies; yet the allocation to this account of some charges can only be a rule-of-thumb allocation, e.g., one sixtieth of the medical store-keeper's pay each month is allocated, while amounts are added for superannuation and leave allowances. The other charges, which are worked out more exactly are: (1) pay of head cutler, (2) extra establishment not charged direct, (3) value of stores drawn for shop use—not spare parts of instruments, and (4) depreciation on the value of buildings. These give the non-production charges. The power charges are taken at one-twentieth of the total power charges of the factory.

3. The charges for direct labour are the basis of the cutlers' accounts. An all round rate for the pay of the cutlers is struck. It has long been 2 annas per hour in Madras. The number of hours spent on each job is recorded, and the direct charges are obtained by multiplying the all-round rate by the number of hours the cutlers spent on all jobs. Monthly totals are thus available for (a) direct charges, (b) non-production charges, and (c) power charges.

The clerk then works out figures for his final abstract each month under the following heads for each job separately:—

- (a) direct charges,
- (b) non-production charges,
- (c) power charges, and
- (d) value of materials issued from stock i.e., spare parts of instruments. Here (a)—2 annas multiplied by the number of hours spent by cutlers on the job and (b) and (c) are obtained from

$$\text{the equations } \frac{b}{a} = \frac{B}{A} \text{ and } \frac{c}{a} = \frac{C}{A}.$$

4. The clerk works out (a), (b) and (c) even for military items. This is done that he may be able to check the totals of his final abstract, but in many cases

for no other purpose; no recoveries being made for the numerous military items except when the repairs are done on payment, which items are few. This refinement of accounting is hardly necessary as the total charges for Madras, including those for which no recoveries are effected are only Rs. 200 or 300 a month.

5. The following percentages were added to direct charges for the first six months of 1917-18, after which period the cutlers' shop closed down owing to the move of the depot.

					Percentages added to direct charges:	
					For non-production charges.	For power charges.
1917.						
April	...	...	...	...	69	20
May	...	...	...	...	72	24
June	...	...	...	...	71	24
July	...	...	...	...	65	19
August	...	...	...	...	104	20
September	...	...	...	...	96	10
Average	...	...	...	...	80	20

If therefore the clerk had added, on account of non-production and power charges, 100 per cent to his direct charges for each job, he would have arrived at the same grand total for the six months and his results would have been more consistent; for under the present system he added 84 per cent for a job completed in July, but if the same job had been completed in August he would have added 124 per cent, which is not consistent.

6. Instead therefore of keeping up the present elaborate accounts it would be sufficient to record merely the number of hours spent by each cutler on each job and in the case of Madras to charge 2 annas for each hour so spent. This would give the direct charges; while to charge 4 annas for each hour would cover direct and non-production and power charges. This is probably what a commercial firm would do, except that it would charge at least 8 annas in order to make a profit. The cost of materials should be added when materials are used. No cost should be worked out for military items unless recovery has to be effected.

7. This proposal might be adopted for this year. At the close of 1918-19, and of each future year, the non-production and power charges might be worked out for the year and the ratio which they bear to direct charges examined. If there should be much variation from the results shown in paragraph 5, the controller would determine the percentage to be added to direct charges. The percentage would thus be based on the actual of the previous year. Similarly percentages for 1917-18 and for future years might be worked out for Lahore.

8. If this proposal is adopted all the accounts now maintained may be dispensed with except the non-production account—to include power charges and total output account. The work cards at present maintained for each man should be kept up; they will give the figures required for the "total output."

9. *Laboratory Accounts.*—These occupy one clerk all his time in Bombay and in Madras one clerk for three weeks each month. The depots maintained the following accounts:—

- (1) abstract of material,
- (2) non-production account,
- (3) power cost for month,

- (4) power account,
- (5) machinery account,
- (6) final abstract of labour and material,
- (7) total output,
- (8) cost ledger, and
- (9) work order book.

No. (1) may be dispensed with. It merely shows the total value of materials for each work order, these figures are available in the cost ledger.

10. The non-production account and power account are prepared with the same attention to minutiae as in the case of cutlers' accounts. The former includes: (1) one-third of the pay of the medical storekeeper each month, (2) pay of the superintendent and compounders, (3) value of stores for shop use *e.g.*, cloth, paper, and not drugs, (4) depreciation on buildings, (5) establishment, and (6) superannuation and leave allowances. The total (A) of the non-production charges for a year is calculated. The total output in pounds (B) for the year is also worked out on the system authorised in 1911-1912. The figure $\frac{A}{B}$ to the nearest pie gives the amount to be added on account of non-production charges to the value of one pound of outturn of each medicine, tablet, etc., made up. The total (C) of the power account for the year is also calculated and the figure $\frac{C}{B}$ gives the amount to be added on account of power charges to the value of one pound of outturn of each medicine for which power is used.

11. The prices of medicines made up are entered in the final abstract and other accounts correct to the last pie. The final abstract with typical entries is as follows:—

1	2	3	4	5	6	7
Serial number of work orders.	Work orders.	Amount of outturn.	Value of material.	Non-production charges at Rs. per lb.	Power charges at Rs. per lb.	Total of columns 4, 5 and 6.
		lbs. oz.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
13. Liniment belladonna	500	2,544 12 8	23 7 0	...	2,568 3 8
16. Tinct. scillae	324	32 8 0	15 3 0	...	47 11 0
23. Unguent hydrarg	72	47 3 6	3 6 0	1 2 0	51 11 6

These 3 items are taken from the accounts of the Bombay depot for 1916-17, in which year the rates in columns 5 and 6 were Re. 0-0-9 and Re. 0-0-3 per lb., respectively. The office of the Supply Controller worked out rates of laboratory medicines for its triennial price list of 1917 for Bombay depot from these accounts and the accounts of the two previous years. But that office had to ignore the refinement of these accounts. Thus the stock book rate of belladonna liniment if worked out from item 13 only would have been Rs. 5 per lb. for military and Rs. 5-8-0 for civil institutions, the rules for simplification of stock book rates being adhered to. Hence this refinement in the cost accounts is wasted.

12. Major Marr suggests that power charges should be allocated not only to the work order for which power is used, but over all work orders. He points out that even for work orders for which power is used the present rule acts unfairly; in some jobs very little power is used; for other jobs, the engine may be employed for some days; yet in the accounts these two jobs are treated as if the same amount of power had been used for each. As the total non-production charges for 1916-17 were Rs. 20,327-2-0 and the power charges were only Rs. 3,386-5-1 this proposal will cause only a slight variation of rates, while greatly reducing clerical labour. It would mean for Bombay for that year a

all round addition of 0-0-10 per lb. instead of Re. 0-0-9 for those items where power charges are not now borne and instead of Re. 0-1-0 for those items where power charges are now borne (paragraph 11 above).

13. Thus if Major Marr's proposal were in force the values in column 7 for the 3 typical items given in paragraph 11 would be—

		Rs.	A.	P.	and not	Rs.	A.	P.
Liniment belladonna ...	...	2,570	13	4		2,568	3	8
Tinct. scillae ...	...	49	6	0	„	47	11	0
Unguent hydrarg. ...	...	50	15	6	„	51	11	6

The materials for the first item are much more expensive than those for the second. This and the "poundage system" explain the greater comparative difference in the values of the second item.

14. If the proposal to charge power against all laboratory preparations is adopted the credit entry in the power account "Amount charged direct, etc., etc.," should be altered to "Amount charged against non-production in the non-production account."

The final abstract should be prepared at all depots as it is now prepared at Lahore, *viz.* columns 5, 6 and 7 should not be filled in monthly; at the end of the year a summary in the final abstract should be made of the cost of each separate preparation for the year, columns 5, 6 and 7 being filled in for the summary. As this procedure has been accepted by the medical storekeeper at Lahore, the Controller, Military Supply Accounts, might request the other two depots to follow it. The remaining accounts given in paragraph 9 should be maintained as at present, No. (1) being abolished, see last clause of paragraph 9.

15. Major Marr has made the further suggestion that the military accounts department should revise every year or even half year not only for laboratory supplies but for all medicines supplied by the depot, the "Medicines" section of the price list, which price list is now revised throughout triennially. There should be no difficulty in doing this with the present establishment of the Military Accounts Department. But as the production account is only completed yearly for reasons advocated by Mr. Rawcliffe in 1911, the revision of the "Medicines" Section could not well be done oftener than once a year.

16. These proposals (paragraphs 6, 7, 8, 12, 14 and 15) do not affect the main principle, of cost accounts but only the manner in which these principles have been applied. They will need the sanction of Government.

17. An alternative proposal of Major Marr's is that all supplies to civil institutions, whether made up in the laboratories, or issued as purchased by depots, should be priced at 10 per cent below current local rates. This would admit of a very large profit being made on medicines so large that it would not be necessary to levy departmental charges against civil institutions, which charges often act very unfairly. And it would allow of instruments being sold cheaper by depots than by local dealers, whereas at present instruments are often to be obtained cheaper from the latter. But this proposal is not likely to meet with favour of Government, as it would overthrow the cost accounts system.

ANNEXURE X.

SHORT HISTORY OF THE QUEEN ALEXANDRA'S MILITARY NURSING SERVICE FOR INDIA.

The Queen Alexandra's Military Nursing Service for India was inaugurated in 1888, as the Indian Nursing Service. Prior to this date trained female nurses were not employed in military hospitals in India.

The first batch of English trained nurses, ten in number, arrived in India on the 21st March 1888. Of these, six were located at Rawalpindi and four at Bangalore. During 1890-1 the total number of nurses was increased to 28. The employment of these nurses in India was regarded more or less as an

experiment for the first few years. In 1892-3 the scheme was considered sufficiently successful to have justified its trial and continuance. From 1893 the nursing service was recognized as an integral part of the military medical service. From 1896 it was known as the Indian Army Nursing Service, and the establishment was increased to 52.

The nurses were distributed to the principal station hospitals. Four circles were formed, each containing three or four stations where nurses were employed. Four lady superintendents were appointed in independent charge of these circles, with their headquarters at Rawalpindi, Meerut, Bangalore and Poona. Deputy lady superintendents were appointed in charge at stations where lady superintendents were not located. The staff of nursing sisters allotted to a station varied from two to four. Sisters were not in charge of their own wards. Each took her turn on duty to supervise the general nursing in the one or two special wards where the nursing sisters were employed, so that in each station the sisters had to subordinate their work to one another, and this proved difficult and often unsatisfactory. Such a system required mutual tact and good feeling to carry it through successfully, and this was not always possible. It was a trial to many who had held responsible and independent posts in England.

It was originally intended that the lady nurses should merely superintend the nursing of serious cases concentrated in the special wards. British nursing orderlies, drawn from the local combatant units, were allotted to do the actual nursing with the assistance of Indian ward servants. These orderlies were totally ignorant of the most rudimentary principles of nursing, and the sisters had to work with them in order to instruct them in practical detail and by force of example get them to take an interest in their duties.

About 1902, a committee was appointed to consider the re-organization of the British nursing service. The War Office suggested amalgamation of the British and Indian services, but this proposal was rejected by the Indian authorities.

About a year later the Indian service became the Queen Alexandra's Military Nursing Service for India, and its strength was increased to 91.

There are now in this service 4 lady superintendents and 16 senior nursing sisters, the remaining 71 being known as nursing sisters. One of the lady superintendents is styled Chief Lady Superintendent, and is the recognised advisor of the Director, Medical Services in India, in matters affecting the interior economy and welfare of the nursing service.

Lady nurses are engaged for a term of 5 years. With the permission of the Government of India, and if pronounced by a medical board to be physically fit for further service in India, they may re-engage for a second and third term, and further, if in all respects efficient, and if specially recommended by the Commander-in-Chief, for a fourth term.

ANNEXURE XI.

PROPOSED FUTURE ORGANIZATION OF THE NURSING SERVICES OF THE ARMY IN INDIA.

THE Committee propose that the following changes should be made in the present organization of the nursing services of the army in India:—

- (1) That the present Queen Alexandra's Military Nursing Service for India be abolished and its place taken by the Queen Alexandra's Imperial Military Nursing Service as described below. Members of this service should come to India for tours of duty, as they do in various other parts of the Empire.
- (2) The introduction of Royal Army Medical Corps, other ranks, and eventually the nursing section of the Indian Medical Corps, composed of a skeleton cadre of Royal Army Medical Corps men with members of the domiciled community, as contemplated in our scheme, in British station hospitals.
- (3) The introduction of the nursing section of the Indian Medical Corps into Indian station hospitals.

- (4) The matrons of station family hospitals should possess a certificate in general nursing, in addition to that in midwifery, and should have a competent staff of female nurses under them.
- (5) The whole of these nursing services should be under the supervision of the senior ladies of the Queen Alexandra's Imperial Nursing Service as contemplated below.

The requirements in personnel of the Queen Alexandra's Imperial Military Nursing Service and the functions they should perform, should be as follows :—
 at Army Headquarters—Matron in Chief with an appropriate staff.
 at Command Headquarters—A Principal Matron and staff.
 at Divisional Headquarters—A Senior Matron and staff.

These will form the administrative ranks of the service and should not be engaged in executive nursing duties. They would be responsible for the distribution of the nurses, and the proper control and supervision of the nursing in all the station hospitals, both British and Indian, and station family hospitals in their area of administration.

Each hospital should have its proper proportion of nurses in their various grades, and the matron, or charge sister, as the case may be, should be considered to be the senior nursing official of the station in question. She should maintain the same supervision over all the nursing duties in that particular station as laid down for the ladies of the higher ranks.

The ladies of the nursing service in administrative appointments should be considered to be staff officers of the Director, Deputy Director, or Assistant Director, Medical Services, as the case may be.

It is realised that the abolition of the present Queen Alexandra's Military Nursing Service for India would necessitate some scheme for their disposal, and the following is proposed. Those who are in their second or later tour of service should be permitted to complete the necessary service for pension under their original terms of employment. They would continue to serve in such a grade in the Imperial service as their standing in the Indian service may warrant. In their first tour of service these ladies should, with their consent, be transferred to the Imperial Nursing Service, otherwise their employment should be terminated. Pensions, if admissible, could be arranged for all these latter, proportionately to their length of service in India.

It is considered that members of the Imperial Nursing Service should not be allowed to serve for longer tours than five years in this country, and should not be permitted to return for another tour until after three years' intervening service in the United Kingdom.

Ladies who are appointed to the position of Matron-in-Chief or Principal Matron should have completed one tour in India before such appointment.

The Matron-in-Chief should be selected by the Secretary of State on the recommendation of the Director-General, Army Medical Service, and the lower grades should be deputed to this country by the War Office as demanded by the Secretary of State.

Ladies who have been trained in the general and presidency hospitals in India should be eligible for admission to the Imperial Nursing Service provided that they fulfil the requirements of that service. If admitted they should join in the United Kingdom for duty.

It has been contemplated to place in each first class Indian station hospital a certain number of nurses for the supervision of nursing and training of ward orderlies. It is considered that these ladies should be a branch of the Imperial Nursing Service, and should be entertained for periods of five years under contract. The matron or charge sister of such a hospital should belong to the Imperial Nursing Service, and come under the jurisdiction of the local administrative nursing authority.