evident. In specimens of the quartan and malignant types no dotting of the host-cell is seen; the parasite, however, is quite evident. What the dots actually are and what their cause is, is not known. Schüffner believes them to be either a product, a separated or an effete portion of the parasite, but Maurer maintains these theories are untenable since the dots do not increase in number, but only in size during the growth of the cell and parasite. Moreover broken off and effete portions of the parasite are elsewhere coloured blue, and he thinks the dotting is more probably due to changes in the protoplasm of the cell. Schüffner's dots have at all events nothing at all to do with the "Kernrest" stage, for here usually the parasite lies in a clear space quite at the side, while the dots are seen in the centre of the cell.

In India the stain from its simplicity should be of great assistance in facilitating diagnoses or in saving the laborious microscopical searching of many fields of unstained blood cells. The dyes should be obtainable at any good chemists for a few annas.

THE BODY TEMPERATURE OF THE GOORKHA*

CONSIDERED IN CONNECTION WITH A PREDISPOSITION TO PULMONARY PHTHISIS.

BY N. P. O'G. LALOR, M.B., B.CH.,
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I THINK it is admitted that the normal temperature of the Goorkha Sepoy is lower than that of the European, and lower than that of most of the other native tribes inhabiting this country.

The explanation of this phenomenon ought to be, one would say, a physiological one, attaching the blame to this or that system or function of the body or its parts.

After two months' experience as medical officer of the 43rd Goorkha Rifles, I had satisfied myself that this abnormality of temperature did actually exist in the Goorkha, and I had the good fortune to assure myself of the general truth of this observation by personal reference to a medical officer who had been for some years in medical charge of a Goorkha regiment.

In searching for an explanation physiological considerations at once suggested that an abnormally low body temperature in health must be connected with an abnormality of general tissue metabolism, and especially of muscular metabolism, the great constant source of animal heat.

According to this idea the abnormally low body temperature of the Goorkha would be due especially to an abnormality of muscular metabolism.

Now dextrose forms a distinct and important food of muscle. Considerations which lead to this conclusion are:—1. If artificial circulation be kept up through a living muscle, and dextrose introduced on the arterial side, this dextrose will be found to be almost absent on the venous side (having, therefore, in the course of its circulation, been selected and absorbed by the muscle). 2. If the amount of muscular work done by an individual be measured by a reliable standard, it will be found to be greater when he is taking a diet containing sugar than when he is taking a diet containing none. The following consideration now presented itself. If there be in the Goorkha an abnormality in muscular metabolism, and if it be owing to this that his body temperature is abnormally low, then by administering a fair amount of sugar (a distinct and important food of muscle) to him in his diet, one should be able to raise his body temperature to a level approximating to that which is normal in the European.

With the idea of submitting this theory to a practical test, I asked that six healthy Goorkhas of the detachment of the 44th Goorkhas at Shillong might be placed at my disposal, and this request was very kindly acceded to by the officer in command of the detachment.

The temperatures of these six men were carefully registered morning and evening for eleven days, during the course of which they were ordered to abstain from sugar. This first period was followed by a second of equal duration, during which their temperatures were taken morning and evening as before, but during this period they each received daily about six ounces of country sweets, which they consumed in my presence. This second period was followed by a third of the same length, during which each man's temperature was registered twice daily as before, but the consumption of sugar entirely stopped.

Thus there were three periods in the experiment, each lasting eleven days. During the first, no sugar was administered; during the second, sugar was administered to the extent of about six ounces daily; during the third, the administration of sugar was stopped. The result for all was an average temperature of 97·1F. for the first period, of 97·4F. for the second period, and of 97·2F. for the third period. Not only this, but *in each individual case* the average temperature showed a rise while sugar was being administered, and a fall when the administration was stopped.

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* See note on same subject by Lieut.-Col. H. Hamilton, I.M.S., in *Indian Medical Gazette* for 1900, p. 136.—ED., *I. M. G.*

I had, previous to the experiment, satisfied myself by reference to the men's Medical History Sheets that their health was good. The thermometers employed in the registration of temperature were reliable; temperature was taken in each case in the axilla, and the thermometer left in for a full five minutes on each occasion. The coincidence and identity of the result secure the experiment, as far as I can judge, from fallacy.

I had now arrived at this stage, stated concisely.—

1. There is a constitutional abnormality in the healthy Goorkha, of which his abnormally low body temperature is the expression.

2. This constitutional abnormality is due to an abnormality of metabolism, and most probably of muscular metabolism since:—

(*a*) Physiological considerationss upport the statement

(*b*) The daily administration of sugar to six healthy individual Goorkhas in their diet, diminished in all the amount of abnormality previously found to have existed.

I now turn to the consideration of pulmonary phthisis, in so far as it affects the Goorkha. Amongst men of the 43rd Goorkhas there seemed to me to be an undue prevalence of pulmonary phthisis. I remember to have treated at least eight cases of the disease in hospital during the four months of my incumbency. Again by reference to my senior, I was able to assure myself of the correctness of the above surmise, further strengthened by reference to the hospital records of the regiment for previous years. I made a tabular extract from previous annual returns, and this extract is appended below. It will be seen that bronchitis, acute lobar pneumonia, and acute pleurisy have been included in the table, so that there might appear that absence of relation which exists between these different pulmonary diseases as regards the number of annual admissions for which each is responsible.

STATION.	FOR	ACUTE BRONCHITIS.		ACUTE LOBAR PNEUMONIA.		ACUTE PLEURISY.		PULMONARY PHTHISIS.	
		CASES.	DEATHS.	CASES.	DEATHS.	CASES.	DEATHS.	CASES.	DEATHS
Head-Quarters at Kohima: Detachment at Manipur.	1895	32	*Nil.*	8	1	2	*Nil.*	9	2
Do.	1896	23	*Nil.*	11	3	6	*Nil.*	7	3
Do.	1897	22	*Nil.*	13	Nil.	8	*Nil.*	5	4
Do.	1898	50	*Nil.*	29	3	1	*Nil.*	6	1

I think it will be obvious that not much relation could be said to have subsisted between acute lobar pneumonia and pulmonary phthisis, when one finds the number of admissions for each to have been respectively 8 and 9 in the year 1895, and 29 and 6 in the year 1898.

Bronchitis might be considered as especially a disease brought on by chill, and when the number of annual admissions for this disease are examined, it will be seen that it prevailed habitually amongst the men of the regiment to an unusual extent. Yet again there is an absence of correspondence between the number of admissions for bronchitis and the number of admissions for pulmonary phthisis.

This, it appears to me, at all events clears the ground to the extent necessary to enable one to exclude exposure to chill with its ultimate consequences, as a satisfactory explanation of the prevalence of pulmonary phthisis amongst the men of this regiment. The explanation seemed to lie in some abnormality of system or function in the Goorkha which involved predisposition to tubercular disease of the lung.

In pulmonary phthisis wasting is a prominent clinical feature, and this wasting applies to muscle as well as to fat. The fat of the human body forms a reserve store of energy for the body at large. When it is required for any purpose in the animal economy it has to re-enter the circulation, and this it cannot do in the form of fat. Foster considers that it re-enters the circulation in the form of sugar, and that it is carried in the form of sugar to the tissue or organ requiring the nourishment it supplies. Sugar we have seen to be a distinct and important food of muscle, and if it be administered in the diet of a consumptive patient, it ought not only to act in that capacity, but ought also to lessen the waste of the body's store of fat by satisfying the needs of those tissues or organs, which in its absence would draw upon the body's store of fat for their needs.

There would appear then to be a distinct need for sugar on the part of the animal economy, in the case of a patient suffering from pulmonary phthisis.

There is a disease with which we are well acquainted, *viz.*, diabetes mellitus, in which, were the sufferer also attacked by pulmonary phthisis, the need I have mentioned could not be satisfied, inasmuch as from the nature of the case, the sugar available for the needs of the economy is constantly leaking out more or less rapidly through the kidneys. We should then expect to find in cases of diabetes mellitus a peculiar predisposition to pulmonary phthisis, and we should further expect pulmonary phthisis in such cases to pursue a very rapid course. As a matter of fact both [illegible] of these presumptions are clinically true.

It will now conduce to clearness to sum up the considerations upon which we have been dwelling.—

I. *a.* The Goorkha has an abnormally low body temperature.

b. This is most probably due to an abnormality of muscular metabolism.

c. The abnormality can be reduced by the administration of sugar, which is a distinct and important food of muscle.

II. *a.* The Goorkha is predisposed constitutionally to pulmonary phthisis.

b. In pulmonary phthisis muscular and fatty wasting are prominent clinical features.

c. As far as pulmonary phthisis is concerned muscular and fatty waste may be considered together, inasmuch as one involves the other.

d. In pulmonary phthisis there would seem to be a distinct need for sugar to repair muscular and fatty waste.

The case then stands in this way :—

I. Individuals of a certain race exhibit two defined characteristics.

1. A constitutional abnormality in health.
2. A constitutional tendency to a specific disease.

II. There is a dietetic substance which, administered to such individuals in moderate amount, tends to correct the constitutional abnormality.

III. This dietetic substance seems to be specially called for as an adjunct to treatment, in cases of the specific disease.

In such a case as this, I think the inference is that there exists a relation between constitutional abnormality on the one hand, and predisposition to disease on the other, as far as the individual is concerned.

If these arguments be correct, the continued administration of sugar should be a constitutional prophylactic against pulmonary phthisis not only in the case of the Goorkha, but also in the case of predisposed individuals generally, and the administration of a dietary containing a large amount of sugar should be a valuable adjunct to the treatment of most cases of tubercle of the lung itself: at all events in the early stages of the disease when the digestive powers are still active. I hope later on to be able to add a further contribution concerning the subject of this investigation.

A Mirror of Hospital Practice.

NOTES ON EIGHT CASES OF OVARO-HYSTERECTOMY (PORRO'S OPERATION) PERFORMED IN THE ISHWARI MEMORIAL HOSPITAL, BENARES, DURING THE LAST FIVE YEARS.

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HAVING in view the great prevalence of extreme pelvic distortion among females in India, in part the result of rachitis, but more commonly the result of osteomalacia, the necessity for more frequent resort to the operation of ovaro-hystorectomy seems to me to be urgently needed. The dangers of this operation are, I believe, over-estimated, and the following notes of eight cases performed by me in the Ishwari Memorial Hospital since 1896, in which six mothers and the eight children were saved may prove of interest. In a country in which seclusion of females is carried out to such an extent, it is obvious that the ordinary rules regulating remedial measures in child-birth cannot be followed, and "induction of premature labor" and "turning" are in consequence seldom possible; while in most cases in which the forceps could be applied the child is, as a rule, dead before recourse to hospital is effected. We are, therefore, in cases of great distortion reduced to the consideration of simple Cæsarean section, its modification ovaro-hysterectomy or Porro's operation, laparo-elytrotomy or Thomas' operation and symphysiotomy. Simple Cæsarean section is, outside the larger towns, an operation which should seldom be attempted, as, while fully weighing its one obviously great advantage, yet this advantage is more than counterbalanced by, firstly, its relatively greater danger than Porro's operation, and secondly, the danger of necessity for resort, on future occasions to a similar measure when, perhaps, for various reasons such operation may not be undertaken.

Laparo-elytrotomy or Thomas' operation is one I have no fancy for as it is more difficult than Porro, has not up to the present been as successful, and like simple Cæsarean section may require repetition in any future pregnancy. We have remaining symphysotomy which should be tried in all cases of lesser distortion in which a living child may be extracted through the natural passage, and lastly, the operation under consideration by which both mother and child can be saved and the mother preserved from future similar trouble. Muller's modification of the original Porro has the great advantage in that hæmorrhage can be so easily controlled and