to bed; if, however, there be any complication, such as bubo, condylomata, etc., the patient is kept in bed so long as necessary.

Dress.—The clothes supplied by the hospital consist of a blue serge jacket and skirt, under clothing, shoes, and stockings.

Hospital Hours.—The patients rise at 7 A.M., breakfast at 8, dine at 1 o'clock, have tea at 5, and retire to bed at 8 in winter and 9 in summer.

Diet.—Breakfast consists of bread, six ounces; tea, half a pint. Dinner, of meat (cooked), three ounces; potatoes, half a pound; bread, four ounces; porter, half a pint. Tea consists of bread, six ounces; tea, half a pint. Extras, as wine, beef-tea, eggs, etc., are given at my discretion.

Cleanliness is rigidly enforced. All the women are expected to be properly washed and dressed at 10 A.M. Each has a warm bath once a week, unless there be some special reason to the contrary.

Occupation.—The convalescent patients, in addition to the household work of their wards, do all the needlework required for use throughout the hospital. They wash their own linen weekly; those who are thus employed receiving extra rations. At one time shirt-making was tried, but the work was not performed satisfactorily.

Recreation.—Exercise is allotted to convalescents in the open air for two hours after dinner. For this purpose, an enclosed space adjoining the Lock wing has been set apart.

Allotment of Beds.—When new patients are admitted, care is taken by the nurse to avoid placing intimate friends together in the same ward; experience having shown that mischief or disturbance is seldom planned by a single patient. Young girls are not placed together with hardened characters if it can be otherwise arranged. Patients who express a wish to go to a reformatory are placed by themselves in a separate ward, and are not allowed to mix more than is absolutely necessary with the other women. By this means, moral contamination is as far as possible prevented. I may, perhaps, here mention that, in order to carry out this more fully, I have made arrangements by means of which a ward containing twelve beds will be kept almost entirely for patients who have never been in a Lock Hospital before.

Visits and Examinations.—I make a point of visiting the wards daily, and seeing each patient individually. When I enter a ward, all stand up at their bedsides. I pass from bed to bed; and, after inquiring as to their general health, I prescribe accordingly. Special attention is bestowed upon all bad cases; and, in the event of there being any which require more than ordinary care, such, for example, as troublesome sores, I make a practice of daily dressing them myself. In addition to this, all special cases are seen each evening by the Assistant-Surgeon. All the patients are examined by me twice a week, viz., on Mondays and Thursdays. The examinations are held in a small ward, well lighted by three windows. The head nurse is present to render any assistance; the assistant nurses are in attendance on their respective wards and bring their patients to the door of the examining room. The patients come in one by one, bringing their prescription cards with them. These they hand to me, and then each woman mounts a high table, her feet being placed on a form. If the case be merely one of gonorrhœa, the speculum is used at each examination; but if there be sores, I, as a general rule, pass it only in making my first examination. I need scarcely say that the speculum is invariably used before pronouncing any patient fit for discharge. After each use of the speculum, it is washed in a strong solution of Condy's fluid and warm water. I also wash my hands in another basin, containing Condy's fluid, after each case. When the examination of a patient is concluded, she returns to her ward.

Discharge.—Those that have been discharged are not informed of the fact till the discharge papers are made out. They are then called out of the wards by the nurses, and change the hospital clothes for their own in a waiting room; a nurse being present to see that none of the hospital property is stolen.

Conveyance of Patients to Reformatories, etc.—A woman who has expressed her wish to go to a reformatory is, on her discharge from hospital, conveyed thither by one of the nurses or some other responsible person. If a girl wishes to return to her friends, the same plan is adopted, and we have thus sent patients to Hampshire, Brighton, Halifax, and Ireland. The expenses of their conveyance are defrayed by Government.

Religious Instruction.—The chaplain visits the wards daily and holds prayers therein. He, at the same time, pays especial attention to any young girls who have not become hardened, and to those who have expressed a wish to return to their friends, or to enter a reformatory. On Sundays, Christmas day, and Good Friday, full service with sermon is held in the wards. The women join heartily in the chants, hymns, and responses, and are, as a rule, most attentive.

Discipline.—With regard to the general discipline of the wards, any misconduct is reported to me by the head nurse. If the offence be a

very trivial one, I take no notice of it, provided the patient have already expressed her sorrow to the nurse. If the culprit be obdurate and refuse to conform to the rules, I send for her and speak to her quietly by herself, telling her that I cannot tolerate misconduct, and that in the event of its being repeated, I shall have to punish her by depriving her of her allowance of porter. In most cases the offender expresses her regret, especially if talked to in a kindly way and in homely language. Should she offend again, which is rarely the case, I carry out my previous sentence, notwithstanding any expression of sorrow for her second offence. The more I see of this class of the community, the more am I convinced that any symptom of yielding on my part is put down to fear, and the offender only proceeds to greater lengths of insubordination. When two or three patients in the same ward misbehave themselves, I find it an excellent plan to separate the offenders, and for doing this the construction of our hospital gives us great facilities, as I mentioned before when speaking of the number of our wards. During the two years, I have been obliged on two or three occasions to keep a patient in bed and on low diet for a few days, till the fit of insubordination has passed off. A very good plan, and one which I have occasionally adopted, when several patients in a ward are troublesome, is to inform the whole ward that the next time any complaints are made against that special ward, the porter will be taken off the whole of the patients in that ward; the quiet women do not like to suffer for two or three noisy ones, and they combine together to keep the refractory ones in order. During the two years, twelve patients have been sent to gaol for wanton destruction of hospital property; I am glad, however, to be able to state that we have gone for so long a time as eleven months together without a single case of this sort. To sum up, I may truly say that I have experienced but little difficulty in dealing with this class of patients; and, I am convinced that, if spoken to with kindness and at the same time with firmness, very few will refuse to listen to reason.

I will only add, in conclusion, that in furnishing this account of the working of the Contagious Diseases Act, I have thought it right to confine myself to the simple statement of facts, in preference to drawing any inferences or putting forward any views of my own.

ON "HOSPITALISM."

BY HOLMES COOTE, F.R.C.S.,

Surgeon to St. Bartholomew's Hospital.

THE interesting communication of Sir James Simpson, in the JOURNAL of June 12th, on "Hospitalism", merits the attentive consideration not only of the medical profession, but of the public at large; and if he has not succeeded in establishing all his points, he has at least, by the combined influence of his great name and powerful writing, excited a degree of interest in the matter of hospital statistics which cannot be allayed until the truth is thoroughly established. It is in no captious spirit that I reply, for I yield to no one in admiration of Sir James Simpson's vast experience and ability, or in a feeling of pride at seeing so distinguished a member of our profession taking this active part in a question involving the welfare and recovery of the poorer classes.

I must be permitted to reply in my own way. Sir James asks whether the statistical method of inquiring into the relative safety of amputations and operations in country and in city hospital practice is to be depended upon as a proper means of investigation? and he answers this question in the affirmative, instancing the use of statistics in assurance and annuity companies.

I should take the history of many such companies to shew that in clever hands statistics may be made to prove almost anything; and I might point to the vast sums of money lost by errors in calculation, in some instances accidental, in others intentional. I do not oppose the application of statistics to surgical inquiries; but in order to draw any useful conclusion, I demand to know the circumstances by which each case was surrounded. One surgeon will amputate the thigh in children for disease of the knee-joint twenty times to another surgeon's twice. Suppose they each lost one case, how would the death-rate stand? The first surgeon loses only one case of amputation in every twenty, or only 5 per cent.; the other, one out of two, or 50 per cent. But what would be the proper inference? That he who cuts off twenty limbs to the other's two must either have a most unhealthy hospital, or must be a very indifferent surgeon indeed.

Sir James desires to prove that the death-rate in the London hospitals in limb-amputations is 1 in 3. I answer that in one year I lost only two cases after eighteen severe operations, in order to prove that a very high death-rate was not in any way inseparably connected with the construction of the hospital to which I have the honour to belong. If

the cases are favourable, the atmospheric conditions do not retard recovery. My colleagues and myself have had twenty consecutive operations of lithotomy, *all successful*, the last being done a few days ago by Mr. Holden. I maintain that such a fact is a good answer to the charge that the hospital is unhealthy, as contrasted with rural hospitals, and that the death-rate must of necessity be high. Let us imagine that the next two cases of lithotomy terminate unfavourably, we shall in all human probability find that in each case there has been long-standing disease of the kidneys, and that the patient would have died after operation anywhere. We should not be justified in inferring that in St. Bartholomew's Hospital, as contrasted with some other institution elsewhere, the death-rate after lithotomy was 1 in 11. The only useful inference would be, were the patients sufficiently numerous, that, in cases of vesical calculus, there is disease of the kidney in this proportion, namely, 1 in 11. Now that is a question affecting the relative health of city and rural populations. I grant that, in unities or entities of a doubtful chance, while the result or event in *individual* instances, or small individual group of instances, is ever variable and uncertain, the result or event, when calculated in sufficient *masses* of instances, becomes comparatively certain and invariable; but the conditions of the cases must be similar, and the numbers must be counted not by hundreds, but by hundreds of thousands, in order to approach accuracy.

Between the years 1863 and 1868 inclusive, there have been performed at St. Bartholomew's Hospital 300 limb-amputations of first magnitude, with 99 deaths, or rather less than 1 in 3, as first stated by Sir James Simpson. In private, rural, or provincial practice, of 2,098 country patients, only 226 died, or 1 in every 9.2, or 10.8 in every 100. Might not the conditions under which these operations are performed make a subject of interesting statistical inquiry? and, instead of confining our attention to the death-rate, might we not ask what is the proportion of limbs saved in town and in country practice? It is by no means always the operation which kills the patient, but the shock of the accident, some internal and unknown complication, or the age of the patient; and all surgeons are not alike.

The question whether more cases of injury and disease of the limbs are cured without amputation in hospital practice or in country practice is one which, though often discussed, requires yet further evidence for its settlement. We must all unite to obtain honest and impartial information; and into no hands could it be more safely intrusted for analysis than those of Sir James Simpson.

I do not wish him to imagine that I undervalue the advantages of fresh and uncontaminated air in the management of the sick: all that I affirm is, that large cities cannot do without "palatial hospitals"; that the means of relief must be on the spot; and that such buildings must be in the most crowded spots. Let convalescent homes be attached to such hospitals, but the "working part" must be done in town.

I know of no hospital more charmingly designed, nor more healthily situated, than the detached huts and the long galleries which constituted the British hospital of Renkioi on the Dardanelles. Were it possible to imitate it, I would do so; but it would be found somewhat costly as a continuance, though cheerfully accorded for a time for the relief of those suffering from Crimean exposure and risks. We were alone in a plain, sloping gently to the sea, surrounded by hills of moderate elevation; no village was nearer than four miles; Government sent out supplies; and ships, after touching for a few hours, passed onwards to let out their bilge-water elsewhere; sewers were carried out to sea; the patients, in Her Majesty's service, were of course free from all care. The medical staff were all paid, and, being isolated from the outer world, could turn their attention to elegant pursuits. Life in it was perfect and calm. A wandering Bashi-Bazouk, a shower of rain, or a flight of wild ducks, threw the whole encampment into a flutter of surprise. The life was pleasant, but with something of a tameness in it. It was, in truth, a perfect model, the temperate and genial atmosphere bringing health to the soldiers' shattered frames.

But this pleasant vision would ill supply the wants of London. Although there may be many districts where extensive works are carried on, I doubt whether their casualties can be equal to those of London. In the single hospital of St. Bartholomew's there were received in 1868, according to Mr. Willett's reports, 439 cases of fracture and dislocation, of which 75 were compound—cases, of course, which could ill bear removal to distant places.

In thanking Sir James Simpson, in common, I am sure, with many others, for bringing this subject before public notice, I have only to assure him that I am open to conviction, and willing to learn; also, that I quite well know that there is much in our general hospital system which requires reconsideration and reform.

PROFESSOR HUXLEY'S HUNTERIAN LECTURES ON THE ANATOMY OF THE VERTEBRATA.

Delivered at the Royal College of Surgeons of England.

LECTURE XVII.

IN the adult Frog the Heart consists of a sinus venosus and an auricle, which externally appears single, but is internally divided by a septum into a large right side and a smaller left one. Both these chambers open into the ventricle, which is single, but such a spongy mass as almost to be like erectile tissue. On the right side of the ventricle is the aperture of the aorta, guarded by valves, as also is the auriculo-ventricular aperture. The root of the aorta (bulbus aortæ) is divided by a longitudinal partition, which hangs down freely from the dorsal surface to which it is attached. The anterior end of the bulbus is also furnished with valves; and just behind these, on one side of the partition, is the opening of the pulmonary artery, again protected by valves. The pulmonary artery is short and very wide, so that little resistance is offered to the blood tending to flow into it. The bulbus aortæ opens into the true aorta, which immediately divides into two very short branches. The left branch splits into the left common carotid, and a vessel (the splanchnic artery) which supplies the intestines and gives off a small twig to the great descending aorta. The right branch splits into the right common carotid and the great aorta. The course of the blood entering the common carotids is greatly checked by the retia mirabilia, called carotid glands. That tending to traverse the other arteries just mentioned is slightly delayed by a valve in each gland in a reversed position. It has generally been asserted that the blood received from the auricles is quite mixed in the spongy ventricle; but such is not the case really, for, from the position of the aortic opening in the ventricle, the first blood that enters is that most impure, which came from the right auricle, and (owing to the little resistance offered by the pulmonary artery) thus finds its way direct to the lungs. As soon as these pulmonary vessels are so filled that their resistance becomes greater than that of the systemic vessels, the blood rushes into the latter, pushing the median partition to one side of the bulbus aortæ. This second stream of blood is less impure than the first; but scarcely any, if any, of this finds its way to the head, owing to the resistance offered by the carotid glands. This resistance is only overcome by the third and last portion of the blood in the ventricle—namely, that which is almost entirely derived from the left ventricle, and is, therefore, exceedingly pure. By this singular arrangement, a tolerably complete division of the arterial from the venous blood is effected, without the aid of any ventricular septum. The so-called pulmonary artery is pulmo-cutaneous, as it gives off a great branch to the head and skin. It is owing to this that Frogs can live so long after extirpation of the lungs, breathing by cutaneous respiration. The pulmo-cutaneous artery is, however, really the representative of two aortic arches (the fifth and sixth), which have coalesced; and thus the Frog has truly four aortic arches on each side, and not three.

The Saurapsidan heart is formed upon three distinct types: 1, the Chelonian (common also to Ophidians and most Lacertilia); 2, the Crocodilian; and 3, the Avian.

In the Chelonian heart we have the large right auricle separated from the small left one by a complete septum, which ends below it in two very large valves at the entrance to the single fleshy ventricle. A fleshy fold ascends from the bottom of the ventricle on the right side up towards the auriculo-ventricular opening. This fold is an ingrowth of the front wall of the ventricle. The pulmonary artery and the two aortæ all arise side by side from the right-hand part of the ventricle. The effect of these arrangements is such, that the Turtle, like the Frog, has its ventricle filled with blood which on the right side is almost entirely venous, on the left side (in the so-called *cavum arteriosum*) almost purely arterial, and in the median parts is mixed. In some Lizards (e.g., in *Psammosaurus*), this triple division is so marked that it has been described as having three ventricles. In the Turtle, just as in the Frog, almost pure blood is sent to the head, mixed blood to the trunk, and blood almost entirely venous to the intestine.

In the Crocodile, there is a complete partition dividing the ventricle, and answering, no doubt, to the fleshy fold of the Turtle; so that there are two auricles and two ventricles, and the right and left sides of the heart are completely separated. Moreover, though the pulmonary artery and left aorta still spring from the right side, the right aorta now takes origin from the left ventricle. In this way, purely arterial blood only would find its way into the right aorta, and blood entirely venous