

pany present assembled in the board-room of the Hospital, where refreshment was provided on a most liberal scale, and where several microscopic and photographic objects of great beauty and interest were exhibited, as well as some remarkably fine specimens of crystallised chemical and medicinal preparations.

CHARING-CROSS HOSPITAL.

The Introductory Address, at the Charing-cross Hospital School of Medicine, was delivered by Dr. Chowne, the Lecturer on the Principles and Practice of Medicine; in which the customary topics that constitute an inaugural lecture to Medical students were ably and emphatically dwelt upon, and urged upon the attention of the students present on the occasion by the lecturer. Free scholarships are instituted at this Hospital, and are bestowed upon a limited number of deserving students. Diligence and attention, combined with a good preliminary education, are absolutely necessary in cases where these free scholarships are bestowed.

ST. MARY'S.

The Inaugural Address was delivered by Dr. Alderson, F.R.S., the Senior Physician to the Hospital, and Lecturer at the School of Medicine, which is the only new Medical School opened, for the first time, at the commencement of the present Winter Session. The attendance was very numerous, and the address was very warmly received.

ORIGINAL COMMUNICATIONS.

ARMY MEDICAL REPORTS

No. XX

(SELECTED WITH PERMISSION OF THE DIRECTOR-GENERAL, FROM DOCUMENTS IN THE OFFICE OF THE ARMY MEDICAL DEPARTMENT.)

EXTRACTS FROM A REPORT  
 ON THE TOPOGRAPHY AND DISEASES OF THE  
 TURCO-DANUBIAN PROVINCES.

By DAVID DUMBRECK, M.D.  
 Deputy Inspector-General of Hospitals.

(Continued from page 339.)

PROPHYLAXIS.

1. I should recommend that every man in the army should, in the early part of the autumn, be provided with flannel jackets and drawers, to be worn till the month of May following. The climate, for nine months in the year, with its abrupt and trying transitions from great heat to the most severe cold, requires the adoption of the above suggestion as a measure of the first importance for the preservation of the health of our troops.

2. During seasons and in localities where endemic diseases prevail, I think that soldiers exposed to the evening and morning exhalations from malaria,—productive ground, should have a small ration of diluted spirit medicated with quinine given to them an hour before sun-set and before day-break. A couple of grains of quinine given at such times would exercise a very salutary effect as an antidote. This plan dates from Lind; it obtains in the Navy, and is worthy of serious consideration; for I believe that cinchona has as much an antidotal as a remedial power.

3. In notoriously unhealthy places, the sentries should be changed every hour. This may involve loss of rest, but it will break the force of the pestilential emanations if we can, before the period of continuous exposure to them.

4. The introduction of a good warm hood, as worn in the Turkish army, or where the men are exposed to severe weather, on night duties, would be an admirable addition to the soldier's dress, and would protect him from cold as well as disease. Let us imitate the inhabitants of all classes in these countries, who universally wear this in circumstances where protection is sought from cold and damp. The hood worn by the Turkish soldier will serve a double purpose. Pulled over the men's forage caps, it will save them from the chilling effect of the cold of night, piercing in these climates; and as it has two woollen straps, each a yard long, these brought over and round the neck and mouth, and tied, would form an excellent respirator and sifter of malarious exhalations.

5. Immediately on the occupation of a town or neighbourhood of evil (sanitary) reputation, large fatigue-parties should be at once employed in removing or lessening all patent or suspected causes of disease,—foul ditches should be cleaned, pent-up pools of stagnant water should be given vent to; exuberant vegetation, when not a screen against malaria, should be cut down; the filthy accumulations of mud, ordure, and numberless impurities with which Mussulman towns are polluted, should be removed.

6. Much of the river water in Bulgaria is bad—surcharged with lime; and at some parts of the country—for example, on the large plains stretching from Widdin to the East—water is far from plenty.

For our Hospitals, filters would be desirable, or some substitute for these. Felt, for instance, is used for this purpose in, I think, the Austrian army, when water is unwholesome. Alum, as a means of purifying turbid water, I have just heard of.

In the Turkish army there is attached to each regiment a certain number of men, about twenty-five to a battalion, whose duty it is to provide wholesome water for the soldiers. Each of these men has a horse laden with two immense leathern bags, with a hose at the bottom of each. The duty of these men is to keep the regiment supplied with good water. They bring it to the Hospitals and barracks. On a march they precede the advancing corps or army, and then meet it with water drawn from the purest sources, such as fountains, etc. When an army is encamped, these men still labour at their vocation, bringing good water, filling the receptacles provided for it, and always keeping up an abundant and wholesome supply. Some arrangement of this sort (we cannot do better than imitate the Turk) is wanted with us.

7. Short marches, particularly when troops first take the field. 8. The formation of open fireplaces, or the introduction of stoves into the wards of Hospitals or buildings used as such. The mode of house-heating is most objectionable. The "mangal" is a large dish of live charcoal, and on the introduction of this into the room or ward they are dependent for warmth. Two or three of these things would be insufficient to keep up a proper temperature if ventilation were also cared for, but this is disregarded; the windows are kept closed; large mattings are hung before the doors, and not a breath of air finds admittance; the atmosphere is naturally polluted and unwholesome. They are all stuffy and close, and I think, at Widdin, that the epidemic typhus and dysentery there prevailing were invited to establish themselves by the atmosphere provided and maintained for them by this miserable contrivance. Burning wood in an open fireplace would assist and promote ventilation; this and a good stove would warm the largest ward or barrack-room, and we should escape from the suffocating "mangal" and its consequences.

9. Avoiding, as quarters, towns deep sunk in valleys, where ventilation is obviously wanting. Towns so placed are always unhealthy.

10. In these countries there are scarcely any tables. The Turk eats off a tray placed on a low stool, and he writes on his knee. Each regiment should carry with it a portable operating-table.

[Most—indeed, there is reason to believe all—of these recommendations have been carried into effect.—Ed.]

CHOLERA IN THE MIDDLESEX HOSPITAL.

By ALEX. P. STEWART, M.D.  
 Assistant-Physician to the Hospital.

MANY of your readers are, I doubt not, aware that the Middlesex Hospital has been the receptacle of a very unusual number of the victims of the late epidemic in the Soho district of St. James's parish. Many friends, both Medical and lay, have expressed to me their surprise and regret that no account has yet been given of the remarkable scene which the Hospital presented during the first week of September. Their surprise at the protracted silence of every one connected with the Institution would, I believe, have been even greater than it is had they seen the reality, the report of which would doubtless have "filled the post-horns of all Europe" long ere now, had the scene been laid at Varna or Aladyn, instead of London. That some notice of it has not appeared in "the leading Journal," is not owing to neglect on the part of my colleagues and myself, as we all agreed that an episode so unparalleled, as I suppose, in the more modern history of any of the Metropolitan Hospitals, presented features of some interest, not only to the Medical Profession, but to the public at large. I can but express my regret that the want, on my part, of that distinguished capacity which secures for the

communications of its "own correspondents" an eager perusal by all ranks and classes of the community, should have closed against me the columns of so influential a Journal. As the Hospital has now returned to its usual routine, and the cases of cholera admitted within the week have been comparatively few, I can now furnish you with the complete statistics of the late fearful outbreak, so far as we have had to do with it.

CHOLERA PATIENTS.				
	Recovered.	Died.	Total.	
Before Sept. 1, 1854:				
Males ...	4	5	...	9
Females ...	5	5	...	10
	9	10	...	19
From Sept. 1 to Sept. 30, inclusive:				
Males ...	48	64	...	112
Females ...	49	47	...	96
	97	111	...	208
Total 1854 to Sept. 30:				
Males ...	52	69	...	121
Females ...	54	52	...	106
	106	121	...	227

CHOLERAIC DIARRHOEA.				
In-patients, 1854 to Sept. 30:				
Males ...	18	0	...	18
Females ...	24	0	...	24
	42	0	...	42

DIARRHOEA OF ALL KINDS.				
Out-patients, male and female, from July 1 to Sept. 30, inclusive				
	...	...	...	2010

Thus we have a grand total of 2279 cases of cholera and diarrhoea treated at the Hospital from the beginning of July till the present date. Between one-half and seven-twelfths, or 53.3 per cent. of the cases of well-marked cholera have died; but we have not yet known or heard of a single death from choleraic diarrhoea, though some of the cases were of such severity as to be with difficulty distinguishable from cholera itself. This remarkable fact has naturally excited, in the minds of several with whom I have conversed, a feeling of surprise that deaths from diarrhoea should constitute so considerable an item in the Tables of the Registrar-General, and shows how unsafe it would be to found any special pathological conclusions on these returns, in the absence of more minute details.

The tabular statement I have given brings out pretty clearly the fact of a sudden increase in the number of cholera cases admitted on and after the 1st of September, but tells nothing as to the amount of that increase, or the distribution of the cases over the period referred to; nor does it show the weekly rate of increase and decline of the collateral epidemic of diarrhoea. These points are well brought out in the following Table, which has been constructed from accurate data kindly furnished me by Dr. Corfe and Mr. Sibley. In it, a few cases of choleraic diarrhoea which occurred before July are omitted.

	IN-PATIENTS.				Out-patients with Diarrhoea.
	Males.		Females.		
	Cholera.	Choleraic Diarrhoea.	Cholera.	Choleraic Diarrhoea.	
July 2 to July 8, inclusive	..	..	..	..	5
" 9 " 15, "	..	..	..	..	7
" 16 " 22, "	..	..	..	..	7
" 23 " 29, "	2	2	2	2	42
" 30 Aug. 5, "	2	2	2	2	88
Aug. 6 " 12, "	3	1	2	2	145
" 13 " 19, "	..	3	..	..	299
" 20 " 26, "	1	3	3	3	299
" 27 Sept. 2, "	48	..	29	2	290
Sept. 3 " 9, "	37	2	38	1	465
" 10 " 16, "	13	..	20	..	190
" 17 " 23, "	10	1	7	8	108
" 24 " 30, "	5	..	3	4	125
Total .. ..	121	14	106	24	2010

During the six weeks, then, preceding September, cases of well-marked cholera dropped in at more or less distant intervals, to the number of 19; the male and female admissions, recoveries, and deaths being as nearly as possible equal. On the morning of Friday, the 1st inst., however, the numbers suddenly increased. Above a dozen were admitted in the course of a few hours; and, as it quickly became evident, from the fresh applications that came continually pouring in, that the demand for beds was only beginning, our first care was to discharge as many patients, both Surgical and Medical, as could with any propriety be sent home. Their places were soon filled by patients in all degrees of collapse, who were admitted, to the number of 57, before mid-day of Saturday, the 2nd instant, a very large proportion of these being, on admission, far beyond the reach of remedial skill. Such being the case, it is not wonderful, that of nearly 90 cases admitted during the fifty hours ending at one p.m., on Sunday, the 3rd of September, forty were at that hour already dead. That life, however, was prolonged for two, four, or six hours, in many even of the worst cases, by the warm bath, the mustard emetic, and the counter-irritants used in almost every case, does not admit of reasonable doubt. So rapid was the succession of arrivals, that the Hospital gates were besieged early and late by a crowd of onlookers, at times so dense that a couple of policemen were stationed there to keep the passage clear.

The excess of male cases, regard being had to the natural preponderance of females in the general population, is remarkable; and no age has been exempted from the virulence of this epidemic. Infants and children (of whom an unusual number seem to have been fatally attacked), men and women in their prime, and feeble septuagenarians, were brought, though, strange to say, some walked, considerable distances to the Hospital, blue, cold, shrivelled, and almost or quite pulseless, and were carried up, with scarcely any intermission by night or day, to wards from which, as constantly, lifeless and decomposing bodies were carried down to the already over-crowded dead-house, which presented a spectacle that baffles description.

It is difficult, without appearing to exaggerate, to convey any adequate idea of the state of the wards during the four first days of September, or of the feelings of admiration with which the House Committee and Medical Officers viewed the noble conduct of all those resident in the establishment. While daylight lasted, the sunshine, though it revealed every minute detail, relieved, by its cheerfulness, some of the horrors of the sad and harrowing sight. But, as night closed in, the dim light shed by a solitary burner, and by the pale moonbeams that struggled through the windows, lent a still more ghastly hue to the livid features, the skinny hands, and the deeply-sunk eyes—in general nearly closed, as if in death, but sometimes bloodshot and glaring—of the poor patients, who were screaming in agony or groaning in mortal weakness, on every hand. Add to all this the sobs and shrieks of new-made orphans and widows, and the clank of the shell, as in its ceaseless round it "vexed the drowsy ear of night"—and you have a very feeble representation of a scene before which many a stout heart might have quailed, and by a single glance at which not a few who presented themselves to be engaged as assistant-nurses, were scared away, without so much as entering the wards. Yet hour after hour, and night succeeding day, did all the members of the Hospital staff—Apothecaries and House-Surgeons, Matron and House-Steward, the few pupils who were in town during the College vacation, sisters, nurses, and porters—discharge, without for a moment shrinking from, tasks the most laborious and the most revolting. To understand the whole amount of service rendered by them, and its bearing upon the question of the contagiousness of cholera, it must be borne in mind, that this enormous and unprecedented influx of cases, every one of which required nearly constant attendance, came upon us so unexpectedly, that we were wholly unprovided with the requisite assistance. The whole duties, therefore, overwhelming as they were, from the morning of the 1st till midday of the 2nd of September, fell to be and were discharged by the ordinary staff of the Hospital. To lessen this extraordinary pressure, which, if long continued, must have been attended with disastrous consequences, a large temporary addition was made as quickly as possible to the staff of attendants; and to enable them to bear up under the excessive toil and the many depressing influences to which they were exposed, all, without exception, were at once placed on a very generous diet, which was continued for several weeks. The pleasing result of these measures, and of the admirable ventilation of every part of the building, is, that only two of the inmates have contracted the disease. One of these, after disregarding the premonitory symptoms, which were present for 12 hours before the fatal seizure,

was allowed to pass into a state of hopeless collapse before advice was applied for. The other, who had had severe diarrhoea for eleven days before she made any complaint, is now completely convalescent. I need only add to this narrative, that, as the Dispensary has been open night and day to all comers with diarrhoea, and as all the cases of cholera and choleraic diarrhoea have been at once admitted without letters of recommendation, the cost to the Hospital of the recent outbreak of cholera cannot be less than 300*l.* or 400*l.*,—an expenditure which, I believe, has been mainly rendered necessary, unless I am greatly misinformed, by the unexampled negligence and apathy of the Guardians of the wealthy parish of St. James. Hence my questions of last week, which, I have reason to know, have attracted attention in official quarters, and may be of service in eliciting the truth. On some future occasion, I may trouble you with some further remarks in reference to that ill-fated district, and the history of the epidemic which has rendered it so notorious. I must defer the few general observations which I had intended to make on the treatment of the disease till next week.

ON THE COMMUNICATION OF CHOLERA BY IMPURE THAMES WATER.

By JOHN SNOW, M.D.

I HAVE now completed the inquiry of which I gave some account in a letter published in the *Medical Times and Gazette* of Sept. 2. I have called at every house in which a death from cholera had occurred and been registered during the first seven weeks of the present epidemic, in all the sub-districts to which the supply of the Lambeth Water Company extends. In the cases of persons removed to a workhouse or any other place after the attack, I have extended the inquiry to the house in which the attack commenced. In a few cases the address of persons removed to a workhouse was not known; in a few other instances the individuals were of such an itinerant character that it was impossible to ascertain where the illness might have been contracted. These cases are placed, with a few others which could not be found, in the column of the accompanying table for deaths where the water supply was not ascertained.

There were very few instances in which I could at once get the information I required. Even when the water rates are paid by the residents, they can seldom remember the name of the Water Company till they have looked for the receipt. In the case of working people who pay weekly rents, the rates are invariably paid by the landlord or his agent, who often lives at a distance, and the residents know nothing about the matter. It would, therefore, have been impossible for me to complete the inquiry if I had not found that I could distinguish the water of the two Companies with perfect certainty by a chemical test. The test I used is founded on the great difference in the quantity of chloride of sodium contained in the two kinds of water. On adding solution of nitrate of silver to a gallon of the water of the Lambeth Company, obtained at Thames Ditton, beyond the reach of the sewage of London, only 2.28 grains of chloride of silver are obtained, indicating the presence of .95 grains of chloride of sodium in the water. On treating the water of the Southwark and Vauxhall Company in the same manner, 91 grains of chloride of silver are obtained, showing the presence of 37.9 grains of common salt per gallon. Indeed, the difference in appearance on adding nitrate of silver to the two kinds of water is so great, that they can be at once distinguished without any further trouble. This test is not liable to any fallacy. The Lambeth water may become impure by remaining in a butt without cover, but the quantity of chlorides is not increased; and, on the other hand, the water of the Southwark Company may become perfectly free from organic impurity by spontaneous putrefaction, but the quantity of chloride of sodium remains unaltered. The common salt is, I believe, part of that which has passed through the kidneys and bowels of the two millions and a-quarter of inhabitants of London. I do not, of course, attribute any ill effects to this common salt, and I found it of great use in conducting the inquiry. When the resident could not give clear and conclusive evidence about the Water Company, I obtained some of the water in a small phial, and wrote the address on the cover, when I could examine it after coming home.

The number of deaths from cholera down to August 26, in the sub-districts which are partly supplied by the Lambeth Water Company, was 642. Of these I found that the water supplied to the house in which the attack took place was, in 509 instances, that of the Southwark and Vauxhall Water Company; in 93 cases it was that of the Lambeth Company; and in the remaining

40 instances it was from other sources, or the supply was not ascertained.

I hope shortly to learn the number of houses in each sub-district supplied by each of the Water Companies respectively, when the effect of the impure water in propagating cholera will be shown in a very striking manner, and with great detail. In the mean time, in order to be able to compare the mortality from cholera among the customers of each Company, with the entire number of houses supplied by each of them respectively, I thought it desirable to extend the inquiry to Rotherhithe, Bermondsey, Camberwell, and certain parts of Southwark, which are supplied by the Southwark and Vauxhall Company alone. I was unable by myself to execute this part of the inquiry before the commencement of the winter session, but I was fortunate enough to obtain the assistance of a medical man, Mr. John Joseph Whiting, L. A. C., who took great pains with this part of the inquiry. The inquiry thus extended reached over the whole of the districts on the south side of the Thames, except those of Greenwich and Lewisham. As regards most of the sub-districts, to which the water of the Lambeth Company does not extend, the personal inquiry reached only to the first four weeks of the epidemic, viz., to August 5, and the remaining cases are calculated to have been supplied by the Company, or to have obtained water from ditches, etc., in the same proportions as those occurring previously. The sub-districts in which the numbers are partly made up by calculation, are marked with an asterisk in the accompanying table.

DISTRICTS AND SUB-DISTRICTS.	Population in 1851.	Deaths from Cholera in the Seven Weeks ending August 26.	Supply of Water in the House of Attack.					Not ascertained.
			Southwark and Vauxhall.	Lambeth.	Pump-wells & Springs.	River Thames, Ditches, &c.		
ST. SAVIOUR, SOUTHWARK.								
Christchurch .. .. .	16,022	25	11	13	..	..	1	..
*St. Saviour .. .. .	19,709	125	115	..	..	10	..	..
ST. OLAVE, SOUTHWARK.								
*St. Olave .. .. .	8,015	53	44	..	..	3	6	..
*St. John, Horsleydown ..	11,360	51	46	..	..	3	2	..
BERMONDSEY.								
*St. James .. .. .	18,809	123	102	..	..	21	..	..
*St. Mary Magdalen .. ..	13,934	87	83	..	..	4	..	..
*Leather Market .. .. .	15,295	81	81	..	..	..	..	..
ST. GEORGE, SOUTHWARK.								
Kent-road .. .. .	18,126	57	52	5	..	..	..	..
Borough-road .. .. .	15,862	71	61	7	..	..	3	..
London-road .. .. .	17,836	29	21	8	..	..	..	..
NEWINGTON.								
Trinity .. .. .	20,922	58	52	6	..	..	..	..
St. Peter, Walworth .. ..	29,861	90	84	4	..	..	2	..
St. Mary .. .. .	14,033	21	19	1	1	..	..	..
LAMBETH.								
Waterloo-road, 1st. .. ..	14,088	10	8	2	..	..	..	..
Waterloo-road, 2nd. .. ..	18,348	36	25	8	1	2	..	..
Lambeth Church, 1st. .. ..	18,409	18	6	9	..	1	2	..
Lambeth Church, 2nd. .. ..	26,784	53	34	13	1	..	5	..
Kennington, 1st. .. .. .	24,261	71	63	5	3	..	..	..
Kennington, 2nd. .. .. .	18,848	38	34	3	1	..	..	..
Brixton .. .. .	14,610	9	5	2	..	..	2	..
Norwood .. .. .	3,977	8	..	2	1	5	..	..
WANDSWORTH.								
*Clapham .. .. .	16,290	24	19	..	5	..	..	..
*Battersea .. .. .	10,560	54	36	..	4	8	6	..
*Wandsworth .. .. .	9,611	11	3	..	2	6	..	..
Putney .. .. .	5,280	1	..	..	..	..	1	..
Streatham .. .. .	9,023	6	..	1	5	..	..	..
CAMBERWELL.								
Dulwich .. .. .	1,632	..	..	..	..	..	..	..
*Camberwell .. .. .	17,742	96	72	..	24	..	..	..
*Peckham .. .. .	19,444	59	45	..	..	..	14	..
St. George .. .. .	15,849	42	34	4	..	..	4	..
ROTHERHITHE.								
*Rotherhithe .. .. .	17,805	103	69	..	..	34	..	..
Total .. .. .	482,485	1,510	1,224	93	48	97	48	..

In the instances placed in the column for pump-wells and springs the houses were not supplied by either Water Company. There are a few houses in the suburbs which have a pump-well in addition to the Water Company's supply, but I have not indicated this in the table. I shall, however, state the circumstance in the list of deaths from cholera, which I intend to have reprinted from the Weekly Returns of the Registrar-General. The cases in which water was obtained direct from the Thames by pailsful, or from the river Wandle, the Surrey Canal, or ditches, are included in a separate column.

The accompanying table shows that, during the first seven