AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF PUBLIC MEDICINE,

*At the Annual Meeting of the British Medical Association
held in Dublin, August, 1887.*By SIR THOMAS CRAWFORD, M.D., K.C.B.,
Director-General of the Army Medical Department.

DEVOLUTION AND EVOLUTION.

As requested by the Association, I abstain from inflicting on you a formal address. Permit me to thank my friends in Dublin at whose suggestion the Council of the Association have nominated me President of this Section. I accept the compliment as paid to the position I hold as head of an important public service by which State Medicine, in the widest sense of that somewhat indefinite term, is carefully studied and practised.

The science of public health is rapidly assuming its proper position in the curriculum of medical education; and although the General Council of Medical Education has not yet, so far as I know, laid down any standard of qualification for registration, the fact that diplomas in sanitary science, public health, State medicine, etc., must sooner or later be recognised as one of the necessary qualifications of medical men is sufficiently obvious.

The present and the future of State Medicine have been so recently and so ably discussed by our esteemed Secretary in an address to the Academy of Medicine in Ireland, that I need say but little on that subject. I concur fully with Dr. Moore in thinking it very desirable not only that we should have uniformity of title in the registrable qualifications under this head, but that the curriculum of study and the scope of the examinations intended to test the standard of knowledge required should be carefully laid down.

Of the subjects usually embraced in the term public medicine there are three—law, engineering, and medical jurisprudence, which are so mixed up with other branches of human knowledge that they may be left to specialists as highly important and interesting, but as hardly within the requirements of the ordinary medical man. What we, as the constituted health guardians of the public, require, is a fair knowledge of those conditions which favour the full development of the human race, and keep it in health and vigour for the longest possible period, and an equally clear perception of those hostile influences which act injuriously on health, and thus tend to shorten life.

The most important elements of such knowledge group themselves round the etiology of disease which lies at the very door of sanitary science. Without a clear comprehension of the factors that produce disease in the individual, attempts at prevention must be, what a great deal of our so-called preventive medicine is, merely guesswork.

But the etiology of disease in man has always formed an important part of medical education, why then put it forward as a speciality? Our knowledge of deviations from the health-standard in man falls far short of what is really required. A careful investigation of all the conditions under which life is presented to us, including the whole range of so-called comparative physiology, is essential. When we approach the investigation of those deviations from health which eventually destroy life, our education as medical men is narrowed down to human pathology.

Now the various orders of animated nature are so interdependent in regard to the causation and spread of disease, that it appears unwise to limit our pathological investigation to any one family or class. The diseases of men are not infrequently traceable to the lower animals, and through them, or even without them, to the vegetable kingdom. Our knowledge of pathology should therefore harmonise with that of physiology. Recent investigations into the origin and spread of scarlatina sufficiently illustrate this point. Careful study of comparative pathology as well as of comparative physiology is therefore a necessity for all who desire to master the very rudiments of public medicine.

Again, the now familiar doctrine of evolution has thrown so much light on the hitherto ill-understood laws of development, that we are prone to forget the process of *devolution* or degradation which should have a greater attraction for students of public health than it has.

It is by no means unusual in these latter days to hear the champions of sanitary science boast, and justly boast, of the perceptible prolongation of life which has been secured to the race through the beneficial effects of improved sanitary arrangements. This has been made sufficiently clear by the numerous able popular addresses de-

livered by the members of public health organisations in the great centres of population throughout these kingdoms during the last ten years; to this must also be added the valuable oral and practical instruction given in the Parkes Museum, Margaret Street, London, an institution of great value, but one that is too little known, and is, in consequence, permitted to languish for want of that support from the public to which it is so justly entitled. But while admitting all the good thus done, there is evidence of perceptible deterioration or degradation of type in the lower orders of the people, and it is to this point that I desire to draw your special attention during the few minutes still remaining to me.

I have here an analysis of the results of 32,324 examinations of men made by army surgeons from 1860 to 1864 inclusive, from which it appears that during these years, in which the number of men required for the army averaged 6,465, and permitted, therefore, a stricter investigation of physical fitness both by recruiters and surgeons, the rejections from all causes were only 371.67 per 1,000; while out of 132,563 men examined between 1882-1886 inclusive, the rejections were 415.58 per 1,000. A careful examination of these tables leads to the inference that the lower classes, from whom the recruits for the army are chiefly taken, are of an inferior physique now to what they were twenty-five years ago.

Causes of Rejections, in Classes.	1860-64.		1882-86.	
	Total Examined 86,969.	Ratio per 1,000 Rejected.	Total Examined 318,981.	Ratio per 1,000 Rejected.
	Total Number Rejected.		Total Number Rejected.	
1. Syphilis.. .. .	1,008	11.59	3,096	9.70
2. Scrofula.. .. .	917	10.54	1,023	3.21
3. Phthisis	371	4.26	810	2.54
4. Impaired Constitution	2,042	23.48	2,175	6.82
5. Other General Diseases	331	3.80	1,246	3.91
6. Diseases of Nervous System	53	0.61	448	1.40
7. Weakness of Intellect	126	1.45	739	2.32
8. Defective Vision .. .. .	.. .. .	.. .. .	12,460	39.06
9. Diseases of Eyes and Eyelids	3,150	36.22	913	2.86
10. Diseases of Nose and Mouth	135	1.55	199	0.62
11. Disease of Ears	155	1.78	202	0.63
12. Deafness	111	1.28	370	1.16
13. Impediment of Speech	105	1.21	502	1.57
14. Disease of Heart	1,450	16.67	5,984	18.76
15. Disease of Arteries (Aneurysm)	47	0.54	242	0.76
16. Disease of Veins (Varix)	3,361	38.65	5,483	17.19
17. Disease of Lungs (except Phthisis)	245	2.82	559	1.75
18. Loss or Decay of Many Teeth	1,140	13.11	2,975	9.33
19. Hernia	1,049	12.06	2,476	7.76
20. Laxity of Abdominal Rings	882	10.14	628	1.97
21. Hemorrhoids	331	3.81	664	2.08
22. Diseases of the Urinary Organs	47	0.54	329	1.03
23. Varicocele	2,227	25.61	5,462	17.12
24. Other Diseases of the Genital Organs (not Syphilitic)	528	6.07	589	1.85
25. Defects of Upper Extremities from Fracture, Contraction, Luxation, etc	862	9.91	1,933	6.06
26. Defects of Lower Extremities from Fracture, Contraction, Luxation, etc	3,040	34.95	4,087	12.81
27. Flat Feet .. .. .	.. .. .	.. .. .	2,969	9.31
28. Diseases of Joints	191	2.20	854	2.68
29. Other Affections of Bones and Muscles	156	1.79	847	2.65
30. Ulcers, Wounds, and Cicatrices	992	11.41	1,036	3.25
31. Other Affections of Cutaneous System	512	5.89	1,280	4.01
32. Malformation of Ears	6	0.07	66	0.21
33. Malformation of Nose and Mouth	27	0.31	95	0.30
34. Malformation of Chest and Spine	533	6.19	2,959	9.27
35. Malformation of Urinary or Genital Organs	69	0.79	146	0.46
36. Marks of Punishment, or of letter D, or B.C.	319	3.67	29	0.09
37. Under Height	18	0.21	9,154	28.70
38. Under Chest Measurement	2,885	33.17	38,282	120.02
39. Under Weight (Muscular Tenuity and Debility)	2,896	33.30	14,696	46.07
40. Apparent Age not in accordance with General Order	2	0.02	3,862	12.11
41. Not likely to become an efficient soldier .. .. .	.. .. .	.. .. .	647	2.03
42. Over Height .. .. .	.. .. .	.. .. .	35	0.11
Not stated .. .. .	.. .. .	.. .. .	12	0.04
Total Rejected	32,324	371.67	132,563	415.58

In seeking for an explanation of this apparent deterioration, I have been forcibly impressed with the fact that the recruits drawn from town-bred populations give by far the larger proportion of rejections, while the causes of rejection among this class usually indicate a decidedly inferior physique. The inferiority is shown by the difference in weight between town- and country-bred recruits, as well as by the greater frequency of rejection for want of sufficient capacity of chest, loss and decay of teeth, and diminutive stature. There are other points in these tables which lead to the inference that neither the process of evolution nor the law of the survival of the fittest appears to have the effect of improving the physique of the lower orders of these kingdoms; let us see whether we can find the causes.

The last fifty years have produced striking changes in the relative proportions of the rural and urban populations. Commercial development and the growth of manufacturing industries in certain localities have drawn rapidly augmenting numbers of the rural population into the towns, while the splendid field for individual enterprise, opened up throughout our vast colonial empire during the same period, has deprived both town and country of the very cream of their population.

The physically fit preferring the prospects offered by a new world left the less robust and vigorous to struggle on at home. Emigration is a necessity of our rapidly increasing populations, but can it be regulated so as to secure for the mother country a fair proportion of the strong and healthy, while lessening the strain on patriotism by the disruption of the family tie?

But migration from the country to the over-crowded slums of great towns is by no means a necessity in the same sense. Here the people have the remedy in their own hands. A land settlement, which would give to agriculture the fair play it so much needs, by putting it on a footing of equality with other food-producing countries, would do much to cover these fair islands with a physically vigorous population, which is, after all, the life of a nation.

There are other means of improving the physique of the people that must not be overlooked by the sanitarian. Of all the ready methods of measuring the health standard of a people, I know none on which reliance can be more safely placed than on the number of those whose vision is impaired. Wherever overcrowding is permitted, where filth abounds, where personal cleanliness is an unacknowledged virtue, there you will find the factors of this particular form of human suffering. Judged by this standard, the sanitary condition of the lower orders is far from satisfactory.

In the table to which reference has already been made you will find the rejections for defective vision and diseases of the eye very high, nearly 42 per 1000, exclusive of all those whose defects of vision are so obvious as to attract the notice of the recruiter, and who would be thus excluded.

Our experience in the army throws some light on this point. There is a peculiar form of ophthalmia which, whether you meet with it in military or in civil life, in the bazaars of Cairo or in the cabins of Connemara, in the big school or in the convict prison, is mainly caused by the vitiated atmosphere arising from overcrowding. It is characterized in its initial stage by the presence of little "sago-grain" granules in the inside of the eyelid, and its existence offers a delicate test of the sanitary, or rather insanitary, state of the community among whom it occurs. You can, so to speak, manufacture this form of ophthalmia among the lower animals as well as among men, and still more readily among children, by subjecting them to unhealthy influences of which foul air from overcrowding is the most potent. In the early part of this century and even later the amount of inefficiency and invaliding in the army caused by this affection was very considerable. Go where you would you encountered it. You saw unfortunate invalid soldiers guiding their steps with the aid of a stick through streets and alleys. The knit brow, the watery eyes, and shuffling gait proclaimed the disease. Of late years it has dwindled away and this scourge may be practically said to have been altogether banished by the sanitary improvements that have been introduced into our barracks. It is, to my mind, the most striking illustration of what these measures can accomplish, and there is no longer any excuse for the existence of a disease which renders so many helpless, and adds proportionately to the nation's burdens.

As with the blind so with the insane. What are the causes that produce the very large class of sufferers included under this head in the numerous hospitals and asylums throughout these kingdoms, and at what a cost to the taxpayer? I may be told these causes are moral, lying beyond the proper sphere of the sanitary officer; but is this really so? The old Latin phrase "*mens sana in corpore sano*" is, I maintain, well rendered in the "*omnia sanitas*" of a statesman of our own times.

We must look to improved personal hygiene, especially during the training of the young, if we desire to see all classes of bread-winners so reared that they may enter upon the struggles of life both mentally and physically fit. And if this be so with the bread-winners, is it not still more necessary in regard to the genesis of the future race?

The habits of the people, too, have a very marked effect upon the development or deterioration of the species. Look at the effects of physical culture as seen in the upper and middle classes of England at the present time, where every well regulated school has its gymnasium, every village its cricket ground, and every house its lawn-tennis courts; and compare the young men and young women to be seen there with the dwarfed specimens of humanity in the overcrowded slums of our large towns. The results of such a contrast will convince the most sceptical, not only of the value, but also of the necessity of educating public opinion on this most important subject.

I remember when stationed in Manchester with the King's Own Light Infantry some 33 years ago, being much struck with the diminutive stature of the people generally, and on questioning a brother officer of local knowledge and experience as to the cause, I received for reply, "Gin and tobacco—and if the consumption of these and other similar articles become still more general than it is at present, the result must be a marked physical degeneration of the race." The figures before you leave little doubt on this point.

I have in these somewhat desultory remarks avoided earth, air, and water, not because I think the subjects either unimportant or already exhausted. The purity of these "elements" of the Ancients is a matter of vital importance, as is also the sanitary state of the dwellings of the people and the equally important subject of sewerage and drainage in general. But time will not admit of more than a passing allusion to these. I cannot conclude, however, without adverting briefly to the subject of contagious diseases and the principle of isolation now so generally insisted upon by sanitarians.

Do the so-called filth-diseases, many of which are said to be contagious, really require isolation, and are we justified in calling upon the State to insist upon due provision being made for such isolation? In my judgment it is the filth that should be isolated; and not the unfortunate sufferers from filthy environments. And here I see a pressing need for clearer views regarding causation. Let this point be once determined, and much of the difficulty of dealing with so-called contagious diseases will have vanished. In certain diseases depending on a known specific poison, the laws governing the multiplication of such poison, the conditions under which it can retain its infectivity, the pabulum, so to speak, on which it lives, and the vehicles by which it is distributed, all demand more attention than they have received. When all existing doubts have been removed, and when we are able to say unhesitatingly here is a case in which neither disinfectants nor the utmost attention to cleanliness will safeguard the healthy if brought into contact with the sick, the consent of the people to enforced isolation will no longer be withheld, and I may add that the number of cases requiring removal for purposes of isolation will be fewer than is generally supposed.

As regards the question of epidemics, properly so called, we can hardly hope to meet the requirements of the case by any system of isolation. Quarantine in such cases is not only a waste of time, money, and energy, it is also a cause of much unnecessary suffering to the sick and danger to the healthy. But, to quote Miss Nightingale, "Does not the protection of life and property from preventable epidemics rank next to protection of life and property from criminals as a responsibility of Government, if indeed it is not even higher in importance; for since the world began, criminals have not apparently destroyed more life and property than do epidemics every year?"

For these and other reasons, the laws of epidemics demand careful investigation, and this will bring into clearer light another of Miss Nightingale's aphorisms: "All that we want is collective cleanliness carried out collectively with the least possible annoyance and the greatest possible advantages to individuals."

DONATIONS AND BEQUESTS—"A Lady" has given £1,200 to the Charing Cross Hospital, being the entire cost of the new accident ward, in memory of her husband, who was a governor of the hospital. —The proprietors of *The People's Friend* have given £128 10s. to the Glasgow Hospital for Sick Children, being the entire proceeds (in addition to defraying the whole of the expenses) of a National Wild Flower Exhibition in the Waterloo Rooms.—Mr. Richard Hurst, of Rochdale, has given £100 to the Royal Albert Hospital for Idiots and Imbeciles of the Northern Counties.—The Great Northern Central Hospital has received £56 9s. 9d. towards the building fund from Mr. Courtney Page, being the surplus of the Hornsey Jubilee Festival.