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ETS

HOSPITAL SERVICE

OF THE

FRENCH ARMY IN THE EAST.

(*Translated from the* MONITEUR DE L'ARMÉE *of the 20th of October.*)

THE *Journal des Debats*, quoting the correspondents of English newspapers, gave us two days back a painfully interesting narrative of the sufferings to which the wounded in Lord Raglan's army had been subjected, as well as the wounded Russians entrusted to the care of that army. When we recollect the attention that is bestowed by our neighbours on the other side of the channel, upon every necessity of the soldier, and even on superfluities for his comfort (*confort*), it is impossible to deny that the serious inconveniences pointed out in the accounts that have just been made public, are the results of an improperly adjusted financial arrangement, or of a negligence that painfully contrasts with that liberality which is the characteristic of the English administration of the affairs of the army and navy.

On the other hand, but a few months since, the organiza-

tion of the English medical and hospital service, was cited as a model for our imitation: our attention was especially directed to the fact that the English military surgeons had complete control over everything that related to the supplies and to the administration of their hospitals, and that as a consequence all would go on admirably well; and persons were not wanting who wished, when the question of re-organizing our medical staff was raised, that we should adopt this plan, so perfect, and so precise in its workings.

If affairs are really so well ordered in England, and if the reports that have arrived from the East are correct, we are forced to come to the conclusion that the English medical pre-arrangements were insufficient, not only in respect to the staff attached to the army, but also in regard to dressings, and to the material, and means of transport. In short, what would have been the result if a sudden hurricane had arisen, and separated the English even for a short time from their ships; if, in the absence of litters, the brave sailors had not been present to offer their oars; and if, moreover, their wounded countrymen had not found on the decks of these vessels an asylum, and some attention, though, as we see in the accounts of the overcrowding of the wounded, very incomplete!

It is consoling to the relatives of the brave soldiers of France, to find by the side of this recital of the sufferings which have weighed so cruelly upon the English army, evidence of the active and intelligent care which has preserved our own wounded. Thanks to the admirable organization of ambulances and hospitals in the medical service

amongst our troops, no sooner does a man struck in the ranks fall, than he is carried to the rear, where the regimental medical officer (*officier de santé regimentale*) pays the first attention to his wounds by the aid of the dressings which are at hand in charge of a soldier. If it is a severe wound, the sufferer is led or carried to the provisional post, where the chests of the regimental ambulance are established, and, if necessary, to the ambulance of the division. A sufficient number of attendant soldiers (*soldats infirmiers*), of seats (*cacolets*) fixed on pack-saddles borne by mules, are always in readiness to carry the wounded from the field of battle, and convey them to this ambulance, under the immediate direction of the officers of administration entrusted with that duty, and under the active *surveillance* of the deputy military intendant, in whose hands this important part of the duties of the administrative service is placed.

The English surgeons, it would appear, do not sufficiently appreciate the advantages presented by this plan of removing and transporting the wounded. They prefer to *cacolets*, which have answered so admirably in Africa, and which are at this moment doing such good service in the East, a species of ambulance waggon, upon which the London press, some few months since, delivered a pompous eulogy. We have seen a coloured plan of this carriage, and we are far from allowing it the merit which has generally been attributed to it.

The front part, divided from the rest like the *coupé* of our public conveyances, holds three sick men * who are capable of

* This is a mistake; the front part holds six, instead of three men.

sitting upright, but the seats are placed sideways, as in omnibuses. The back part of the waggon is arranged for the reception of four sick or wounded men, who are laid horizontally on frames made to slide in like drawers: two being placed at the bottom of the carriage, and the two others above, an arrangement similar to the berths in steam-boats.

This painful method * of transporting the sick soldier presents a number of inconveniences, especially for those placed in the lower frames. Moreover, the waggon cannot turn in every direction with the same facility as our pack-saddle mules; and thus the latter are infinitely superior in the field of battle, and also in a mountainous country, or in one which is difficult of access.

In our army, when it is required to transport such of the sick as a horizontal position is necessary to, litters are employed, which are also carried by mules. For the discharge of the sick and wounded from the provisional ambulance into

* It is very evident that the writer of this article had never seen the waggon which he professes to describe with so much accuracy, or he would not have used the expression "*painful method.*" All means which human ingenuity could devise were employed, in order to obtain an easy motion; and it was acknowledged by all those persons who subjected themselves to the experiment of being conveyed in the waggons that Mr. Holmes, the well-known carriage-builder, had been eminently successful in his efforts.

The writer also shows that he was unacquainted with the construction and capabilities of the vehicle, when, in the next paragraph, he gives it to be understood, at least by implication, that the wounded transported therein will be denied the benefit of pure air and daylight—an impossibility, inasmuch as each compartment is fitted with a Venetian shutter, extending its entire length, so that the interior may be aired and lighted to any extent that is considered desirable.

a regular hospital, our military waggons (*caissons*), hung on springs, are employed, with still more success than the English vehicle; for in ours, the sick soldier has at least the benefit of pure air and daylight.

We have said that at all times the attendant soldiers (*soldats infirmiers*) remove the wounded from the field of battle under the direction of the officers of administration for the hospital service, and under the *surveillance* of the deputy military intendants; and we think that a few more special particulars on this important subject will not be out of place here.

In our army, the surgeons are not required to burden themselves with any care relative to the organization and administration of the material of the hospitals and ambulances. Devoted entirely to the exercise of their noble calling, they practise it with a power the most supreme. The dispenser is at their side, ready to make up their pharmaceutical prescriptions; the officer of administration directs the employment of the material, and carries out alimentary prescriptions, of which he bears the responsibility.

The *infirmiers* (attendants), selected from the best-intentioned men amongst the troops, or from the young soldiers of the annual contingent, previously instructed in the military hospitals in all the duties of the holy mission which is entrusted to them, are all men of intelligence and feeling, all robust and well-framed: they are really the choice soldiers (*soldats de l'élite*).

Over all these, is the superintending military officer (*officier de l'intendance militaire*), who, according to the

orders which have been transmitted to him, directs the movement of the staff and the material of the ambulance, and orders the wounded to the temporary or permanent hospitals established by the military administrative, which are likewise under his authority.

In this organization, as complete as it possibly can be, every one has his share of action, of authority, and of responsibility. The man of science, as he should be, is the absolute master at the bedside of the sick. The dispenser and administrative officer, whilst they are called upon to comply with the prescriptions of the surgeon within such limits as the regulations have marked out, are, however, in no way subordinate to his authority, for they are both of them accountable and responsible. If they are involved in doubts, or disputes, they must refer to the deputy military intendant, whose decision is law to each.

Hitherto the *service*, and that is the essential, has worked well in France under these regulations of duties, against which only a few irritable grumblers have raised their voices. Let us compare the results in the two armies, and then pronounce an opinion on the respective merits of the two systems that are followed.

We will complete our explanations by giving a rapid summary of the resources which our military administrative has allotted to the army in the East, for carrying out the hospital arrangements.

Each corps possesses a surgeon and an assistant-surgeon, who have at their disposal for each battalion, or for two squadrons, an ambulance bag (*sac*), capable of being carried

wherever it is most needed, and a pair of chests furnished with drugs, lint, and everything necessary for the treatment of two hundred wounded.

If the corps makes any prolonged stay in camp, or elsewhere, a regimental infirmary is formed, and the magazines of reserve furnish for that purpose all the elements of organization.

Each division, or each detached brigade possesses, in addition, and in conjunction with the materials above mentioned, a regular ambulance, the materials of which belonging to two different sources, have been combined upon the spot, by the competent authority, in such a manner as to answer to the wants of the regiment consequent upon the greater or lesser amount of movement in the corps forming the division, or the detached brigade.

One of these sources is the organization of the ambulance of the army of Africa, the *materiel* of which is transported on the backs of mules ; the other is the organization of the regular ambulances borne on waggons. In the combination of these two means, the latter serves as a reserve to the former, and is more particularly attached to the service of the advance post, or of the first line. The conjunction of these waggons forms a species of temporary hospital.

The moveable ambulance of Africa for a division of ten thousand men is composed of the following staff and material :—

Staff in its different ranks.

16 Surgeons and Dispensers.
7 Officers of Administration.
104 Hospital Attendants (*Infirmiers*).

Material.

8 Surgical chests, each containing 338 dressings.
4 Medical chests for drugs.
4 Chests of administration for material.
18 Reserve chests for the service of health.
22 Chests for the administrative service.
26 Chests (personal), for medical and administrative officers, &c.
10 Casks of Ptizan.
20 Hand litters (*brancards*).
200 Blankets.
50 Cart tilts for the sick, &c. (*bâches pour les malades, &c.*)
30 Tents.
24 Litters.
250 Pairs of seats (*cacolets*).

The whole resources amount to 6,500 dressings, distributed in the various chests for actual use, and in those of the reserve. The transport of all this material requires 364 pack-saddle mules.

The material of a regular ambulance for a division of ten thousand men is composed of five waggons, each carrying 2,000 dressings, and all the elements of a small hospital. The ambulance of a division of cavalry is only composed of three waggons. Each waggon is drawn by four horses.

The military administration of the army in the East possesses twenty-five waggons of ambulance so furnished.

To sum up, the total medical and hospital staff attached to the French army in the East is composed of—

276 Surgeons and Dispensers.
54 Officers of Administration.
50 Sisters of Charity (nurses for hospitals).
751 Infirmiers.

With respect to the material, independently of the resources of the interior service of the corps, and active ambulances, there has been already despatched from France, for the establishment of permanent hospitals at different places, a complete material for 7,700 sick; and this is irrespective of the establishment of a hospital at the Piræus, capable of accommodating five hundred sick. At the present time, a complete material for the organization of two new hospitals, for the reception of five hundred sick each, is being despatched; five hundred being the number chosen to represent the unity of each hospital. In short, large reserves of various objects have been organized, and more especially dressings.

With the aid of these supplies, we may reckon upon resources sufficient to provide 200,000 dressings. Nevertheless, from day to day ships leave France, to the reserve store established at Constantinople, with new supplies for the use of the service.

In the first instance, 1,000 iron bedsteads only were sent out, the temporary hospitals merely carrying mattresses, furnished with sheets, coverlids, &c.; but in consequence of successive supplies, the number of iron bedsteads amounts at present to 4,000, and will soon reach 8,000 or 10,000; so that the hospitals in the East have no cause to envy those of Europe.

The dispensing service is organized in the same manner as the administration, and is provided not only with drugs, but also with every material that is requisite. A central depôt, established at Constantinople, is furnished with every provision for replenishing the local stores.

The arrangements made for some years past by the military administration for regulating the method of packing the different classes of *materiel* required for hospital service, gives moreover every facility for determining before-hand the nature and importance of the means of transport required by each supply. The dimensions, the contents, and the weight, of each case are settled, hence results great facility for the rapid and sure despatch of this material. Thus, for a temporary hospital of five hundred sick, are required:—

Administrative material in all, 55 metres cube.* Total weight, 15,000 kilogrammes.†

Pharmaceutical material in all, 9 metres cube. Total weight, 1,800 kilogrammes.

Every hospital of five hundred sick is provided with drugs for three months.

As for the alimentary requisites, which the administration of the hospitals procures in a great measure upon the spot, the central administration occupies itself with the means of procuring for the sick a proper allowance of such special food as agrees with them, by establishing at the reserve depôt at Constantinople considerable stores of vegetables, preserved by Chollet's process.

* A metre is 39·3702 inches.

† A kilogramme is 2 lbs. 3 oz. 5 dwts. 13 gr. avoirdupois.

These details, the interest of which will doubtless excuse their length, bear the highest testimony to the enlightened care bestowed by his Excellency the Minister at War upon the perfect performance of the important duties of the hospitals, and upon the health of the troops, an object of constant solicitude to the Emperor. They prove, also, that the administration of war in all its movements justifies the confidence of the minister, and that in that respect, also, it is enabled to present to foreign armies some principles worthy of imitation, and examples worthy to be followed.

HAUSSMAN.

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THE CATTLE PLAGUE

AND

DISEASED MEAT,

IN THEIR RELATIONS WITH

THE PUBLIC HEALTH,

AND WITH THE

INTERESTS OF AGRICULTURE.

A LETTER

TO THE

RT. HON. SIR GEORGE GREY, BART., G.C.B.

SECRETARY OF STATE FOR THE HOME DEPARTMENT.

BY

JOSEPH SAMPSON GAMGEE,

STAFF-SURGEON OF THE FIRST CLASS AND PRINCIPAL MEDICAL OFFICER OF THE BRITISH-ITALIAN LEGION DURING THE LAST WAR, LATE ASSISTANT-SURGEON TO THE ROYAL FREE HOSPITAL AND PRESIDENT OF THE MEDICAL SOCIETY OF UNIVERSITY COLLEGE, MEMBER OF VARIOUS LEARNED SOCIETIES, BRITISH AND FOREIGN, MEDICAL AND VETERINARY.

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THE CATTLE PLAGUE,

ETC.

To the Rt. Hon. Sir GEORGE GREY, Bart., G.C.B.,

SECRETARY OF STATE FOR THE HOME DEPARTMENT.

Sir,—The national importance of all that relates to the PUBLIC HEALTH, and to the prosperity of AGRICULTURE,—the fact that a part of the subject on which I have undertaken to address you was very recently brought before Parliament without result beyond a stimulus to inquiry, may, I trust, be in some measure regarded as justification of the course I have adopted, in undertaking to expose a system, actually productive of great calamity and imminently threatening a much greater one,—a cattle plague. It is a fact beyond question that the people are already very largely consuming diseased meat as food; no less certain is it that the importation of foreign cattle imminently threatens us with the invasion of a plague, which is devastating the herds in various parts of the European continent, which has called from the French and

Austrian Governments the most energetic sanitary provisions, based on enlightened and laborious scientific inquiries,—a plague to which, unhappily, we are no strangers; for in the last century, when, according to Faust, it destroyed two hundred millions of beasts, according to Schwarzhop nine-tenths of the cattle of Europe, according to Paulet one hundred and fifty millions of beasts from 1711 to 1714, it three times visited our shores, and called from Parliament the most energetic measures.

In performing the duty I have assumed, I shall have to demonstrate defects in institutions, insufficiency of laws, and want of competent officers. From no part of the duty do I shrink, entertaining a full sense of its magnitude and of my own responsibility.

I pledge myself to make no statement which I am not able and prepared to demonstrate true in its whole extent by facts, observed and rigorously analyzed by myself and by my brother, Professor John Gamgee, to whose indefatigable co-operation I am very largely indebted for being able to bring this matter to the notice of Her Majesty's Government.

It is very generally suspected, and a Committee of the Metropolitan Association of Medical Officers of Health has proved, that unwholesome meat is sold for food in large quantities to the London population. The quantity is even much greater, and the quality very much more deleterious, than

the said committee had means of ascertaining. And it is not only to the detriment of the population of this metropolis that the evil operates; it prevails in Scotland to an enormous extent, and there is no valid guarantee against its operation throughout the empire.

The law has taken cognizance of the evil above stated, but its provisions are based on incomplete and defective data, and in practice they fail to guarantee the public health and the interests of agriculture.

In the intent of facilitating the exposition of facts to substantiate this preliminary statement, I propose arranging them in four categories.

1stly. *Statement of the existing evil.*

2ndly. *The inefficiency of existing laws.*

3rdly. *Statement of impending danger.*

4thly. *An exposition of the principles on which the urgently-required legislation should be based.*

FIRSTLY,—STATEMENT OF THE EXISTING EVIL.

The existing evil is multiple. *a.* Public sale of diseased beasts with healthy ones, in consequence of inadequate inspection of live markets and cow-houses. *b.* Inefficient inspection of slaughter-houses and dead meat markets. *c.* Insufficient state of knowledge on cattle diseases, due, in great measure, to non-observance of the very wise regulations framed by the founders of the Royal Veterinary College of London.

a. Public sale of diseased beasts with healthy, in consequence of inadequate inspection of live markets, and cow-houses. It is a publicly notorious fact, repeatedly verified by my brother, that diseased beasts, in very considerable numbers, are sold in the New Cattle Market at Islington, which I inspected on Monday morning the 16th inst. The live beasts were generally extremely well-conditioned and thoroughly sound; but standing amongst them were three diseased beasts. One of these was emaciated and hide-bound, with abscesses in various parts of the body, particularly over the region of the head and neck. From the clinical observations I made on diseased cattle, nine years ago, I believe this case was most probably one of pyæmia following typhoid fever. A second beast was in ill-health, viz., thin and feverish, but I could not make a precise diagnosis. The third diseased beast was a fat one: it was lying down, moaning, looking round anxiously at its flanks; pulse 110; respiration 45; pleuro-pneumonia.

On Friday, the 20th inst., I several times visited the Islington market, and found in it many diseased beasts. The most remarkable example was a row of twenty-one very small and very old and emaciated cows; several of them bore unmistakable signs of old disease; one of them was moribund; it was standing in the throng, leaning almost its whole weight on the beast near it, striking out its

head, panting for breath at the rate of forty times per minute, emitting large volumes of hot vapour from the lungs; its eyes were fixed and staring in the lean and deepened sockets; in the arteries of the extremities the pulse had ceased to beat; and out of two large ulcers the hinder extremities of the hip-bones protruded through the skin, which seemed artificially stretched over and bound down to a lifeless skeleton. From numerous inquiries in the market, I learned that such a state of things is by no means unfrequent. In reply to my inquiries, an official in the administrative department made the following statement:—"It is notorious about diseased beasts in the market: never a market without them; often beasts are disgraceful to look at,—certainly unfit for human food: could not say why the inspector did not seize them."

I had several interviews with the Inspector of the market, Mr. Nice, a veterinary surgeon, who with the greatest urbanity answered all investigations; the result of which was a conviction on my part that, although Mr. Nice appears to have performed a great public service by his inspection of the horse-market held at Islington on Friday, he has not exercised the control necessary for excluding diseased beasts from the healthy cattle-market. It did not appear to me that the Inspector's knowledge of the diseases of animals used as human food, is on a level with what is known of the

subject, and with what is absolutely required for the public safety. On the whole, I was led to entertain a very decided opinion, that good ground exists for immediately inquiring into the manner in which the inspection of the New Cattle Market is effected.

The cow-houses with which London abounds, are practically exempt from inspection; although, with extreme zeal, several of the Medical Officers of Health have, accompanied by the Inspector of Nuisances of their respective districts, visited those localities. But such inspection, to be valid, must be systematically frequent, and performed by professional men practically acquainted with the diseases of cattle. Under existing circumstances the large number of cows which become diseased in the London sheds are, with perfect impunity, sent to the Islington market, or to slaughter-houses in the metropolis, to be sold for human food, after having for many days, and sometimes weeks, been kept in the shed, yielding from one to two or more quarts of milk, which is sold for daily consumption. I have a water-colour drawing, executed by my brother in 1855 in the Fox and Knot slaughter-house in Smithfield, from a specimen of typhoid disease in a cow, which had been carried to that establishment for sale from one of the dairies adjoining Belgravia, in which dairy my brother had seen the cow alive just previously to making the *post-mortem* examination.

b. Insufficient inspection of slaughter-houses and dead-meat markets. On Monday the 16th instant, I inspected one of the slaughter houses at the New Islington Cattle Market. In it I saw five carcases, three of oxen, two of sheep. One of the latter was of magnificent shape and condition, so far as fat was concerned, but the whole carcase had a uniform dusky red colour, evidently the result of general infiltration with bloody serosity. The carcase having been trimmed and completely dressed for the butcher, I had no means of inspecting the viscera. Two of the oxen were much emaciated, and had apparently died from typhus or typhoid fever; they presented numerous bloody extravasations in the subcutaneous, inter-muscular, and sub-pleural cellular tissues. I should have required to see the viscera, in order to state accurately the nature of the disease, but they had been removed. The third ox was large, moderately fat; pleuro-pneumonic. I carried away the lungs of this beast; they were infiltrated with solidified plastic matter in almost their whole extent; so that, whereas their average weight should have been about eight pounds, it was twenty-seven pounds. The disease was in its acute stage. Although the carcase had been very skilfully trimmed and dressed, the flesh in the walls of the chest and abdomen bore unmistakeable marks of disease. The slaughterman stated that these carcases would be conveyed to the city markets, where

they would be *sold as food*. In his opinion, those carcases were not diseased, nor would they be considered such by the city meat inspectors. He even maintained that the lungs were not diseased; he said they only contained congealed healthy blood!

On Sunday, the 23rd instant, at 5 p.m., I inspected the same slaughterhouse, where several men were busily at work. Twelve very fair recently-dressed carcases were hung up, two of sheep, ten of oxen; additionally three diseased carcases, two of which were dressed but quite warm, a third was in process of *trimming*. These three were very old, extraordinarily lean cows, destitute of the least particle of fat; the flesh was pale, nearly white, extensively ecchymosed, the cellular tissue inflated with gas; in the buttocks of the beast which was being trimmed were huge masses of putrid, bloody, and disintegrated muscle,—the whole appearances were those of advanced typhoid disease. From two of these cows two calves, nearly at full period, had been removed; they were now hung up, and would, from all I have seen in Newgate market, and personally learned, no doubt be sold in that market, or cut up for sausages. Firmly convinced that all this diseased meat was unfit for human food, I sought for some official all over the market, and in the clerk's office, but I could find none; consequently, to the desecration of the Sabbath was added the preparation of dis-

eased food for the people, without any chance of the merited chastisement being inflicted. Such a system must act as a premium to knavery.

So far as I have been able to ascertain, the slaughter-houses in the New Cattle Market are exempt from inspection: the clerk of the market so informed me, and he added that he regarded those establishments as private, inasmuch as though the buildings formed part of the public market, they were let to private individuals. If such be the fact, and I believe it practically is so, a premium is offered to sending diseased beasts to the cattle market; for the inspection of live stock being lax, and the slaughter-house exempt from supervision, the greatest facility is offered for disposing of diseased beasts and preparing their carcases for the butcher, with all those arts of trimming, dressing, and polishing, which are well known to veil appearances of disease, so as to beguile the inexpert, to facilitate a commercial fraud, and introduce the seeds of disease, and not unfrequently actual poison, into the unhappy individuals who unconsciously partake of the meat for the sustenance of their lives.

Inspection of the city markets is inadequately performed. It is notorious that much bad meat is sold in Newgate Market, which is under the special charge of Mr. Pocklington; granting, which I do with the fullest conviction of according what is due, that the official named is a man of upright

intentions and a most worthy servant of the City Corporation, I submit that the alleged evil is a very regretable reality; yet it is no matter of surprise. Mr. Pocklington is the collector of rents of Newgate Market for the City, a duty for which he receives four per cent, and which must necessarily occupy the greater part of his faculties, he being upwards of eighty years of age. Very true is it that Newgate Market contains a large number of very honourable tradesmen, but when the public health is concerned, the goodwill of individuals must only be trusted to in a limited extent; while it is notorious and can very readily be proved, that many unprincipled individuals inhabit the market, there to carry on a nefarious trade in unwholesome food.

On Saturday afternoon, the 22nd instant, I visited Newgate Market. The establishments of the large salesmen were all closed, and, at numerous little shops, meat was being sold, chiefly by men of disreputable appearance, to poor persons. The quantity of diseased meat, most unquestionably unfit for human food, was very large; what I saw in half an hour would have laden a single-horse cart: amongst other specimens, I saw, at the back of a little dark shop, a very thin pale fore quarter of beef, extensively ecchymosed, for which I was asked three pence per pound; in another place a saddle of mutton, the muscle of which was pale and pappy, the scanty fat, moist, and deeply tinged

with the characteristic yellow of bile; many legs of mutton and huge pieces of beef were either in an advanced stage of putrefaction or bore unmistakable marks of organic disease. I sought about the market for officers, but I only found the beadle in his closet; the meat inspectors were nowhere to be found, and I reluctantly made my way to the meeting room of the Medical Society of London, to relate the scene of filth, fraud, and negligence which I had witnessed.

Newgate Market is also inspected occasionally by Mr. Fisher, the general inspector of the city markets and slaughter-houses, to whom I am greatly indebted for most kindly affording me opportunity of full inquiry into the duties of his office, and of ascertaining his mode of performing them. He is a zealous, valuable, and gentlemanly officer; but his duties are such, that the matter for surprise is that the existing very great evil is not much greater. Mr. Fisher possesses a large fund of empirical knowledge; but in examining him relatively to the diseases of animals, I find he is deficient in knowledge respecting them; as it is reasonable a man should be, however by nature intelligent and zealous, who has not been especially educated for the business in which he is engaged. I consider, and it would be difficult to discover grounds for questioning, that an inspector of a great market should be thoroughly acquainted with the anatomical states of disease, and with their re-

lative import in all particulars concerning the public health.

The inspection of the London slaughter-houses and butchers' shops beyond the precincts of the city is professedly performed by the Inspectors of Nuisances; but the duties of these officers are so numerous, that it would be impossible for them to perform the required special duty, even if they possessed the requisite knowledge, which they do not. As an example, I shall allude to the parish of St. Pancras, which I inhabit. It contains one Inspector of Nuisances, a most zealous and intelligent person. The parish contains one hundred and ninety thousand inhabitants; it is impossible that any one officer can discover and keep down the common nuisances; and yet the present inspector, who receives a salary of £100 a year, is expected, besides the supervision of the common nuisances, to inspect the one hundred slaughter-houses licensed in the parish. Such a system of inspection can only have the effect of engendering a false belief that a great public requirement is provided for; practically, it must leave the duty in great measure unfulfilled.

c. Insufficient state of knowledge on diseases of animals, and especially of cattle, in great measure due to non-observance of the very wise regulations framed by the founders of the Royal Veterinary College. The 17th, 18th, and 19th regulations are so provident, and, if carried out, would be productive of so large a measure of public good, that I transcribe them in full.*

"*Regulation* XVII. There shall be chosen, on the day of election in each year, two Committees, viz., a Medical Experimental Committee, and a Committee of Transaction.

"*Regulation* XVIII. The Committee of Transaction shall be charged with the selection, compilation, and arrangement of the matter for the annual volume of Transactions, and the preparation of a prefatory discourse.

"*Regulation* XIX. The Medical Experimental Committee shall meet occasionally for the purpose of suggesting and trying experiments, with a view to throw additional light on the animal œconomy, and to discover the effects of medicines upon different animals, to be procured for that particular purpose; and this Committee shall from time to time make reports of their proceedings to the Council."

So far as I am aware these two Committees are not in existence, or if they be, they produce no results. It is moreover provided in *Regulation* XXVII. that a volume of the Transactions of the College and School shall be published annually, and de-

* Veterinary College, London, established April 8, 1791, for the Reformation and Improvement of Farriery and the Treatment of Cattle in General. London, 1791: pp. 16. This very scarce pamphlet of Regulations may be seen in the Library of the British Museum.

livered to each subscriber gratis. Such publication would obviously be the means of diffusing over the nation a large amount of scientifically interesting and practically useful knowledge: but the law enjoining it is only suffered to subsist as a dead letter. At p. 11 in the Regulations for the course of study, we read: "A knowledge of the common plants and herbs being necessary to the veterinary physician, the pupils shall attend a course of botany relative to veterinary medicine. This course shall take place in the afternoon, and shall, as well as the preceding, continue during the summer." There can be no question as to the wisdom of this provision, and its practical requirement, as testified by the fact that, in all the veterinary schools of continental Europe, its execution is most faithfully provided for; but in the London Institution, for which it was originally framed, it is completely set aside, and the pupils are sent home in April for a six months' vacation, without any educational pursuit for the summer months, which were especially prescribed for in the original code. At no period of their course are they taught anything of botany. At p. 13, the following passage occurs: "It appears from the above division of the studies, that a term of three years is sufficient for a complete education, provided the pupils are capable, assiduous, and well-instructed." The three years, be it observed, including summer and winter sessions. At present, the pupils only receive instruction two

winters; the whole summer is a vacation, from April to October. The two winter courses are identical; so that instead of the mind being trained by degrees to a knowledge of the profession, as the original laws directed, it is unsystematically crowded one winter, and subject to the very same process in the next; while the means for practical instruction are altogether insufficient. It is strictly true to allege, that the Institution affords no practical instruction in the diseases of cattle.

I have very good reason for believing, though I have not the means of proving, that the above institution, in the early stage of its existence, received subsidiary grants from Parliament. Certainly it owes a duty to the country, for the performance of which duty laws were framed by its wise and philanthropic founders. I cannot but doubt that the existing Council can have no idea of the nature and extent of the evil, which, I submit, is matter demanding the fullest and most urgent inquiry.

The veterinary profession includes a notable number of gentlemen of distinguished talent and experience; but they have attained that position in consequence of individual endowments and effort. The mass have derived very much less advantage from the institution than they had reason to expect, from an establishment founded for a scientific and economical purpose, which it does not fulfil. After personally inspecting, and that most carefully, the

Veterinary Schools of Belgium, France, Switzerland, Italy, Wurtemburg, Austria, and Prussia, my brother and myself have come to the conclusion, which we are prepared to prove, that whereas England's wealth in animals by very far exceeds that of any other nation, it is very far inferior to all the countries of continental Europe, in knowledge of the diseases of animals, and in means for instruction in that all-important branch of science, and public œconomy.

So far, I believe, I have proved the existence of national evils; many more facts might be adduced to support the evidence I have adduced, but if it be conclusive, to more I cannot aspire; hence I proceed to the consideration of the next division of the subject:—

Secondly, The Inefficiency of Existing Laws to Provide Against the National Evils in Question.

The fact that the evil overtly exists to so large an extent as has been stated, may fairly be regarded as proving one of two things, or both conjointly, *Defective legislation, or inefficient administration.* I believe the evil is referable to both these causes, and I do so for the following reasons. On the 17th instant, I proceeded to the Mansion House with portions of one amongst several diseased beasts which I had seen slaughtered the previous day as fit for human food at the New Islington Cattle Market. I was not permitted to make a statement of the

facts in open court, the clerk stating that such a course could not be pursued. As the Lord Mayor did not sit in court that day, I took the liberty of sending in my card to his lordship, with a prayer for an interview, which was most graciously granted; but his lordship could not, in his capacity as magistrate, hear my verbal statement, and he suggested that I might take out a summons against any guilty party, or submit a written charge which he would forward to the City Markets Commission. I sincerely thanked his lordship, and applied in the court for a summons against Thomas William Farey, the slaughterman, whose name was painted on the door of the building in the New Cattle Market wherein I saw the diseased carcases, and whence I had carried away the diseased lungs; being careful, however, to obtain full evidence that these lungs had belonged to a beast slaughtered and hung up as fit for human food, by a servant of the said Thomas William Farey. But the summons against this individual was not granted me, on the plea that the New Cattle Market, in Copenhagen-fields, is not in the city police district, but in a totally different one, in which jurisdiction is exercised by the Magistrate sitting in Clerkenwell. His worship received me most kindly, and, with great pains, examined the Acts of Parliament under which we might summons Thomas William Farey. In conclusion his worship stated that the case was new to him; that he did not feel that he had

any jurisdiction under the circumstances; but he pressed me to continue my researches, with the certainty of their being of great public utility.

A system of law cannot be regarded effective which permits the slaughtering of beasts extensively diseased, without control, in a public market, the property of a great city corporation, without holding the slaughterman accountable, and readily and efficaciously bringing him to justice if he offend so as to endanger the public health. The various Acts of Parliament regulating the sale of meat, do not appear to me to fulfil the intention of their framers and the public requirement, if they do not give to a magistrate other jurisdiction than his worship sitting in Clerkenwell believed he possessed, under the circumstances which I brought to his notice.

Further observations of the law relating to the whole question may with convenience be ranged under two heads: 1stly, as regulating the sale of meat; 2dly, in its application to the spread of contagious diseases amongst animals. A variety of Acts (11 and 12 Vict., cap. 61 lxiii; 14 and 15 Vict., cap. 61 xii; 18 and 19 Vict. cap. 121 xxvi) empower inspectors of nuisances, clerks, and others duly appointed, to inspect slaughter houses, butchers' shops, and other buildings or places where dead meat is exposed or offered for sale; and in the event of such meat appearing to the inspector *unfit for human food*, he may seize it; and a Justice of

the Peace has the power of inflicting a fine not exceeding twenty pounds, on the seizure being reported to him, and satisfactory evidence adduced, that the meat *is unfit for human food*. It is the wording of this expression which renders all but nugatory the Acts in which it is employed. What is it that renders meat unfit for human food?—*Dryness*, *wetness*, *pallor*, *redness*, *smell*, are all qualities which, in various degrees, may belong to sound, though not absolutely perfect, meat; but it is not *imperfection* or inferiority of quality which has to be proved, but *absolute unfitness for human food*. Who are the officials to determine this unfitness? The inspectors of nuisances and inspectors of city markets; the former received some general instructions on the subject last year, but they know very little of the matter compared to the city markets inspectors. But even these are imperfectly acquainted with the qualities rendering the meat unfit, as proved by the very incomplete instructions which, at the invitation of a committee of the Metropolitan Association of Medical Officers of Health, they were able to give to the inspectors of nuisances. Mr. Fisher, who is the most able and efficient of the two city inspectors, when examined by me, stated that he only knew of two diseases, *the lung disease* and *the foot and tongue disease*, as affecting cattle. The fact is, that to determine the question of *fitness* or *unfitness*, a man must be furnished with the lights of science as to the relative import of the *long list* of

diseases to which the beasts are subject, which serve as food for man. But live markets, slaughter houses, and dead meat markets, need conjointly the most rigid inspection; for if it be permitted, as I have proved it is at the New Cattle Market, to slaughter a beast labouring under typhus, and leisurely and artfully trim it, viz., cut away the portions of disease, it may be impossible to prove, on seeing the remainder of the carcase in a butcher's shop, that it is unfit for food, while in point of fact it is of the most deleterious nature.

But allowing that the law empowering the inspectors is meagre, repeated observations have convinced me that the inspectors must be inefficient, negligent, or disabled from doing their duty by over work or other causes. Much of the meat which I have seen exposed for sale in Newgate market on Saturday afternoon, was of the worst description; and most unquestionably unfit for food; yet the low shopmen were with impunity plying their nefarious traffic; the wives of poor men eking out the hard earnings of the week to procure—the seeds of disease, and possibly the stroke of death! I knew the law to be imperfect; but, as it is, it would have been useful if put into execution. There were no officers to execute it. What I saw is no exceptional occurrence.

Imperfect also is the act 11th and 12th Vict., cap. 107, "To prevent the spreading of Contagious or Infectious Disorders among Sheep, Cattle, and

other Animals." That act was passed in 1848, at the critical season of the importation of small-pox amongst our flocks, and to prevent the spread of that disease does the act exclusively tend, though it professes to limit the diffusion of infectious diseases generally. The various sections of the act refer to "sheep pox, or variola ovina, or any disorders of the like nature," a phraseology which must limit the operation of the act to the small-pox of sheep,—a specific disease, like small-pox in the human subject, distinct from and unlike other diseases: any other diseases to which the act is intended to apply should be distinctly designated; for the general expression *contagious or infectious diseases*, would always give rise to litigation and frustrate the aim of justice; seeing that to adduce absolute proof of a disease being contagious or infectious, is a task of the greatest difficulty; I may cite cholera as an instance of remarkable dissidence of opinion amongst eminent authorities as to its contagiousness or infectiousness; although during the many years since it first invaded Europe, the most elevated talent, erudition, and critical acumen have been applied to determine the question at issue.

Thirdly, Statement of Impending Danger:—

If the existing evil alleged in the first section be real,—and, with deference, I believe I have demonstrated it to be such in an eminent degree,—if the inefficieney of existing laws treated of under the second head be a reality, then, to the health of the

people and to that prime element in the nation's wealth, the live-stock of the agricultural community, the actual danger is incalculable. How to compute it when we contemplate the possibility, nay, if provision be not made, the very great probability, of a pestilence amongst cattle? Happily, though our sanitary code is singularly incomplete, the basis for it is superb. To no country are we second for the eminent talents of medical officers of health, such as have been appointed in accordance with comparatively recent parliamentary enactments. France and Germany have greatly excelled us in the study of the questions more immediately considered in this address; but the learning and experience of their savants is at our disposal: then let it be collected, and be made the basis of an efficient legislation, which taking a comprehensive view of all the interests involved, a calm accurate estimate of the actual and impending danger to the public health and to the interests of agriculture, shall legislate for it as urgently and effectively as upon full and competent inquiry circumstances shall seem to demand.

Fourthly, An Exposition of the Principles on which the Urgently-Required Legislation should be Based:—

The actual and impending evil demonstrated being twofold,—firstly, the spread of a fearful disease amongst cattle, and secondly, the consumption of diseased meat by the population; for both of

which existing laws very inadequately provide; it is with reference to such of those calamities that the principles on which legislation should be based may be conveniently considered; and, firstly, as to the threatening plague invasion, with the certainty that if it once penetrate our herds, all human means will fail to arrest its work of relentless devastation. Unquestionable is it that for the last few years contagious typhus, popularly designated *the murrain*, has prevailed amongst cattle in various parts of Europe; and that the Austrian and French governments, guided, the first one by the learning of Eckel, the second by the result of a commission expressly sent into Hungary by the Emperor of the French, and composed of such eminent men as Renault, Yvart, and Imlin, have ordained the most stringent sanitary regulations, which hitherto appear to have succeeded in checking the pestilential progress; but the experience of the last century in the same malady, and the great difficulty generally attendant upon preventing communications between the various parts of a continent, is good ground for apprehension, lest the barriers with which the stringent laws have hitherto confined the plague, may from day to day be broken down, and the whole European continent again involved in one of the most terrible of calamities. Our insular position offers much greater facility than does the geographical relation of France and Germany, for arresting the typhus indigenous to, and spreading from, the Steppes; and

there is very good reason for hoping, that, provided our legislative enactments be as enlightened and provident as those of the afore-mentioned governments, our chances of immunity will be greater in proportion to our superior geographical advantages.

About seven hundred head of cattle are imported every week for the London market, in the proximate proportion of three-fourths from Holland and Northern Germany, and one-fourth from Spain. A regulation has provided for the sanitary inspection of foreign cattle on landing on our shores, but it is possible beasts and persons may, for the time, be in apparently perfect health, and yet be the bearers of the seeds of contagion. It is established, that the contagious typhus has an incubative stage of several days duration. Under such circumstances it would appear as if perfect impunity could only be purchased by absolute prohibition of cattle imports, a measure which, however laudable in its aim, would be productive of serious consequences, by necessitating a very considerable rise in the price of animal food. Cheapness of food is manifestly a desideratum of great importance, and no effort should be spared to secure it, consistently with safety to one of the greatest sources of national wealth—the live stock of the agricultural community. I would recommend that no ship should be allowed to land cattle on our shores without producing a clean Bill of Health, in form of a certificate from the British consul at the port of export,

that no epidemic or contagious disease prevailed among the cattle of that neighbourhood As the Spanish cattle are very good, and there is every reason to believe that the supply could meet a much greater demand, sanitary regulations might render advisable, and œconomical reasons not oppose, the propriety of prohibiting for a time the importation from Holland and Northern Germany; for certain it is, that thence did the contagious typhus pass over to England in the last century, and that the greatest fears are now to be dreaded from that quarter. The value of these suggestions must depend upon accurate knowledge of the state of the disease all over the continent; which information, once acquired, it would be very easy to keep up to the level of the day. As I believe such knowledge does not exist in this country at present, I venture to suggest that its acquirement is a matter of the very first importance. The labours of the French Commission in Hungary and Bohemia extended over several months; no doubt the French Emperor's Minister of Agriculture would place them at the disposal of any commissioner from Her Majesty's Government, who might additionally in a very few weeks examine and report upon the state of cattle in Spain, Italy, Holland, and Northern Germany. At the same time such commissioner might be instructed to collect information relatively to the laws in force in various countries for preserving the health of cattle, and

commensurately affording guarantee to the *Public Health.* A consideration not to be overlooked in these inquiries, is to ascertain precisely what danger may attend upon the large quantity of raw hides imported into this country. It is so undoubted that the hides of beasts affected with contagious typhus are capable of producing the disease, that one of the measures of continental governments to arrest its progress, is to order interment of the hide with the carcase. The line of inquiry indicated might render necessary, as a prudential and harmless measure, the disinfection of hides imported from suspected localities; if the scourge did visit us, in spite of all efforts to provide against it, it would be a source of gratification to reflect that those efforts had been enlightened, strenuous, and unsparing.

A second no less urgent call for effective legislative enactments is the vast amount of diseased meat consumed for food by the population. Here it becomes of first importance to consider what is the effect on man of eating meat from an animal that has died or been killed with disease. Numerous authorities attest* that such alimentation may be and

* *D. Meier,* in Archiv für Thierheilkunde von der Gesellschaft Schweizerischer Thierärzte, Band xii, heft, 2, s. 148. *Albert,* k. 6. Landgerichtsarzt zu Enendorff Henkes Zeitschrift für Staatsarzneikunde, 22r. Jahrg, 1842, 3s heft, s. 185. Vesicular Disease contracted from Sheep, by *George Burrows,* M.D., F.R.S., in *Med. Times and Gazette,* and *Veterinarian,*

often is productive of the most baneful results, even unto speedy death. The fact that many persons have

1856. On the Production of Tænia considered in relation to public Hygiene, by Dr. *Riecke,* of Nordhausen, in Henle's Zeitschrift, *Edinburgh Med. Jour.,* October, 1857. "Case of Tape-worm occurring in connection with the eating of measled pork," communicated by Dr. W. T. *Gairdner* to Medico-Chirurgical Society of Edinburgh. Clinical observations of effects of eating measley pork and unsound meat, by Dr. *Gibbon,* Dr. *Challice,* and others, in *Report on Unwholesome Meat,* by Committee of Metropolitan Association of Medical Officers of Health. Ueber das Fleisch der Schlachtbaren Hausthiere in Gewerblicher und Sanitäts-polizeilischer Beziehung. Ein Handbuch von Veterinair Assessor Hildebrandt. Magdeburg, 1855, S. 144. On the consignment of Sick Cattle to the Butcher, by Mr. Hosburgh, of Dalkeith, *Vet,* 1842. Eduardo Turchetti in Archiv für Thierheilkunde, Band xii, Heft. 1, Zurich, 1843, and Gaz. Méd. de Paris, 6 Aug. 1842. Hering Leistungen in der Thierarzneikunde, p. 66. Vermeintliche Brechweinsteinvergiftung bei Menschen in Folge des Genusses von Fleische eines Zuvor mit Brechweinstein behandelten Ochsen-Mitgeheilt vom Herausgeber in Centraltzeitung für die Gesammte, Veterinärmedizin, herausgegeben von Dr. Johann Martin Kreutzer; Vierter Jahrgang; Erlangen, 10 Mai 1854, s. 74, und Forts. Umschau auf dem Gebiete der Staatsveterinärmedizin von Dr. Johann Martin Kreutzer in Centralzeitung, supra cit. Beitrag zur Erledigung der Frage, ob der genuss des Fleisches Milzbrandkranker Thiere, schadlich sei oder nicht. Dr. Rosenthal, in Caspar's Viertaljahrschrift für gerichtliche und öffentliche Medizin, 1854, Zweites Heft.

Canstatt's 'Jahresbericht über die Leistungen in des Thierheilkunde' in Jahre, 1853, s. 65, und in Jahre, 1854, p. 61. Dr. A. Neuman, 'Ueber den genuss des Fleisches Kranker Thiere,' in Het. Repertorium Tydschrift voor de Geneeskunde in al haren Omvang, Leiden, 1853. Professor John Gamgee

often subsisted on animal food of the worst kind, is no more an argument against the injuriousness of such alimentation, than would be a plea for the harmlessness of a cholera or intermittent fever atmosphere, founded on the fact that a large number of persons may breathe it without apparent suffering. The fair presumption is, that from impure materials the sustenance of the human body cannot be derived without risk ; and, accordingly, experience teaches, that although by the marvellous organic and functional provisions of the animal economy, injurious influences from without are, in great measure, counteracted, yet impure air, water, and solid aliment, cannot be introduced into the system without weakening the vital powers, and often without the most disastrous immediate results. Moreover, it is most fair to argue that the number of cases of illness referable to the eating of diseased meat is even much greater than that recorded in the annals of science, it being impossible in very many instances to trace back the causes of a disease, and to ascertain what kind of animal food has been partaken of.

on 'Unwholesome Meat,' in Scotsman, 28 Feb. 1857. Congrossi Acta Erudit. an. 1713-14, Malad. Epiz. p. 125. Anleitung den Gesundheitszustand und die Krankheiten der Schlachtbaren Hausthiere im lebenden wie geschlachteten zustande zu erkennen von Königl. Regierungs. Departements, Thierarzt zu Breslau, F. Grüll, Breslau, 1848. Verheren, 'Sur la vente de la chair des animaux atteints de certains maladies.'—Rapport fait à l'Académie Royale de Médecine de Belgique, *vide* Recueil de Méd. Vét. 1847, p. 851 et *seq*.

It is perfectly certain that most sausage makers' use up the diseased parts, which even the poor would not buy ; the frequenters of eating-houses, particularly in some neighbourhoods, are largely supplied with the best-looking parts of diseased beasts ; and even in good society no guarantee exists against such occurrence, beyond the honesty of individual purveyors. And be it not imagined that because the hind quarters of a beast that has died with typhus, or the fore quarters of a fine fat young cow that has died with puerperal fever, may chance to look well, therefore they are harmless as food. The poisoned blood has circulated through every tissue, and, besides its dose of animal poison, it has been the carrier of the medicinal substances that may have been administered to the beast before death. I have supplied reference to a case of poisoning in man from eating the flesh of an ox that had been treated with tartarized antimony, and Professor Macadam of Edinburgh has experimentally proved that strychnine is discoverable, and in notable quantity, in the tissues of a dog that had been fed on the flesh of a horse killed with strychnine. It is a fact, which I can produce in evidence, that a cow-keeper at Chelsea would not let a veterinary surgeon continue to give sulphuric ether to one of his sick cows, because it had been smelt in the milk by one of his customers. Other drugs were substituted, health did not return, and in the regular course, after having supplied its dis-

eased and medicated milk the beast was sent to the slaughterer, and thence partly to the sausage-maker and partly to the butcher!

An aspect of the case not to be lost sight of is, that this traffic in diseased beasts is a most dishonest one; that the majority of those who are engaged in it know it to be such, and employ every art to deceive the population, the poor part of which most grievously suffers. Assuming that every one will admit the evil is one of the most enormous magnitude and seriousness, I shall now proceed to consider the principles on which legislative enactments should be based to arrest it.

In the first place, it is important to establish that the flesh of animals dying from or with disease is not invariably prejudicial to man; in many cases its injurious effects are extreme, in others they do not appear. Hence the necessity of defining the line of demarcation; because it is a great *desideratum* to lessen the loss from disease to cattle breeders and dealers, and to allow a cheap article of food for the population, so long as such advantages are not attended with counterbalancing evils. It is a curious fact, of great practical moment to be known, that the extent in which the flesh of diseased animals is injurious to man, is not in exact proportion to the degree in which the disease is fatal to themselves. Thus: whereas oxen affected with pleuro-pneumonia frequently die in a few days, their carcases may be eaten—the

actually diseased parts excepted—with comparative impunity; but the flesh of malignant anthrax, of the cynanche maligna of pigs, of puerperal fever, and gangrenous erysipelas, is capable of producing the most disastrous consequences, if partaken of as human food. Moreover, all parasitic affections affecting the edible parts of animals are most serious; because scientific experience has amply demonstrated, that men partaking of them become themselves infected with worms; the cœnurus cerebri of the sheep, and the cysticercus cellulosæ of pigs, develop into the tænia in the dog and man. These facts render absolutely necessary the inspection of live and dead meat markets by persons endowed with the knowledge, which only experience, obtained carefully with the lights of science, is capable of imparting.

The question now centres itself into what is the best plan for inspecting live and dead meat markets? To London more particularly do I refer. London is supplied with meat from the following sources:

a. Cattle and sheep from the continent.

b. The cows which become diseased in metropolitan sheds.

c. Live and dead beasts from Scotland and Ireland; chiefly the former.

d. Beasts from the counties of England and Wales.

a. Foreign cattle and sheep. When considering

the laws necessary for averting the spread of contagious diseases, I have suggested measures for preventing the importation of infected or suspected animals, which, if carried into execution, must ensure the landing of only healthy beasts; the subsequent inspection of which, has an importance secondary to the next matter for consideration.

b. The cows which have become diseased in the metropolitan sheds.—These sheds are notoriously and for very obvious reasons foci of disease. When cows are brought into them from the country, the artificial state of living, impure air and dirt, speedily engender disease; nevertheless the milk is supplied to the dairies; if the animal survive, it continues for months, and often years, in the same filthy stall, yielding its quota of milk. The very great majority of these cows die diseased, and are supplied as food to the people without inspection. The remedy, at first sight, would appear to be strict inspection of these sheds; but, to be effectual, this would be an expensive process; every consideration of economy, hygiene, and humanity points to the remedy, radical as it is cheap—an order to prevent the keeping of milk cows in London. In defence of such an order, besides the above reasons, may be submitted the most urgent consideration, that no valid argument can be adduced why the present toleration should be continued. As a means of supplying London with milk, the cowsheds in it are next to valueless, by far the larger proportion

of that commodity being brought in by rail from the surrounding country; the country milk is of much better quality, the cows which supply it living better, viz., more naturally. If to the suggestion here made be given the force and form of law, it appears difficult to understand, how any considerations can be adduced to outweigh the many reasons, economical, sanitary, and humanitarian, which can be adduced in its support.

c. The London market is supplied with live and dead beasts from Scotland and Ireland, chiefly the former. Scotch beef is undoubtedly amongst the very best with which this great market is supplied, but it is absolutely indispensable that the slaughter houses and markets of Scotland be most rigorously inspected; otherwise a great facility is afforded to sending to London parts of animals that have fallen prey to the most terrible diseases. With reference to the Scotch markets, my brother John observes:—"When in Aberdeen, last autumn, I was painfully struck in witnessing as much heedlessness there regarding the sale of diseased meat, as anywhere else in Great Britain,—a fact not only serious to the population of that city, but to London; Aberdeen being one of the chief ports whence meat is shipped for the metropolis.

"I found that in Aberdeen there were no special slaughter-houses: that most of the butchers of the suburbs, in whose stalls the diseased meat is chiefly sold, live in the country, and it is in their farms

that the cattle are dressed for the Aberdeen or London Market. The diseased animals are bought up and either driven or transported in carts to such farms, and conveyed into town on Friday and Saturday more than other days.

"Carefully conducted inquiries enabled me to find out when and how the meat enters Aberdeen and eludes the vigilance of the inspector. As to this officer I am informed that *he is inspector of weights and measures, is collector of the rents of the city established churches*, and has other laborious duties to perform besides holding the *inspectorship of meats*."

Under these circumstances the importance of most efficiently inspecting the Scotch markets cannot be exaggerated.

d. We have finally to consider the chief source of supply to the London live market—the counties of England and Wales. There can be no question that inspection of a market like the new one at Islington, to which, in the course of a week 5,000 oxen and 20,000 sheep are an average concourse, is a matter of the very first importance. Neither has it escaped the consideration of the City corporation. But in the Regulations for the market nothing is enacted for the imperatively required sanitary inspection, and, so far as I have been able to extend my inquiries, it appears no specific instructions are issued to the officer on whom the inspectorship devolves—with what result, the previously recorded experience attests. It is of the very first importance to the *Public Health* and to the interests of *Agriculture*, that the inspector of the great metropolitan cattle market should discharge his duties with entire efficiency. Continuance of the slaughter-houses adjoining that market in their present state, must offer a premium to fraud, in so far as it constitutes what should be the mart for healthy beasts the most easy place for selling, and preparing for the butcher, diseased ones; and here I am led to the general question of the Inspectorship of the Metropolitan Slaughter-houses. These are so numerous, that while it is most important they should be subject to the most rigid supervision, the inspectors of nuisances cannot perform it in addition to their other heavy duties. Moreover, these officers are only competent to determine as to the degree of cleanness of the building, whereas it would be very important that they should be able to inspect the animals slaughtered, and determine as to their soundness or otherwise. Such are the arts of the butcher, such the appearances of nature, that the inspection of dead-meat markets must be comparatively useless, unless live markets and slaughter-houses are under most rigid control.

Distributed as the almost innumerable slaughter-houses now are all over London, it is impossible to conceive how they can be efficiently inspected without such a staff of officials as would entail great expense,

and, in spite of intelligence and zeal, would meet with very great difficulties in the performance of their duty. These considerations, conjoined with the fact that the existence of so large a number of slaughter-houses in the metropolis cannot but be regarded as a very great nuisance, and, hygienically very prejudicial, suggest the advisability of suppressing these establishments. Their evils are certain, while, to counterbalance, no good reason for continuance of the present system can be adduced.

I venture to suggest that all private slaughter-houses be forbidden in London, and that public ones be constructed. A magnificent site for them would be immediately adjoining the Islington market, on a part of the spare ground belonging to the City corporation, and already enclosed by a wall. If this plan were adopted, the inspectorship of the live market could be extended to the slaughter-houses with great economy, and still greater efficiency, for the public could then have a sure guarantee that no beast was sold and slaughtered for human food in London which could be prejudicial to health: detection of the unfit being a matter of certainty. The reform would be more complete, the paramount interests of the PUBLIC HEALTH more effectually provided for, if the chief dead meat market were also concentrated at Islington, where the City corporation owns land in addition to the present cattle market, and to what would be required for the projected slaughter-houses, abundantly sufficient for the construction of a most healthy and commodious dead-meat market. The suppression of Newgate market is most urgently called for; its smallness altogether unfits it for the enormous business of the day; while the vast number of its little dark shops, or rather holes, offers great facility to the hiding bad meat, which in the day is imperfectly visible, and when brought out under a gas illumination on Saturday night, does not show its true colours, and finds purchasers in the poor and hard-working population. The transference of the dead meat market to old Smithfield could only be regarded as the establishment of a very great nuisance on a site now pure, though but the other day a disgrace to the kingdom. If the suggestions here made were adopted, then, indeed, could an efficient inspectorship be enforced, while the City would be relieved of a great nuisance, and one of its great avenues of traffic be relieved of inordinate pressure. To counterbalance these enormous advantages, only one objection could be adduced,—the convenience of a small class; for, I conceive, the pecuniary interests of the City corporation could be secured in arranging the concentration of markets and slaughter-houses on its Islington property. As to the convenience of dead meat salesmen and their customers, it is not easy to conceive how they can be so materially affected as to outweigh the unquestionable advantages of

the proposed plan, to which others have yet to be added.

While the great supply of dead meat from Scotland and the Eastern Counties Railway could be conveyed to the new Market by the Blackwall Rail as easily as to Newgate, the supply by the Great Northern and Western lines would be much easier of transfer. Furthermore, the proposed concentration of live and dead markets and slaughter-houses at Islington would practically abolish the circulation of live cattle through London,—in no way a mean consideration. Whether it might be desirable for the more distant parts of the metropolis, to construct one or more subordinate slaughter-houses and dead-meat markets, is a question of secondary importance, and which in no way affects the general question of the abolition of the present system of slaughtering, and the removal of Newgate Market.

If I have succeeded in demonstrating the existence of great public evils, and the inefficiency of existing laws to provide against them ; if, additionally, I have made clear that we are in peril of one of the greatest calamities that can befall a nation—a cattle plague, I feel confident Her Majesty's Government will take the facts here embodied into its most serious consideration, and provide for them in a measure, and with a readiness commensurate with the gigantic interests at stake,—the

PUBLIC HEALTH and the interests of AGRICULTURE. The former is most injuriously affected by the vast amount of diseased meat sold and consumed for human food ; and though the latter—the interests of agriculture—have not yet suffered the calamity which has befallen some nations of continental Europe, yet the danger is real and enormous, as far as it concerns a pestilence, against which the only hope rests in provident and energetic preventive measures.

I have the honour to be, Sir,

Your most obedient humble servant,

JOSEPH SAMPSON GAMGEE.

16, *Upper Woburn Place, Russell Square.*
25th March, 1857.

T. RICHARDS, 37 GREAT QUEEN STREET.

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II.

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III.

REFLECTIONS ON PETIT'S OPERATION,

AND ON

PURGATIVES AFTER HERNIOTOMY.

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THE NEW PROCESS

FOR THE

PRESERVATION OF MEAT

FOR FOOD,

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The following pages will, I trust, serve to direct attention to a subject hitherto strangely neglected, yet of the greatest importance both with regard to the health and efficiency of the seaman and soldier, and to the financial question of the preservation of meat for food, as shown by the subjoined comparative outline:

BY THE METHOD NOW IN USE.	BY THE NEW PROCESS.
In the rubbing and laying in salt the meat is deprived of its nutritive qualities to the extent of one-third (according to the calculation of so eminent an authority as Baron Liebig*); so that, apart from the injury done by the absence of these qualities, the financial loss is enormous—in a single curing season amounting to £25,000, or one-third the cost of 5,000 oxen, producing 5 cwt. of meat each, at £3 per cwt.	There is no rubbing or laying in salt, and therefore no abstraction of nutritive materials or financial loss.
The meat is then packed in salt and brine, and a further abstraction of the nutritive and essential elements thus takes place, proportioned to the length of time in cask.	An entire ox can be preserved in ten minutes, and as the materials used remain in the flesh, even they become a source of profit.
When thus injured and rendered difficult of digestion by being hardened, the meat can only be prepared for the table by boiling, any remaining soluble elements being thus as far as possible taken away and rejected.	The flesh is put to dry as soon as convenient, and when dried, is packed in barrels or cases with sawdust or some dry material, and is therefore more portable than by any other method.
In consequence, a further expense is incurred in endeavouring to supply the natural elements taken away, by using lemon juice, &c.	The meat can be eaten either uncooked, or as beefsteaks, roasts, hashes, soup, &c., thus admitting of a suitable nutriment for invalids, and also of variety.
From the necessity of curing in the winter season, the price of the meat is considerably raised, and a large quantity of stores must be prepared at the same time.	The elements of vegetables as antiscorbutics can be artificially added to the flesh, thus presenting meat and vegetable at the same time.
	Wherever a ship touches and at all seasons meat can be prepared for stores on the spot with great economy.
	The apparatus necessary for preserving any number of animals is portable by one man, and costs but a few shillings. No special machinery or building is necessary.

* *Letters on Chemistry*, p. 448.

THE NEW PROCESS

FOR THE

PRESERVATION OF MEAT FOR FOOD.

THE subject of the Preservation of Food, particularly of flesh food, has lately attracted so much attention in a hygienic point of view, and such various means have been practised to arrive at a suitable mode of effecting this object, that it becomes a question of great interest and importance,—and just now attracts a well-merited share of attention.

To a nation with such a navy, merchant marine, and military force, the great significance of the subject cannot be over-estimated—not only in its *scientific*, but in its *financial* point of view; for where the supply of flesh food for so many thousands of men is concerned, the first consideration which should, *as a duty*, be entertained is, how far the means adopted are capable of securing preserved meat *in a perfect condition*, with regard to *composition*,—and, secondly, how far the material produced is at all *commensurate in perfection with the cost.* I would propose, briefly, to enquire if these conditions are fulfilled by the present means, and if the usual processes cannot be improved or superseded by that introduced by me to the notice of government, as a *scientifically correct* and *mechanically convenient* method, possessing all the requisites for securing perfect results, and adapted to meet any emergencies that may arise, as during the late Crimean war, when the defects not only of the supply but of the quality of the meat for food, were so evident and gave origin to such wide spread mischief, as shown by the statistics that, from October, 1854, to April, 1855, with a healthy climate and a stationary army, the rate of disease rose to the alarming amount of 39 per cent. for the infantry, and 45 per cent. for the troops in the front—

and the proportion of those lost by sickness to those by wounds was, if we take the whole war, as 16·211 to 1·761. That this high rate of ill health was owing chiefly to the imperfect food is admitted by all. It has been aptly remarked,* "If we were asked to prescribe a dietary best adapted to give rise to gastric irritation and dyscrasial disease, could we suggest one more potent than salt pork, hard biscuit, and raw rum?" But if, in addition, we find that this meat could have little or no nutriment, that its most important constituents are taken from it in the process of "cure" and packing, that it is rendered more difficult of digestion, and it no longer contains any of the natural elements suited for the maintenance of health, we may fully understand the speedy appearance of the "great destructive agent scurvy," and the truth of Dr. Macleod's remark † that "this scurvy was our worst enemy and wrested from us more wounded men than even the conical ball."

It is plain that the meats preserved for stores should not only be capable of preparation in as economic a form as possible, and of easy portability and transport, but that they should be in a suitable condition for replacing the wants and supplying the nutritive elements necessary to perfect health. For the sailor this is imperative, who, while exposed to the vicissitudes of weather and temperature, and undergoing frequent and often prolonged exertion, must, at the same time, be supported on a more or less artificial diet, with but little vegetable supply, or even (by the present method), of the *natural* supply contained in flesh originally obtained from the vegetable kingdom; for it has been too much the habit to consider the mere fact of "*cure*" as the sole object to be gained—forgetting that meat may be so preserved with but *little, if any*, nutritive power, and, still worse, be served out as food, representing nutrition. For, to use the words of the most unquestioned authority—Baron Liebig—who has so fully treated of the subject: "It is obvious that if flesh employed as food is again to become flesh in the body, if it is to retain the power of reproducing itself in its original

* *Macleod's Surgery of the Crimean War, p. 26.* † *Ib. p. 71.*

condition, none of the constituents of raw flesh ought to be withdrawn from it during the preparation of food. If its composition be altered in any way, if one of the constituents be removed, a corresponding variation must take place in the power of that piece of flesh, to resume in the living body the original form and quality on which its properties in the living organism depends."*

Therefore, it is a matter of primary importance that the meat should retain the *natural elements sufficient for perfect health*, even without the addition of vegetables, as sufficiently proved by the well-known illustration of carnivorous animals, who derive the requisite vegetable elements from the flesh of the herbivorous animals on which they prey; while, amongst mankind, the fact that the inhabitants of the Pampas, the North American hunting tribes, and the Esquimaux, who are only flesh-eaters, enjoy perfect health, shows the sufficiency of flesh in its *perfection* for sustaining existence, where, either from inability to obtain, or from habit, vegetable food is not used. It is not convenient here to refer to the question of the necessity or advantages of flesh diet, or to notice the superiority in bodily endurance and mental activity of the flesh, over the vegetable eating nations, to shew that the thinking mind and working body are equally influenced by the perfection and quality of food. "The commonest observations," says Liebig, "teach us that flesh possesses a greater nutritive power than all other kinds of food." "It is certain that three men—*one* of whom has had a full meal of beef and bread,—the *second*, of cheese or salt fish—and the *third*, of potatoes, regard a difficulty which presents itself from entirely different points of view, the effect of the different articles of food on the brain and nervous system is different, according to certain constituents peculiar to each of these forms of food."† So that, taking a scientific view of the necessity of a proper supply of flesh materials, it becomes not merely a matter of individual interest, but, for the army and navy, a *serious duty* to enquire how far the soldier or sailor is furnished with a substance capable of fulfilling its proper office of *supplying the wants of the*

* *Leibig's Letters on Chemistry, p. 467.*
† *Chemistry of Food, p. 122.*

system. The necessity of such has been too often proved in warfare—the meat, even if enough in quantity, or rather *bulk*, being deficient in quality and nutritive power. Consequently, the failure of the physical and moral powers follows, and, as illustrated by the above quoted remark of Liebig, there is neither the mental activity to project, nor the ability and energy to accomplish, important measures under circumstances where these qualities are particularly required. Dr. Macleod, in his "*Notes on the Surgery of the War in the Crimea*," observes:—"The constant repetition of the same rations, the absolute uniformity in every item of food, is but too apt to occasion aversion, especially with those in whom disease is beginning to show itself. I can speak from personal experience as to the strong predisposition of this one cause in giving rise to the fever designated 'Crimean,' and I know of few things which had a more undoubted effect on the health of the troops."

In the first place it is necessary, in order to understand rightly the objects to be attained, that the composition of flesh and its various constituents, with their uses in the animal economy, should be referred to. It may be stated in general terms, that flesh contains per cent. of *water* 76 *to* 79; of *albumen*, 2 *to* 14; of *fibrine*, 17 *to* 18; that, on an average, in ten pounds of flesh the soluble matter, after coagulation of the albumen and coloring material, does *not amount to three ounces.* The very smallness of these matters shews the great necessity of retaining them, except the water, intact in the flesh, which consists of—

1. Water.
2. Albumen.
3. Fibrine.
4. Phosphoric Acid.
5. Lactic Acid.
6. Potash, Phosphate.
7. Potassium, Chloride.
8. Kreatin.
9. Kreatinin.
10. Inosinic Acid, &c.

Ashes of Flesh (after Keller).

Phosphoric Acid . .	36·60
Potash	40·20
Earths and Oxide of Iron .	5·69
Sulphuric Acid . . .	2·95
Chloride of Potassium .	14·81
	100·25

It will be now convenient and useful to allude to each of these constituents separately, with reference to their office in the animal economy.

1. *Water*, which is so constant a constituent of the

body, varies in different kinds of flesh, and with the age of the animal—but always forms a large proportion, three-fourths, or more. It is evident that this element can be harmlessly dispensed with, as it can be always added artificially in the preparing of food—but is useless, as well as inconvenient for transport—occupying unnecessary space and increasing weight, while it is ever ready to facilitate decomposition.

2. *Albumen*, as contained in a state of solution in the juice of muscle, surrounds and bathes all the muscular fibres, and is found in varying proportion. It supplies, as food, the basis from which the structures of the body are formed. "Everywhere throughout organized nature where animal life is developed, we find the phenomena of life depending on albumen."* The familiar example of the composition of the egg shews how, with merely the assistance of external air admitted through the shell, all the complex structures of the body of the chick are fully formed, and its organs perfected for supporting an independent existence on emerging from the shell. Albumen is the "starting point" of the whole series of tissues. *The necessity for retaining* this material in flesh is therefore obvious. It is on the abundance of this albuminous fluid, and its retention in the meat, that the tenderness depends; hence the rule in good cookery, of either plunging meat at once into boiling water, or putting it close to the fire at first, to make a crust of coagulated albumen, and so retain its juices. The coagulation of the albuminous substance around the fibres prevents their hardening and contraction.

As the albuminous matter is deficient in the flesh of old animals, it accounts for the toughness of the meat. If flesh be mechanically prepared, by depriving it of the albumen, the fibre becomes hard and horny, and therefore difficult of digestion.

By the method of "cure" at present in use, the greater part of this highly nutritious albumen is abstracted, and merely used for "fining" or cleaning the pickle that is withdrawn from the pickling tanks. It is calculated that

* *Liebig's Letters on Chemistry*, p. 371.

in Glasgow alone, albumen equal to 187 tons of meat is lost per winter, which, at 6d. per pound, equals a loss of £10,472 worth of nutritious material. What the loss on a large scale is, may be conceived.

3. *Fibrine*, which forms 17 to 18 per cent. of flesh, and about 70 per cent. of the flesh when *dried*, is, in a chemical view, analogous to albumen, and in the same relation to the albumen of the blood as solid and fluid albumen would be. In the process of digestion it is softened and dissolved, as is the boiled, *i.e.*, coagulated white of egg. If the fibrine when long boiled be examined after the formation of soup, it is found hard and difficult of digestion.

By the method of "cure" at present used, the fibrine is the principal residue, becoming of course hard, and in a little time so hard as to require a saw or chopper instead of a knife—no doubt the material in this state is not liable to decompose, and on this account hardness is looked on as one of the tests of good "cure"—unfortunately at the same time being a *test of deterioration in quality and inaptitude for food.*

These materials of meat, though popularly believed to be the essentials, are *of themselves incapable of supporting the vital process;* some other compounds, as tabulated above, are requisite. The well-known efficacy of soup in restoring strength to the body and perfection to the digestive process, (though this soup does not contain the fibrine of the meat,) and the inutility and vapidness of the meat after its preparation, are every-day striking though unobserved proofs. Analysis, however, bears out experience on this point.

* When boiled there enter the soup		and remain in the exhausted meat
Phosphoric Acid . .	26·24	. . 10·36
Potash	35·42	. . 4·78
Earths and Iron . .	3·15	. . 2·54
Sulphuric Acid . .	2·95	. .
Chloride of Potassium .	14·81	
	† 82·57	17·68

* *Liebig's Letters on Chemistry, p.* 446.

† The usual process of "cure" abstracts these elements even more thoroughly than in making soup. See page 15.

Two converse experiments performed by the Gelatine Commission in France, (see *Rapport à l'academié des Sciences*, August 2nd, 1841,) and giving its results after continuing experiments for *ten years*, show the importance of these other constituents of flesh. A dog was fed daily with half a pound of boiled flesh softened in water, *thoroughly expressed*, and freed from fat as much as possible, but lost, in the course of forty-three days, a fourth of its weight; after fifty-five days his emaciation was extreme; he could hardly eat the quarter of his ration, and his utter exhaustion was evident to the eye. On the other hand, dogs fed with the same amount of raw flesh, which, of course, contained more water and less meat, continued healthy. The converse results were obtained thus:—

A young dog (female) was for some time fed on bread and gelatine. She had lost one-third of her weight, was excessively weak, and about to die. *Four table-spoonfuls of soup* were now added to each mess, and from that time the animal regained strength.

These experiments, amongst many, show the great necessity of those other compounds, though contained but in small quantity. We may, therefore, further inquire into their composition and objects, premising that "Flesh contains in its composition certain universal conditions of digestion and nutrition, in regard to which other kinds of animal and vegetable food resemble it. In its fibrine and albumen it has a definite value for the production of the fibrine and albumen of blood; in its fat, a value for the production of heat; and in its salts, a value for the production of both heat and blood, as well as for the secretory processes. In addition to these, flesh possesses, in the very remarkable constituents of the juice, *a peculiar value* for certain processes of a higher order, by which it is distinguished from all other forms of food."*

4. *Phosphoric Acid* is contained largely in the juice of flesh, and found in different chemical forms, amongst others of "meta phosphoric," (which I propose, as will be seen by-and-by, to add by my process, being in

* *Liebig's Letters on Chemistry, p.* 448.

this form recommended by Professor Galloway of Dublin.) From the constancy of its occurrence, not only in flesh, but in other substances of food, especially from the vegetable kingdom, its office has been particularly enquired into. We find it forming in usual articles of food, as

In ashes of	Ox flesh	36·60 per cent.
„	Salt Cod fish	16·775 „
„	Yolk of Egg	36·74 „
„	Cheese, Gruyere	45·00 „
„	Tea (Souchong)	9·88 „
In Wheat		from 40 to 60·00 „

In the Ashes of Wheat.

Alkaline Phosphates	49·18 per cent.
Earthy Phosphates	23·13 „
Free Phosphoric Acid	27·69 „
	100·00

Though its exact properties cannot be defined in all cases, yet, from the constancy of its occurrence, we may see it is "indispensable to the vital process."* As it is found largely in flesh-juice, it is necessary to the normal state of the muscles of animal and organic life. It is a constituent of the viscera, liver, lungs, kidneys, &c., and of nervous matter; but in the latter is deficient in childhood, old age, and idiotcy, therefore essential to the composition and perfection of the brain. It is also contained in the gastric juice, explaining the advantage of soup to stomachs of low digestive powers, thus not only supplying the wants of the body, but the gastric fluid itself. Other, and if possible more important offices, are to be fulfilled with regard to the blood by this acid. If we reflect for a moment that the blood, which is so freely distributed to every minute and remote part of the body, is contained in capillaries of extraordinary and even microscopic minuteness, we may conceive of what tenuity must be their walls, and how much more permeable than blotting paper, and yet these minute vessels, though immersed in a fluid muscle-juice, do not allow the filtration of one of these fluids into the other;

**Liebig's Letters on Chemistry, 490.*

nevertheless, the explanation as proposed by Liebig is simple; for, as the contained fluid, blood, is alkaline, and the muscle-juice surrounding, acid, the necessary conditions of an electric nature exist for preventing the interchange of these fluids. In correspondence with this idea, Professor Buff constructed a pile, consisting of discs of pasteboard moistened with blood, of flesh, and of brain. This arrangement caused a very powerful deviation of the needle of the galvanometer, indicating a current in the direction from the blood to the muscle. When water was substituted for brain, the action was weaker; the current arising from contact of blood alone with the platinum was in this case the reverse.*

The alkalinity of blood is owing to the phosphate of soda which is "indispensable to its normal constitution." As it has the peculiar and wonderful property of conveying carbonic acid in large quantity, and when, having given it off in respiration, still retaining its original properties, "the serum of blood absorbs 166 times more carbonic acid than could be absorbed by the very largest proportion of carbonate of soda which it can be supposed to contain;" and "there is no known salt the chemical properties of which approach more closely to those of the serum of the blood than the phosphate of soda. There is none more fitted for the absorption and entire removal from the organism of carbonic acid."† The necessity of this compound of soda in the blood is proved by the eagerness with which animals living on *inland* plants, which *contain potash largely*, but not *soda*, impelled by a natural instinct, seek the "salt licks" and other means of obtaining salt (chloride of sodium). By the action of chloride of sodium on phosphate of potash we have the phosphate of soda supply found so necessary to the blood, and chloride of potassium for the muscle-juice. We find, therefore, phosphoric acid in some form everywhere necessary, specially to blood, gastric juice, and muscle, and serving in the great processes on which life depends—of circulation, animal heat, digestion, &c. As it is supplied in flesh in comparatively small quantity, great care should be taken to re-

**Liebig's Chemistry of Food, p. 104. †Ib. 117.*

tain it, or even to make an artificial addition in certain circumstances of living, and where there is no vegetable supply obtainable.

By the present means of "cure" this material, as in the soup above referred to, is abstracted by the brine.*

5. *Lactic Acid* is another ingredient of perfect meat, and is found to be identical with that formed in sour milk, or by the decomposition of sugar, starch, &c. The acidity of flesh is in a great measure due to this acid, between which and phosphoric there is an equilibrium maintained. It is consumed in respiration, and is, therefore, a former of animal heat. When added in quantity to food it does not pass off by the kidneys, but disappears in the system, as shown by experiments.† "It plainly appears, therefore, that the lactic acid in the organism is employed to support the respiratory process; and the function performed by sugar, starch, and in general all those substances which, in contact with animal matter, are convertible into lactic *acid, ceases to be an hypothesis.* The presence or addition of lactic acid heightens the flavour of meat. Again, it is also contained in the gastric juice, as one of its natural constituents"‡

By the present process of "cure" this lactic acid is abstracted, thus doing not only positive harm, by denying it to the gastric juice, but a negative one, in taking away so much natural aliment and carbon supply for respiration.

6. *Potash salts*, as seen by the analyses referred to above, are largely contained—

	In Ash of Flesh.		*In Soup.*
Potash	40·20	. .	35·42
Chloride of Potassium .	14·81	. .	14·81
In Raw Beef—Potash .	9·599 } per ounce.		
In Salted „ — „ . .	0·394 }		

Their uses having been before incidentally explained, it is only necessary to remark their quantity and obvious importance. These components are removed also by the process of salting,§ and the occurrence of scurvy has been

* *Liebig's Chemistry of Food, p.* 135. † *Ib. p.* 103.
‡ *Ib. p.* 138. § *Ib. p.* 135.

attributed to, and no doubt is, to some extent, owing to their absence.*

Certain other crystallisable constituents have been determined by the researches of Liebig, such as kreatin, kreatinin, sarcosine, inosinic, (or the flavoring) acid of flesh, &c. These must be more or less destroyed by the ordinary "curing process."

Gelatine, usually supposed to be contained largely in flesh, though present in tendon, bones, &c., forms but a very small, and might be called accidental portion—in veal, not 1·578 per cent.; in beef, 0·6 per cent. Contrary to general belief, it is altogether *innutritious;* and here it may be well to refer to this very popular idea of the nutritive value of gelatine, as the latter substance is often supplied and purchased at a high rate for stores, either by itself in cases, or forming a large proportion, in weight and substance, of the tins of preserved meats, and served out to the men as food, and that of a non-nutritious quality, involving waste of money, space, and carriage, and still worse, being generally reserved for the sick comforts, is supplied at a high rate, *with injury instead of benefit.* The Gelatine Commission of Paris, under Magendie, 1841, pursued a series of experiments for a space of ten years, on gelatine made from Holland broth, bones, &c., and by different modes. Gelatine soup in abundance was supplied as long as the dogs, subjects of the experiments, would eat it; but by-and-by they refused, and though living amidst abundance of this soup, died of hunger, and in the same time as dogs of same weights, &c., who ate *nothing.* Again, dogs supplied with water and *no* food lived six, eight, or ten days longer than those supplied with gelatine only. But the instance of M. Jules Lecœur, who voluntarily went through a series of these experiments, is most complete. On the 22nd June, 1842, he took at mid-day *thirty-five* ounces of gelatine, and three and a-half ounces of bread. He was more "*saturé que rassasié*"—more filled than satisfied; he felt uncomfortable, and was very thirsty. At three o'clock was hungry; at six he took twenty-eight ounces

* Dr. Garrod.

of gelatine and three and a-half ounces of bread; he felt more uneasy than before, was tormented with hunger in an hour, and at ten that evening, to satisfy his appetite, had to eat fifteen ounces of bread, though he had consumed within ten hours the product of *thirty litres of bone broth*—about twenty-five quarts. So he continued for four days of experiments, suffering daily more uneasiness, having severe dyspeptic symptoms, perspiring much, and feeling weak. M. Donné also experimented on himself. After six days subsistence on gelatine, during which he suffered much from hunger, he had lost two pounds weight. Indeed gelatine, "so far from increasing, diminishes the nutritive value of food, as it does not disappear in the body without leaving a residue."*

Such an outline will suffice to show the variety of the compounds in meat, their relative amounts and importance, and demonstrate the necessity of inquiring how far the present modes of preservation fulfil *all* or *any* of the conditions requisite for a perfect material, hygienically as well as practically, and whether the method I have introduced does not offer a scientifically *correct*, *economic*, and *perfect* means of preserving meat with its natural elements, and even with those of vegetables artificially added. I will, therefore, briefly review the methods in use, in order to examine how far this is the case.

First, as to the "cure" by salting, in ordinary use. Salt, as an antiseptic, is so abundantly furnished by nature, is so economical and successful in effecting a "cure," that naturally it occupies the first place, not, however, *as ordinarily used*, without causing grievous injury to the meat—*hygienically by abstracting nutrition*, and *financially by losing weight*—as every one knows that meat by being salted loses in weight, though if left in pickle, occasionally after a time it is found to gain, not, of course, by nutritive material, but by the admission of pickle. Liebig has so fully investigated this subject, and proved the unsuitableness of such a mode of preservation, that he remarks:—

* *Liebig's Letters on Chemistry, p.* 444.

"Of 3 cwt. of meat by the operation of salting, 1 cwt. may be rendered useless to the vital process,"*

And "it is universally known that in the salting of meat the flesh is rubbed and sprinkled with dry salt, and that where the salt and meat are in contact, a brine is formed, amounting in bulk to one third of the fluid contained in the raw flesh. I have ascertained that *this brine contains the chief constituents of a concentrated soup, or infusion of meat*, and that, therefore, in the process of salting, the composition of the flesh is changed, and this, too, in a much greater degree than occurs in boiling. In boiling, the highly nutritious albumen remains in the coagulated state in the mass of flesh; and in salting, the albumen is separated from the flesh; for, when the brine from salted meat is heated to boiling, a large quantity of albumen separates as a coagulum. This brine has an acid reaction, and gives with ammonia a copious precipitate of the double phosphate of ammonia and magnesia. It contains, also, lactic acid, a large quantity of potash and kreatine, which, although I could not separate that body from the large excess of salt, may be safely concluded to be present from the presence of kreatinine, &c. "It is now easy to understand that in the salting of meat, when this is pushed so far as to produce the brine above mentioned, a number of substances are withdrawn from the flesh which are *essential* to its constitution, and that it therefore loses in nutritive quality in proportion to this abstraction. If these substances be not supplied from other quarters, it is obvious that a part of the flesh is converted into an element of respiration, certainly not conducive to good health. It is certain, moreover, that the health of a man cannot be permanently sustained by means of salted meat, if the quantity be not greatly increased, inasmuch as it cannot perfectly replace, by the substances it contains, those parts of the body which have been expelled in consequence of the change of matter; nor can it *preserve, in its normal state*, the *fluids* distributed in every part of the body, namely the *juices of the flesh*. A change in the quality of *gastric juice*, and consequently in that

* *Letters on Chemistry, p.* 448.

of the products of the digestive process, must be regarded as the inevitable result of the long-continued use of salted meat. And if during digestion the substances necessary to the transformation of that species of food, be taken from other parts of the organism, these parts must lose their normal condition."* As the meat prepared for stores is afterwards packed in brine and headings of salt, a constant further abstraction takes place, so that the nutritive power already so low, is still further reduced, and probably exhausted; and the evils now attributed to the salt in the salted provisions are not due to its presence, but to the abstraction of the natural constituents, and to the injury done to those remaining. So far from salt being injurious *per se*, the natural instinct of animals shews the contrary. The experiments on animals by Bousingault, shew its advantage; and, strange as it may appear, the difference of food has no influence on its amount in the blood. The blood of a dog fed eighteen days on flesh had the same proportion as after feeding twenty days on bread. "Some cause is in operation, which *(as the proportion of salt in the blood* never goes beyond a certain limit) opposes the increase, as well as the diminution of its quantity. Consequently salt is not merely an accidental but an essential and constant ingredient in the blood, and its quantity is fixed within certain limits."* The very fact of the impossibility of drinking sea water, or the water of the tanks, where any of the sea water has unfortunately got admission, proves amply that the blood, having already its fixed amount, will not take in water containing salt disproportional to it. A simple experiment also puts it beyond question. "If we drink, fasting, every ten minutes a glass of water, the proportion of salt in which is far below that of the blood, after drinking the second glass the kidneys secrete a quantity equal to the first, and so on; for twenty glasses we have nineteen secreted. But if we add some common salt—about one per cent.—no secretion takes place, and it is hardly possible to drink

* *Chemistry of Food, p.* 135.

more than three glasses, shewing that the blood will not take in beyond a certain amount."*

It is plain, therefore, that the evil effects of a sea life, as scurvy, &c., which have been attributed to the taking in of salt, do not arise from it, but from the *incomplete nature of the meat;* for while in scurvy patients were subsisting on the same meat as before the attack, yet, by the addition of lemon juice, recovery took place without diminishing the salt, but supplying some elements contained in this and other vegetable products. *In its preparation as food* on board ship, of course salt meat of ordinary "cure" can only be prepared by boiling. There is *no variety;* and any nutriment it *may* possess after the "cure" and packing is taken away by the water in boiling, which *cannot* be used for soup, hashes, &c.

In the preparation of meat in tins hermetically sealed, the fluid necessary for the boiling is extracted from the bones which contain gelatine, as gelatine soup, and, of course, forms, and is intended to form, a considerable bulk and weight of the case or tin, but of a material valueless for nutrition, and even hurtful—as shewn by the experiments before related. While, from the inconvenience of carriage and expense, but a small supply of this meat, with a large proportion of gelatine, can be given as rations, and, by the great heat to which the flesh is exposed during its preparation, the chemical elements are changed. As the meat can only be served as thus contained in the cases in *bouillie*, it becomes disliked as an article of food, from its sameness and taste, also causing indigestion and loathing. Financially, the great loss entailed by cutting the flesh from the bone, and in small pieces, is a considerable objection, as is also the fact that expensive and local apparatus is required for the preparation, apart from the expense of the tins.

Encrusting with different varnishes, so far has been found inefficacious, as the water contained within the meat causes decomposition,—while the difficulty of covering all the inequalities is very great.

* *Letters on Chemistry, p.* 432.

Keeping the meat immersed in antiseptic fluids of course gives to the fluid all the nutritious materials above alluded to.

Packing in melted fat, though comparatively successful for small substances, on a large scale, would be both inapplicable and expensive, though the dried meat might be dipped in, or lightly covered with, such material for packing.

The method I have introduced *is not open* to these objections, either financially or scientifically. It is based on anatomical principles, taking advantage of the means nature has already used in supplying the circulating fluid to every *most remote and minute tissue* of the body. The difficulties hitherto were, that if the animal was killed as usual, the fluid introduced into the circulatory organs, capillaries, &c., would escape at the incisions in the vessels by which the animal was bled to death, and therefore not enter or saturate the flesh; and if, on the other hand, the incision in the vessels was *not made*, and the blood not let to escape, it would remain in the capillaries, &c., coagulated or otherwise, and prevent the fluid entering, and so attaining the very parts required; and once a small portion of meat would become decomposed, it would speedily propagate itself to the mass.

Brine and preservative fluids have been endeavoured to be forced into meat by atmospheric pressure, but without success; and even still the method of "squirting" meat with a syringe, introduced into the mass here and there, is practiced with imperfect results naturally. For if the millions of channels afforded by the circulatory tree for reaching in the natural way all the flesh be not made use of, *no other humanly devised method* of doing so can be as successful. Yet a very simple, rapid, and most inexpensive method can be attained, by rightly availing ourselves of the means offered. The following is a brief description of the new process I have invented "The animal is killed by a blow on the head, piercing the brain and causing instantaneous death. The chest is then at once opened, and the heart exposed. An incision is made into the right side of it: either the right ventricle or auricle,—and directly another into the left

side (the left ventricle); the blood from the right side (venous), and from the left (arterial), immediately rushes out. When it has ceased flowing, a pipe is introduced into the incision in the left ventricle,—and so into the aorta, or great vessel leading through the body, *i.e.*, the trunk of the circulatory tree, and is there firmly retained. This pipe can be connected by a coupling with a stop-cock fixed to a flexible tubing, twenty to twenty-five feet long; and this tubing communicates with a tank raised the height of the length of the tube, into which brine and a little nitre is put when well strained (about one gallon to the cwt.) The stop-cock is connected to the pipe in the aorta, and the fluid let on; it will rush out at the incision in the right side of the heart, after traversing all the circulatory organs, in four or five *seconds* in sheep, swine, and such like,—and in nine or twelve *seconds* in oxen,—and in two minutes or so in the latter, and proportionately less in former, will have all run through—thereby clearing the vessels and capillaries, and preparing for the second stage, which is performed simply by closing the incision in the right side with a strong sliding forceps, and thereby rendering the circulatory system perfect, as originally—but with the vessels free and ready to receive the preservative fluid.

Into the tank above alluded to, the final materials to be used are introduced, and turned on as before, when rushing through and thus filling the circulatory tree, and the opening in the right side being *now stopped up*, the fluid over-distends the hitherto empty vessels; the flesh surrounding the capillaries takes up the fluid in every part; and it, as well as every tissue of the body, will thus be saturated with preservative fluid; whatever may be used, a few minutes suffices for the whole operation.* It is no exaggeration to say that, with proper arrangements, an entire ox could be preserved with ease in ten minutes—and this without labor or anything worth calling machinery, and with nominal expense. The perfection of the process is *proved* by the fact, that when the animal has

* One gallon of saturated brine and three ounces of saltpetre to the cwt. increased if necessary, to double the quantities, will answer for general purposes.

lain about three quarters of an hour to let the tissues be thoroughly saturated, it may be cut into pieces of suitable sizes—not too thick, to prevent a reasonable escape of the water by evaporation, and hung up at once to dry in a chamber with a good current of air, and a little smoke; or without it, if preferred; if possible, furnished with a revolving ventilator worked by water or steam. Failing these arrangements, it should be dried, if on board ship, by suspending in the air or aloft; if on land, in a chimney or some convenient situation dry and well ventilated.

The amount of drying, smoking, and size of pieces, and the appearance given to them, are of course matters of detail and taste, as well as are, to some extent, the materials. I use, as far as possible, those adopted in ordinary means, applied differently, but in accordance with the scientific view, of presenting a perfect material for the seamen and soldiers. I add such substances as will supplement those ordinarily obtained on land from the *vegetable kingdom*, and also improve the meat by adding to it as a plastic or nitrogenous element of nutrition, a carbonaceous or respiratory element in the shape of sugar, which at the same time improves the taste, gives softness, and acts as a preservative, while it supplies a normal respiratory material for forming lactic acid, the importance of which having been before explained, it is superfluous again to allude to; but it is necessary to notice that, as the meat prepared by my process is cut directly from the animal, it contains, of course, all the fat natural to it, being the normal respiratory food, "or producer of heat," combined with the meat, which is the plastic, *i.e.*, building-up food for the organs and structures, or "producer of force." For the latter purpose, as plastic food, 17 parts of lean beef equal 56 parts of wheat flour, 67 of rye flour, 96 of potatoes, and 133 of rice; while for the former purpose, of heat-producing, 1lb. of fat is equal to 2·4lbs. of starch, 2·5 of sugar, and 7·7lbs. of pure flesh.

By the addition of sugar, as I propose, a respiratory food of a very important nature is added, and therefore the meat for navy stores can be *still more* fitted for a substantial and life-supporting food for the sailor, who finds in the spirits, rum, &c. served out to him, heat-producing

foods, though "most costly materials of respiration, the same effect could be produced in the body by means of saccharine and farinaceous articles of food, at one-fourth or one-fifth the cost."*

As the sailor has at present sugar issued to him (the advantage of which experience has pointed out), and only objectionable from its taste, or when given in too concentrated a form, that is, too much at one time for the action of the stomach, surely it would be more economical and efficacious to add at least part of it in the meat.

Phosphoric acid, which, as before shown, is so important an element for the perfection of the functions of the body, as supplied in vegetable food, is more or less denied to the sailor. I propose to add it to the meat in certain small quantities—half an ounce or more to the cwt.—and in the form found in the flesh of fowl,† namely the monobasic or meta-phosphoric acid; as it, when prepared in this form, has the property of coagulating albumen. Its use is obvious by retaining this very desirable "force-producing" element in the flesh, at the same time giving a phosphatic supply, which, from the analyses above cited of the usual articles of food, is proved to be so requisite. As the albuminous material, when *fluid*, is very apt to decompose, its coagulation prevents this accident; and if it be determined afterwards to pack the meat in brine as usual, the coagulated albumen will be retained. It is to be explained that the addition of phosphoric acid is *not necessary* to my process, though to some extent useful as a preservative of the albumen; but I recommend it for the sailor and soldier in campaign, *as a dietetic addition* of great importance, in the absence of vegetables. Lemon-juice, at present issued at much expense, I believe only serves in making amends for the injury done to the meat in the ordinary process of "cure," and that in this way chiefly it acts as an antiscorbutic; for as the meat has lost, according to the estimate of Liebig, *one third* of its properties for sustaining the vital process, and as a scorbutic patient, *though still* subsisting on this meat, with

* *Liebig's Letters on Chemistry, p.* 470. † *Chemistry of Food, p.* 98.

the addition of lemon-juice will recover strength, it is evident the meat is injurious, not by its *positive*, but its *negative* properties; so that scurvy and various forms of debility arise from mal-nutrition, and not from the addition of salt, as has been so generally supposed; for even salt water has been given to scorbutic patients without aggravation of the symptoms. Though scurvy may not be seen in its intensity now as some years since, yet, the testimony of Dr. Macleod puts its existence, and that in an insidious form, beyond doubt. He states:—"Scurvy was the great destructive agent against which it was most difficult to cope, and which, though but little cognisable by its usual signs—though often carefully masking its presence behind some other ailment—*yet influenced every disease and touched with its poisoned finger every wound.*"*

An inquiry into the symptoms will bear out this view. The most striking evidence of the change of the blood fluid (or the loss of that property it possessed of circulating in minute vessels without filtration), is shown by the well-known appearance of the bleeding gums, and the extravasations and blotches, that take place in various parts of the body, but can be explained by the want of the proper circumstances for sustaining the electrical influence described by Liebig; for if the phosphoric and lactic acids and the potash salts be wanting in the muscle-juice, and the phosphate of soda in the blood, the necessary conditions cease, and the filtration of the blood fluid and colouring matter takes place throughout the body.

The urgent symptoms of want of respiratory power shown by the difficult breathing, dusky hue of skin, fainting, rapidity of breathing, &c., *though the lungs are remarkably free from any disease*,† can only be explained by some want in the blood for taking its part in the process. As the machinery, if we may call it, of respiration is perfect, there must be a defect in the circulating material. As the great agent in the circulation, the phosphate of soda of the blood, has not been supplied, there is no means of carrying the carbonic acid and supporting respiration

* *Macleod, Notes on the Surgery of the Crimean War, p. 69.*
† *Library of Medicine, vol. v. p. 83.*

and animal heat. Therefore, scurvy is observed to come on sooner in cold countries, or where damp clothes are worn, and where the men are on limited rations, under circumstances where the respiratory process should be particularly perfect. The muscular debility remarkable in this disease follows from the want of the proper supply of circulating fluid and chemical constituents. All the symptoms, in fact, can be traced to the want of the natural elements which have been abstracted from the meat. In order to test this idea, and as the analyses given in books supplied no information, at my request lemon-juice from the admiralty stores was analysed by Professor Galloway, Museum of Irish Industry, Dublin, the result showing the existence of important constituents not before enquired for, but of well-known utility.

Analysis made April, 1864, gave, in one gallon of lemon-juice, phosphoric acid equal to 91 grains of anhydrous acid, or 458·5 grains of ordinary phosphate of soda.—The potash was not estimated.

Two analyses made in October, 1864, gave 71 grains of neutral or diphosphate of potash per gallon, and, in addition to this, about 110 grains of potash in the form of other salts.

The Potash Salts I add by my process, as nitrate of potash, phosphate of potash, or chloride of potassium. The former I believe to be most suitable for general purposes, giving colour to the meat.

The other crystallisable substances, *kreatin*, &c., enumerated before, are of course retained in their natural conditions, as no means are taken to remove them.

The addition of spices—pepper, cloves, and condiments; also such flavours as may be desired, lactic acid itself, saur krout, &c.,* can be made at a very trifling expense, in this way pleasing all tastes and requirements.

Though any preservative fluid can be infiltrated, I

* Or citric acid, the product of the evaporation of lemon-juice, tartaric acid, and other antiscorbutics, as may be determined by the authorities.

prefer to use that in most general use, such as pickle with sugar, saltpetre, nitrate of soda, phosphoric acid, spices, &c. Pickle and saltpetre or nitrate of soda suffice for the mere cure, so that *an entire ox can be preserved* for less than one shilling; sheep, swine, &c., for a few pence. If the other materials, as I recommend, are added, they of course add to the expense, but are so much more important and agreeable food,—therefore a saving.

The fluid can be used either cold or boiling, which latter state I avail myself of in some circumstances where, for instance, it is determined to pack the meat in brine afterwards. The boiling fluid, on admission to the flesh, coagulates the albumen and gives a "set" to the meat, so that this albumen cannot separate from it in the casking.

When the meat has been dried and smoked according to taste, it can be packed in cases of sheet iron, in barrels, or tins, either protected from any accidental moisture which would harm them, by dipping each piece in melted fat, so as to make a coating, or by packing in dry sawdust, either alone, or, which I prefer, with powdered charcoal mixed in equal parts. This packing material should be sufficient to thoroughly cover the pieces.

When about to be used, the meat should be washed to free it from the packing dust, and steeped for a few hours in water, or not, according to taste; then prepared as ragouts or hashes, with pea-meal, flour, and such materials as may be had on board ship. By the present system the meat, already deficient in nutritive power, is boiled, and the fluid *thrown away;* whereas the "hung" or "dried" meats can be prepared in ragouts, hashes, soups, and roasts; so that the fluids containing the soluble elements would be taken along with the meats. If for roasting or grilling, the meat may be steeped a few hours in cold water,—and if for making soup (which can be done even for invalids), after a little steeping it should be cut up in very small particles, and so gently heated—such farinaceous matters being added as are accessible. In fact these meats admit of being prepared for food in any way the ingenuity of the "cuisine" may determine, thus of

course presenting advantages not to be obtained by any other known process.

A very important convenience also is attained, that the meat, not containing the large amount of fluid originally in combination, can be carried in small bulk. Each man could take with him in perhaps one-half or one-third the bulk, the amount of *nutriment* contained in the whole; and again, this meat can be eaten (if circumstances require it), without cooking.

Apart from the economy and efficacious nature of my process, there is presented to the authorities this very great advantage, that nothing is done *in secret.* All the stages of the process can be inspected by the officers appointed, so that the health of the animals and the wholesome quality of the meat could be certified; while meats can be prepared at all seasons, and equally well in summer and autumn, when the animals, having recently been fed on the fresh grasses, are nearer to their natural condition, and their flesh better food, being supplied with the earthy salts, &c. The price is also less in the summer and autumn,—for in winter, by the great demand on the market for the "curing" months, the price is considerably raised. On the other hand, there is no doubt as to the injury done to the meat in the ordinary means of "cure;" and as to the preserved meats in tins, there is no means of knowing the condition or health of the animal (though of course the known respectability and high name of manufacturers is more or less a guarantee); while, from the large amount of gelatine soup in the cases, much expenditure is made on a valueless and hurtful substance, though one which, from popular impression, is believed to be the reverse.

A *vast advantage*, and one *altogether unprecedented*, presents itself in the use of my method, namely, that on the arrival of a ship at port, meat can be prepared and preserved on the spot or on board, and in a *few hours* a stock for stores furnished, as the apparatus is portable (not costing more than a few shillings), the materials always to be had, and also the necessary height or pressure. In hot countries the meat may be drying, and in process of preservation, half an hour or so after the death of the

animal. If it is desired to be kept drying slowly, it should be suspended in pieces between decks,—or if to be dried quickly, it might be suspended either aloft or in an extemporized drying shed.

From the description already given, it is plain that the labor required is nil.

I would beg *most strongly* to urge the advisability of having certain officers and men on board each ship instructed in the method, and to practice it wherever animals may be found; as the *necessity for carrying a large store of provisions* would be thus obviated, while a superior and better tasted material could at all times be prepared at an extraordinarily cheap rate, and even in countries where decomposition usually sets in after a few hours.

I would, in conclusion, remark, as to the process itself, that success in some circumstances is attainable without the use of the first stage, *i.e.*, of washing the circulatory apparatus; but it is a most desirable preliminary stage, as I have found by experience, and therefore I strongly recommend it.

Notwithstanding the simplicity and rapidity of my process, though based on anatomical and correct principles, of which I have endeavoured to give an outline, I am, from experience, both in England for the admiralty, and in France before a commission appointed by government, so thoroughly persuaded of its efficacy, its adaptability for use in all weathers and climates, and the perfection of its results, that I am solicitous of the fullest trials and enquiry in every way by the authorities; though at first sight prejudice, or the natural objection made to any innovation or change, may present difficulties. I am sure that experience and enquiry will satisfy both as to the mechanical applicability, and scientific correctness of the method; while as to details of flavors, appearances, and size of pieces, experience alone on an extended scale of trial can decide what may be the most generally suitable, convenient, and pleasing.

In countries where animals are all but valueless, and where labor is scarce or unavailable, my process is peculiarly valuable, and will directly, I expect, be the means

of introducing here a suitable, wholesome, and agreeable meat for the million, at a most reasonable price, and containing all the nutritive properties.

In January and February last I was allowed to prepare fifteen oxen for the Admiralty at Deptford. In twenty-four hours some of the meat was packed as usual in barrels, and some pieces put to dry in the most convenient situations at the victualling yard. With part, a very great heat in the biscuit-drying loft, (about 120°,) was used successfully, and the drying accomplished in a few days. Other pieces were hung in the cooperage chimney, and dried after a few weeks time. By the report of the officers, both these meats having been packed dry in ordinary barrels till August 30th, 1864, when opened and examined at that date were pronounced perfectly preserved, showing that so far, after the lapse of seven months, the material is sound, and capable of preservation through the hot summer months, in barrels, and that without the erection of any special apparatus, in the first instance, as would be desirable for the drying.

In June and August last I operated before a Commission at Rochefort, appointed by the French Government, and prepared both oxen and sheep, in the height of a continental summer, with perfect success, though with but extemporized apparatus. When dried some time, the meats were prepared as ragout, beefsteak, chop, the latter of course grilled. Nothing could be better, particularly than the beefsteak. Soup was also prepared of excellent flavour and appearance, thus showing the value of this material for invalids, while from the artificial addition of sugar, phosphoric acid, potash, &c., it is manifestly particularly suited to the requirements of the sailor—invalid or in health.

Most important testimony in favour of my method has been given by Dr. Parkes, Professor of Military Hygiene, Army Medical School, in his work on Practical Hygiene just published. At page 215 it is remarked, with reference to the process, "This is an excellent plan, and will undoubtedly supersede the old system;" and again, under article "Sieges"—"If food threaten to run short, the medical officer should remember how easily Dr. Morgan's

process of salting meat can be applied, and in this way cattle or horses which are killed for want of forage, or are shot in action, can be preserved."

The foregoing remarks of course do not profess thoroughly to examine the subject in all its details, but are intended to put forward my views as to the causes of scurvy, and to suggest the remedies :

Firstly, of preserving meat in a perfect condition, retaining all its natural constituents.

Secondly, of adding such antiscorbutics as may be determined—those I propose being in accordance with chemical and practical experience, namely, phosphoric acid and the potash salts, which are tastelessly and economically added to the flesh by my process.

The practicability and advantages of this process are now fully recognized, the "*Morgan Patent Meat Preserving Company* of Liverpool being actively engaged in the importation of beef and mutton from the South American continent and the Falkland Isles, where hitherto millions of animals have been lost as food for want of an efficacious and economic method of preservation. Men and requisites have been sent out by the Company to South America, and in a very short time an abundance of well preserved and most economic food will be presented to the public.

The experiment of preserving beef in Australia during the hot season has been made by the Messrs. Davis of Fenchurch Buildings, London, and Australia, and meat has been brought to this country, and also supplied to shipping on the home voyage, with complete success. The Messrs. Davis are now having the process adapted on a large scale in Queensland and South Australia, establishments being formed for the utilization of the vast supply of superior food hitherto boiled down for the sake of the fat.

Meat prepared by the process, boned and dried, and thereby affording great convenience of carriage with unimpaired nutritive quality, has been prepared for the United States Government, and it is now under trial.

The agency of the patentee is established at 9, Broad-street, New York, where all information with regard to commercial use can be had.

EMPLOI

DU

SPECULUM LARYNGIEN

DU

Docteur de LABORDETTE

Chirurgien de l'Hôpital de Lisieux, chevalier de la Légion-d'Honneur

DANS LES BOITES DE SECOURS POUR LES NOYÉS ET ASPHYXIÉS

Sole Manufacturer for the United Kingdom.—
Louis Blaise
(late Savigny) & Co
67 St James's St.
London

EMPLOI

DU

SPECULUM LARYNGIEN

DU

Dr de LABORDETTE, Chirurgien de l'Hôpital de Lisieux, Chevalier de la Légion-d'Honneur,

DANS LES BOITES DE SECOURS POUR LES NOYÉS ET ASPHYXIÉS.

EXTRAIT *du Bulletin de l'Académie impériale de médecine, 15 juin 1865, séance du 16 mai 1865.*

RAPPORT *de* M. Ch. ROBIN, *en réponse à une lettre de M. le ministre de l'agriculture, du commerce et des travaux publics, concernant une note de M. le docteur* de LABORDETTE, *sur l'emploi du* Speculum Laryngien :

MESSIEURS,

Son Excellence M. le ministre des travaux publics a écrit à l'Académie, le 7 avril dernier, pour lui demander son avis sur le mérite d'un instrument destiné à faciliter l'exploration de l'arrière-bouche et

du larynx. Cet instrument, imaginé par M. le docteur de Labordette, chirurgien de l'hôpital de Lisieux, vous a été présenté le 31 janvier dernier, et deux notes concernant ses applications ont été communiquées à l'Académie par M. de Labordette.

L'instrument appelé *speculum laryngien* et les documents que je viens de mentionner ont été renvoyés à l'examen de MM. Trousseau, Gosselin et Ch. Robin. Vos commissaires ne répéteront pas ici la description du *speculum laryngien* et de son emploi, description déjà publiée dans votre *Bulletin* (du 31 janvier 1866), avec des figures qui en rendent l'intelligence facile. Ils se borneront à vous dire qu'ils ont constaté l'exactitude des faits signalés par M. de Labordette, dont l'énumération suit :

1° Cet instrument, d'une introduction facile, est supporté sans nausées par le plus grand nombre des sujets bien portants ou atteints d'angine auxquels on l'applique ;

2° Il permet d'examiner aisément l'épiglotte, les replis aryténo-épiglottiques, l'ouverture supérieure du larynx, les portions de l'arrière-gorge placées à ce niveau et l'état de ces parties, soit directement, soit dans le miroir dont sont munis certains des modèles du *speculum laryngien ;*

3° Il facilite par suite l'introduction des instruments destinés à agir sur ces organes, ou à les débarrasser des mucosités, des fausses membranes, etc., qui leur adhèrent ;

4° Il rend particulièrement sûr et rapide le cathétérisme de la trachée, en permettant à l'œil de suivre l'extrémité de la sonde jusque dans l'orifice supérieur du larynx ; il peut par conséquent être utile à ce point de vue dans l'administration des secours à donner aux noyés et asphyxiés, ainsi que l'a signalé M. de Labordette dans sa deuxième note.

Tel est l'énoncé succinct des faits que vos commissaires ont constatés, tant seuls qu'en présence de plusieurs chirurgiens et élèves des hôpitaux, durant leurs essais sur le vivant et sur le cadavre.

En conséquence, votre commission a l'honneur de vous proposer d'adresser le présent rapport à M. le Ministre de l'agriculture, du commerce et des travaux publics, en réponse à sa demande concernant l'avis de l'Académie sur le mérite de cet instrument.

EXTRAIT

DU

COMPTE-RENDU

DE LA

SÉANCE PUBLIQUE ANNUELLE

DU LUNDI 11 MARS 1867

DE L'ACADÉMIE DES SCIENCES

CONCOURS DE L'ANNÉE 1866

Citation très-honorable est accordée à M. le Dr DE LABORDETTE, chirurgien de l'hôpital de Lisieux, pour un ingénieux instrument imaginé et décrit par lui sous le nom de *Speculum Laryngien*. Non-seulement cet instrument, fort simple et d'un emploi plus facile que ne le sont les laryngoscopes, permet d'examiner

directement l'arrière-gorge, l'épiglotte, les ligaments aryténo-épiglottiques et les cordes vocales, mais encore il peut être utilisé dans d'autres circonstances. Il résulte, en effet, des essais tentés par M le Dr A. Voisin, que, sur les noyés, le Speculum Laryngien de M. de Labordette, introduit après le desserrement des dents à l'aide d'un levier, facilite la distension de l'arrière-gorge, l'arrivée de l'air dans le larynx et enfin l'introduction des sondes ou d'autres instruments chirurgicaux.

PRÉFECTURE DE POLICE

2e DIVISION

4e BUREAU

SECOURS PUBLICS

SPECULUM LARYNGIEN

AVIS D'UNE DÉCISION

Paris, le 19 mars 1867.

MONSIEUR,

Le Conseil d'hygiène publique et de salubrité du département de la Seine a examiné le Speculum Laryngien de votre invention, que vous avez proposé de placer dans les boîtes de secours pour les noyés et asphyxiés.

J'ai l'honneur de vous informer que, d'après son avis favorable, j'ai décidé que l'appareil en question ferait partie des objets composant les boîtes de secours (dites fumigatoires).

Agréez, Monsieur, l'assurance de ma considération distinguée.

Le Préfet de Police,

PIÉTRI.

SOCIÉTÉ CENTRALE
de
SAUVETAGE
des
NAUFRAGÉS
Rue du Bac, 53.

Paris, le 29 mars 1867.

MONSIEUR,

Nous avons l'honneur de vous informer que, dans sa dernière séance et après avoir pris connaissance de l'opinion émise par le Conseil d'hygiène publique et de salubrité du département de la Seine, sur l'utilité de votre Speculum Laryngien dans les boîtes de secours pour les noyés et asphyxiés, le Comité a décidé que cet instrument serait adopté par la Société centrale de sauvetage des naufragés et compris dans ses boîtes de secours.

Recevez, Monsieur, l'assurance de nos sentiments les plus distingués.

Pour le Comité,

L'Administrateur délégué,

J. DE CRISENOY.

PROCÉDÉ POUR L'EMPLOI DU SPECULUM

L'asphyxie des noyés et des pendus est occasionnée par la cessation de la respiration. L'introduction de l'air dans les poumons étant supprimée, le sang n'est plus revivifié et la mort survient dans un temps assez rapproché.

Le but que l'on doit se proposer, c'est de rétablir au plus vite la fonction des organes respiratoires.

En énumérant quelques-unes des difficultés que l'on a à vaincre, je vais essayer de faire comprendre le mécanisme du Speculum Laryngien, chez les asphyxiés :

1° La bouche est fermée et souvent très-contractée ;

2° La langue adhère à la partie postérieure de l'arrière-gorge, cette adhérence est compliquée par la présence d'une plus ou moins grande quantité de mucosités ;

3° La bouche est difficilement maintenue ouverte et l'épiglotte qui recouvre la partie supérieure du larynx est soulevée avec peine.

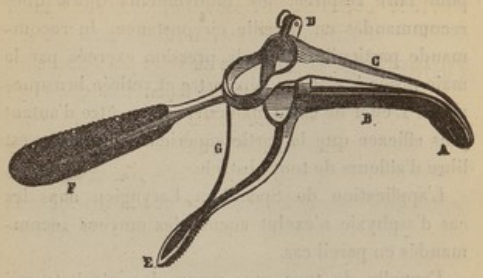
Voici comment le Speculum Laryngien peut vaincre ces obstacles, — le corps du sujet étant placé sur le dos, un peu tourné sur le côté droit, la tête étant légèrement élevée.

Après avoir desserré les dents, si cela est nécessaire, avec le levier en bois, le Speculum, tenu dans la main droite par son manche F, est introduit dans la bouche par l'extrémité arrondie de sa valve postérieure ou supérieure C. On le pousse de façon à ce que cette valve C suive le voile du palais sur lequel sa courbure la fait glisser sans effort et sans qu'elle puisse blesser aucune des parties qu'elle franchit. L'instrument est introduit jusqu'à ce que la charnière D touche à peu près la lèvre supérieure. Quand ce premier temps est exécuté, on attire avec un doigt le manche E de la valve inférieure vers celui que l'on tient. Les deux manches E et F rapprochés sont alors saisis dans la main gauche. On aura soin de bien maintenir l'instrument enfoncé. Sa valve inférieure B arrive à la base de la langue qu'elle déprime de haut en bas et d'arrière en avant, elle ouvre complètement l'arrière-gorge ; et l'épiglotte qui recouvrait le larynx se trouve élevée : la partie supérieure des voies respiratoires est, par ce seul mouvement, complètement dégagée et en rapport direct avec l'air.

Rien n'empêche alors, si des mucosités gênent la respiration, de les enlever avec une baleine munie d'une éponge ; une main reste libre à l'opérateur qui, s'il est médecin, pourra user de tel instrument qu'il jugera convenable, sonde ou insufflateur ; mais il est bien entendu qu'un médecin seulement doit user de ces moyens.

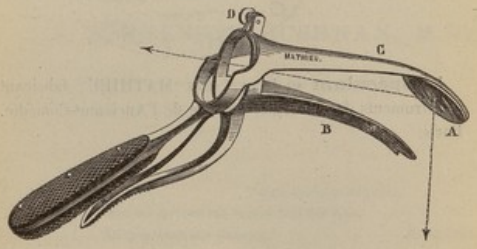
Si le sujet ne respire pas de suite après l'introduction du Speculum, on maintiendra néanmoins

Speculum fermé.



A. Miroir.
B. Valve inférieure ou antérieure.
C. Valve supérieure ou postérieure.
D. Charnière d'articulation.
E. Manche de la valve inférieure.
F. Manche de la valve postérieure.
G. Ressort fermant l'instrument.

Speculum ouvert.



A. Miroir où se réfléchit le larynx.
B. Valve inférieure maintenant la langue abaissée.
C. Valve fixe suivant la courbure du pharynx.

l'instrument en place, tandis que l'on emploiera, pour faire respirer, les mouvements thoraciques recommandés en pareille circonstance. Je recommande particulièrement la pression exercée par la main posée à plat sur l'épigastre et retirée brusquement. L'effet de cette manœuvre devra être d'autant plus efficace que la partie supérieure du larynx est libre d'ailleurs de tout obstacle.

L'application du Speculum Laryngien dans les cas d'asphyxie n'exclut aucun des moyens recommandés en pareil cas.

J'appelle de tous mes vœux des résultats qui viennent confirmer son utilité.

Lisieux. — Imprimerie de E. PIEL, succ^r de PIGEON.

AN ADDRESS

TO THE

WORKING CLASSES OF SALISBURY,

DELIVERED 23rd MARCH, 1865,

TO CLOSE THE FIRST SESSION

OF THE

PENNY READINGS.

BY

J. STEVENSON BUSHNAN, M.D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH,

ETC. ETC. ETC.

"And beshrew our soul,
But we do love the favour and the form
Of this most fair occasion." KING JOHN.

SALISBURY:
FREDERICK A. BLAKE, MARKET PLACE.

MDCCCLXV.

PREFACE.

An Address delivered to an audience — to an audience probably little accustomed to patient listening—must of necessity be short and concise. But an Address which a man can read at his leisure, laying it aside when weary, and taking to it again when so inclined, may be more lengthy and diffuse.

I was much gratified by the request that I would close the first session of the Salisbury Penny Readings. I am more gratified by the request that my Address should be published. In now presenting it to the public of Salisbury, I have acted upon the principle I have above enunciated; and in print I have said all that orally I would have said, had time and the occasion permitted.

My few words of counsel and advice are addressed to my fellow-workmen. I say my fellow-workmen; for he who labours with the brain is a workman equally with him who labours with the hand. Which kind of work is the hardest, which the most exhausting and death-inviting, we need not here discuss. I have glanced at the subject in the Address itself; and it is one upon which the hand-worker will do well to ponder, should envious feelings ever arise in

his mind, as he compares his own life of toil with the apparently easier lot of those who live by brain-work.

The readiness which the working classes of Salisbury have shown to flock to the Penny Readings, during the session which has now closed, convinces me that I shall not cry in vain, when I invite them to others yet to come. Therefore, I have no fears that my words will fall upon a dry and sterile soil. On the contrary, I have every hope that the seeds of learning sown during the future sessions of the Salisbury Penny Readings, to which I now bid my readers, will spring up into a bounteous harvest, and that each succeeding season at its close may show a well-stored granary.

The profits derived from the sale of this work will be entirely appropriated to increase the funds of that admirable and useful educational institution, the Salisbury Museum; and in conclusion I say to my readers, in the words of the poet Catullus,

"Quare habe tibi quicquid hoc libelli est,
Qualecunque;"

Then pray accept this brief address;
Though small its size— its merit less—
'Tis all your friend can give.

J. S. B.

Laverstock House, Salisbury.

AN ADDRESS,

&c. &c.

In bringing the first session of our Penny Readings to a close, I must commence by most heartily congratulating you and all concerned in their organization and working, upon the very great success they have attained. There were not wanting those who, when first the idea was started, sneered at it, and prophesied for it a contemptible failure. There were not wanting those who declared the working classes of Salisbury were incapable of any intellectual pleasure, and so far from being ready to pay the very small sum proposed to be charged for admission to the Readings, would not be induced to listen even if they were paid to come. There were not wanting others who predicted that the supply of Readers would fail, even if hearers were forthcoming; that the gentlemen, who in a moment of enthusiasm took up the work, and promised to give Readings, would grow weary of the task, and let it drop. But in spite of all discouragement, in defiance of sneers, of ridicule, and I may almost say of contumely, the Committee persevered. They announced the first Reading of the series, and from the moment that the doors were opened, the enterprise was an assured success. Let those who doubted the capacity of the

working classes of Salisbury to partake of intellectual pleasures, view the crowds that flock to take their tickets for the Readings! Let those who prophesied that readers would not be found to carry on the work, recall the list of able and accomplished gentlemen who have, in this our first session, delighted and instructed meeting after meeting! Of these Readings, where all have been so excellent, it would be invidious to particularise any, or to point out one as more worthy than another. Enough for my present purpose to state that in the session now closing we have had ten meetings, during which you have been brought, as it were, face to face with the best of England's living authors; have had thrown open to you the treasures of the past; have had laid bare before you the thoughts of the mighty dead. "From grave to gay, from lively to severe"—songs, poems, essays, histories, and fictions—all that our literature has of the richest and the best—have been presented before you in ample profusion.

All classes of the community have met in the good cause; gentle and simple have alike flocked to this room; the magistrate has left his bench to mingle with the mechanics from their benches; the clergy and ministers of all denominations have sanctioned the undertaking with their presence; the professional man—the worker with the head—has met here on common ground with the artizan—the worker with the hand. Does not all this look like a good achieved? Does not all this bespeak success?

I am not prepared to endorse to their full extent

the opinions put forth by his Majesty Napoleon the Third of France. Fortunately literature pays no regard to princes. It is emphatically the Republic of letters, in which even Emperors must meet the humblest writer upon equal terms. So I must be allowed to state that I am not prepared to go the whole length of saying, with the Imperial Author of the "Life of Cæsar,"—all potent sovereign though he be—that success is in itself a proof of excellence. Many bad institutions—aye, and bad men, too—have from time to time succeeded. Nor has their triumph always been a brief one. But, though what is successful may not of necessity be good, we may at any rate rejoice when we find what is good, successful!

And that our Penny Readings are a good, I trust I shall have no difficulty in establishing. That they are successful, experience has already fully established. They were, as I have said, a success from the very commencement. Unlike most new enterprises, which in their infancy, feeble as a new-born babe, have to be fostered and tended until they can crawl a little, then watched until they can run alone, though even yet a long way from maturity—unlike such enterprises, I say, our Penny Readings attained success at once. No sooner was the scheme set on foot than it sprang forth, strong, perfect and mature, as a butterfly emerging from its chrysalis.

And now let us enquire, is the work a good one?

Apart from the sneers against our Readings as useless, to which I have already referred, I have heard them condemned as positively evil, because

they partake largely of the character of amusement! There are people, actuated I have no doubt, by the best motives, who hold that, in this transitory life, amusement of any kind approaches dangerously near to sin—that immortal beings are not justified in spending any portion of their fleeting time on earth in mere relaxation. Now, approaching this question with all the reverence its solemnity demands—giving all credit to the objectors to whom I have alluded for sincerity and good intentions—I boldly maintain not only that occasional amusement and relaxation may be defended; but that it is impossible for a human mind to continue in a healthy state without them! If then, as all the accumulated experience of ages teaches us, amusement of some kind or other is as necessary to the mind as sleep is to the body, is not our work a good one when we try to furnish you with an amusement, not only of the most healthy and innocent description, but one moreover that combines instruction with it?

No amusement! no relaxation! for what end then does the rose give out its perfume? Wherefore find we the earth redolent of sweets? Why is the air made musical with birds? To what purpose the thousand beauties of tree, flower, and shrub? Of what avail the bright blue arch of heaven itself? If human senses are not to be gratified, nor the human intellect take pleasure in anything that is not absolutely, and in the lowest sense of the word, necessary, then let the earth bring forth only corn and cattle!

Banish beauty from creation; and hang the heavens with black or sober drab!

But enough on this point. It is, in fact, useless to argue as to the propriety or otherwise of amusement or relaxation. If we had ourselves to construct a world, and to people it with beings after a model of our own invention, then it would be doubtless well beforehand to consider, whether or not amusement would be good for them. But it so happens, fortunately for us, and for the world as well, that we have no such task allotted us. We are simply bound to take the world as the Great Creator in His wisdom formed it. And we find, whether amusement of some kind be right or wrong, that men will have it!

Having thus I think sufficiently vindicated our undertaking from the charge of being absolutely evil, I will briefly allude to one point in which it seems to me we may pronounce our Readings to be productive at any rate, of what we may call a negative good. They prevent men who attend them doing worse! Were this all, it would be no slight good achieved. Man, as I have said, will have amusement, be it right or wrong; and if he can find his necessary relaxation here, where he can bring his wife to share it with him, it at least keeps him, for the time, from the public-house bar and tap-room, the only relaxation unfortunately of too many of our working men.

But this negative advantage is *not* all. I will not confine myself to saying that our Penny Readings are harmless in themselves; that they keep men from far

less innocent indulgences. I claim for them beyond all this, that they are *positively* beneficial. And I make that claim upon these grounds:—

It is notorious that notwithstanding the enormous spread of what is called Education in the present day, the great majority of our working classes are as ignorant of the rich stores of treasure contained in the literature of their native country, as though that literature were written in an unknown tongue. I have made use of the expression "what is called Education" advisedly; for it is a mistake all too common to consider the mere power to read and write as Education. This is simply putting the means for the end—considering the workmens' tools as though they were the work done with them. Reading and writing are no more Education in themselves than a sickle is the harvest; than a bricklayer's trowel is the finished structure; or, than the key that opens a well-stocked treasure-house is the wealth that treasure-house contains. They are not Education. They are the means, the instruments by which it is achieved. They are the sickle that reaps the rich harvest of knowledge; the trowel by aid of which the intellectual structure is built up; the key which opens to us a treasure, in comparison with which gold and silver are mere dross. But the sickle must be vigourously wielded. The trowel must pile brick upon brick, as one fact after another is mastered; and the whole must be cemented well together by reflection and reasoning into a solid edifice. The key must not

be laid idly aside, but must be used to get at the carefully guarded treasure. Then, as this is more or less completely done—then, and not till then, may the result be called Education.

But before this can be done at all, the desire to do it must be created. So, to continue the illustrations I have chosen, I claim for these our Penny Readings that they are specially calculated to give the man who never before dreamed of looking into books a glimpse of the rich harvest that awaits his gathering; an outline of the noble structure it is in his power to raise; a peep, as it were, through the key-hole at the treasure that lies waiting for him to make his own.

Our Readings, in fact, not only tend in themselves to elevate the moral and intellectual condition of those who listen — but they engender a love of reading and of learning—a desire to know more and yet more, which will in many cases I believe endure and bring forth fruit. And I claim it as a good achieved when any one working man shall be induced by these our Readings to spend his evenings at home in company with an improving book, instead of in an alehouse, where he is but too apt to be tempted to prolong the visit into night—possibly even later until on his way home he finds the policeman, in blue armour, like the ghost of Hamlet's father, begins to "scent the morning air," and it may be, like that ghost, will "beckon him to go away"—or like another spectral apparition—Macbeth's air-drawn dagger—will "marshal him the way that he should go."

Let a man once acquire a taste for intellectual

pleasures, in preference to the grosser indulgence of the senses, and from that moment he is an altered being He is raised from a mere eating, drinking, sleeping machine, to intelligent, thinking manhood. There is little fear of his relapsing into his former state. The pleasures of the intellect are so infinitely superior to those of the mere senses, that spite of the obstacles he is pretty sure to meet with at the commencement, he will find such new charms constantly springing up around him as he progresses, that he will inevitably go on.

There is no royal road to learning—no short cut, by which we may get to the goal without following, step by step, the regular, weary pathway. On the contrary, in learning as in every thing else, all that is of any value must have value given for it—and that learning which is gained without labour is as quickly lost. The soil must be tilled, not only thoroughly, but carefully and slowly, in order to ensure a good harvest. As the bricklayer ascends the ladder, making his footing sure upon the very lowest round, before he takes another step, however high he may intend to mount; so must the student go on, making each step secure, by thoroughly mastering every lesson learned, no matter how simple—every fact acquired, no matter how apparently insignificant. This done, the next step may be taken up the ladder; but not with safety till the former is secured. The golden rule for gaining knowledge may be thus laid down:—Make each thing you acquire perfectly your own before proceeding to attempt another. In fact the

concise and not over elegantly phrased Yankee maxim should be generally adopted—"First be sure you're right—then go a-head!" Your motto should be "Excelsior!" Higher and still higher—onwards and upwards. There must be no slackening—no giving over—no failing in perseverance. Science, though the most lovely and charming of mistresses, is a hard and an exacting one. Her chains are of flowers; but they are chains none the less, and bind her votaries wholly to her service. She will have no rival near her throne. She must be served industriously and zealously; but in her service what happiness is there found! Truly her ways are ways of pleasantness, and all her paths are peace.

I am old enough to remember a period when it was thought that to educate the masses was a step fraught with peril. It was said—aye, and conscientiously believed by many—that to give the worker Education would be to give him ideas beyond his station, and make him dangerous to those above him. Therefore let him be kept in ignorance! Thank God! we have outlived that hideous blasphemy against human nature! As well might we counsel the cutting off the workman's strong right arm, for fear he should employ his strength to murder us! Knowledge is power. True. But so is muscle! In all the history of the world, whenever and wherever we have witnessed class arrayed against class, what the wealthy ones of the earth—the owners of property—have had to fear has always been the brute force of an ignorant mob: never the animosity of an educated working

order. Education, so far from giving a man ideas above his station, enables him to appreciate and understand, and consequently to accept cheerfully, the inevitable necessity of different grades of society. Education may, and generally does, enable a man to rise to a higher position; but it never leads him to attempt to snatch by force that station which he has not fairly earned.

Not very many years ago, in London and other large towns, when the price of bread was high, and poor men saw their cupboards empty, the ignorant mob attacked the bakers' shops; broke windows in the houses of the aristocracy; and otherwise comported themselves as we might imagine would irrational beings, incapable of forming any idea beyond that they were hungry. They were dragooned, and sabred, and shot down!—much, much to the scandal of humanity; but to no possible advantage to their class. And why? Because these bread riots were utterly senseless. Because the rioters, unlearned and incapable of comprehending the cause of their suffering, attacked the nearest object, in the same way that an infuriated wasp will sting whatever happens to be within its reach—even although the act of stinging cost its life. Since then, the noble cause of Education has progressed with giant strides. And mark the contrast! A short time since, on the breaking out of the American war, the whole of England's greatest industry was suddenly paralysed. With scarce any previous notice, the supply of cotton failed. The mills of Lancashire were stopped. The

entire working population of the busiest county in the kingdom all at once found itself without work or wages. And how did these men, thus unexpectedly driven to compulsory idleness, to poverty, and to want of food,—how did they conduct themselves? Did we hear of bread-riots in Manchester? Of mill-owners' houses being burned at Oldham? Of the mansions of the county gentry being plundered? No. Fortunately for themselves, for England, and for the reputation of the English working class throughout the world, these Lancashire operatives were well-educated men. They were enabled to see that their distress arose from no fault of their richer fellow-Englishmen. They waited, and, with a calm reasoning patience which was almost sublime, still waited, until they raised the character of the British operative into something scarcely short of heroism. Of course in due time they were relieved. Shame upon England had it been otherwise! But they would have done no good by breaking windows—and they knew it. Nay! they were numerous enough and strong enough, had they not known better, to have so embarrassed England's government, as to have compelled an action which would have embroiled our country with America, and brought upon us all—themselves included—troubles of which the present generation could scarce hope to witness the end. But then, they did know better! Education for the masses had long been the rule in Lancashire. Had it given these poor cotton-spinners and weavers ideas above their station? Certainly not, in the sense in

which the phrase was formerly employed. It had though in another sense; for it had given them ideas worthy of a race of heroes!

Education leads moreover to refinement. By this I do not mean a desire to imitate the expensive habits of the rich; or a longing for elegance and luxuries, which, although doubtless very charming things in their way, are yet not absolutely essential to happiness. Refinement does not consist in wearing fine clothes, or in sitting down to a well appointed dinner table. Refinement as true may be clothed in a workman's fustian as in the ermine of a peer. The home of a working man may be a refined one although the dinner table does not boast a single silver fork, or even —what in this age of shams is still more common— an electro-plated one. The true refinement—the genuine politeness — that I mean, which should, and generally will, result from Education, is that which leads men to avoid foul and blasphemous language; which makes them less selfish, and induces a regard for the feelings of their fellow men, and especially—if I may say so without being guilty of a bull — for those of their fellow women! There can, perhaps, be no much better test suggested for the amount of refinement to which a man has attained, than the pleasure or the contrary which he experiences—all considerations of lovemaking apart—in the society of the opposite sex. Woman, although no doubt the "weaker vessel," is in all that concerns refinement, our superior; and,

regarding the higher phases of man's nature, it is not without reason that a wife is called our "better half."

Of the advantages of Education in enabling a man to rise in the world, I surely need not speak. In fact, in this respect, not only is it true that knowledge is power; but to a working man without influential friends or patrons, knowledge is the only power. However much the physical strength of individual working men may vary, the difference between the very best and the very worst workman is almost literally nothing, when compared with the advantage that Education may give one man over another in the same walk of life. The possible amount of variation in human strength and mere mechanical skill is confined within a comparatively narrow limit: the height to which mental endowments may raise a man is to all appearance unlimited. The Kings of Labour —the High Priests of Mechanical Science—the Captains of Industrial Enterprise—who have risen from the ranks, form in themselves a noble army indeed. I need not go over the list. But of them all—the blacksmith's boys, the journeymen printers, the handloom weavers, the ploughmen, the shepherds, the engine-tenders—who have made their way to wealth and fame, there never was one who could have so pushed himself into the foremost rank, had it not been for Education—and Education, too, in the sense in which I have before used the word, as something beyond mere reading and writing—a training, in fact, of the talents with which nature had endowed them,

for which training reading and writing were the mere instruments.

It is a fact so notorious as to have become the subject of jests and proverbs, that roam where you will, "from Indus to the Pole," you will find Scotchmen dwelling everywhere, and always well-to-do in life. What is the secret of this unvarying success of our Scotch fellow subjects? In a great measure, no doubt, they owe it to the national character—cool, energetic, and wonderfully persevering—frugal, self-denying, and especially temperate. But not a little of it may be fairly attributed to the very wide and general diffusion of Education in Scotland. In that portion of our island, there is hardly a man or a woman to be met with who cannot read. In fact, Education is in Scotland *morally*, though not legally, compulsory. A parent who neglects to send his child to the parish school, is shunned as a sort of social outlaw. His neighbours look on him with a pitying contempt, not unmixed with wonder. Nor the neighbours only. A parent thus neglecting his duty, loses caste terribly also with his clergyman; and that is no slight matter in Scotland, however some may regard it here. To what cause we must attribute the difference, it is not for me to say; but I should be glad indeed, could I see in England the same reverence and respect paid to the clergy, as are universally rendered to them in Scotland.

It is just possible that there may still remain among us, some believers in the all but exploded fallacy, that to raise the intellectual status of the working

class, would tend to diminish the supply of workers —that the artizans, by acquiring Education, would be led to shun mere labour, in the belief that they were fitted for an easier life. Such fossil remnants of a bygone state of feeling may be answered both by a plain statement of facts, and by the enunciation of a principle. I will give facts the precedence. Within the last ten or twenty years the intellectual condition of our hand-workers has been raised beyond what it formerly was, in a measure which could not have been deemed possible when the living generation of men was young. Who could have dared to prophecy a few years since, that the working man could have his penny daily paper? Who could have predicted for him the comforts which we now find common in the workman's home? Yet what has been the result? Never since England was a nation has her industrial energy been equal to what it is to-day; never in all her history has there been within her sea-girt shores more honest hard work done than is done at the present moment. So much for facts; now for the theory I would draw from them. The one broad principle I would maintain, is that the effect of Education is to teach a man what duties in life he is best fitted to fulfil: not to induce him to attempt others for which nature has not qualified him. If he finds he is more endowed with muscle than with brain, he will be satisfied to remain a worker with the hand. The knowledge he has acquired will make him a better worker than formerly; will enable him to produce better work—and more of it; but will

never lead him to refrain from working. In fact, in the present day, work is compulsory on all. I heard a man state as his opinion, not long ago, that "no one could be called a gentleman who worked for his living." I will admit, by way of extenuation, that the person who said so was an old, a very old man, and possibly had been unable altogether to get rid of the prejudices of a by-gone mode of thinking. But none the less, my reply to him was a flat assertion of the very opposite theory. The principle I would lay down, is that no matter what his rank or wealth, no one can, in the truest sense of the word, be called a gentleman who does not work. Look at our governing classes! They are all men with incomes amply sufficient, if their owners chose to lead a life of indolence, to supply every necessary—nay, every luxury of life. What do we find these men doing? Devoting their days to hard study, and their nights —the hours when the hand-worker is enjoying the sound sleep that his day's toil has fairly earned—these hours our public men devote to work more trying than the digger's or the delver's, for the service of their country. And others of the wealthier classes—men who are not in Parliament, or otherwise engaged in governmental duties. Do they not work? Whether as landlords, their brains and their educational advantages constantly in action to improve the condition and the knowledge of their tenants; or as leaders of a volunteer corps, or an agricultural association, or in the thousand duties that fall to the lot of either a town or country

gentleman of fortune, there is abundant work to do. And woe to him—woe socially and mentally to him —who shirks the task allotted him! The sluggard among the poorer class will starve. But by the same inexorable law of nature, the wealthy sluggard will be scorned by his fellow men, and even by himself, when he finds his shunning work results in a listless apathy, which makes him, as it were, an alien and a stranger—a being who has no business on the surface of this fair earth of ours, where work of some kind is the one claim to citizenship! And the professional man. Does he not work? Day and night —waking and dreaming—his active brain is busy in devising schemes for the benefit of his fellow men. Be he a clergyman who would minister to their soul's requirements; a doctor who would cure their physical ailments; an author who would raise their intellectual capacities, and provide them with rich mental joys—work, still work and work again and again, is his unvarying routine. Work is instinctive; and man, in a healthy mental state, let his position in the social scale be what it may, can no more refrain from working, than the bee can refrain from building cells and gathering honey—than the silkworm can refrain from spinning silk. The sentence passed upon our father Adam "In the sweat of thy face shalt thou eat bread" was not a curse. It was a blessed dispensation, without which life for an intelligent thinking being would be unbearable. Welcome we cordially the man who by self-culture raises himself from the condition of a worker with

the hand to that of a worker with the brain! But at the same time, while honouring intellect, let us not be unmindful of the respect due to honest intelligent hand-labour. Brain-work is doubtless the more noble of the two; but hand-work has immunities the other does not possess. Both are essential to human progress: each in its own sphere commands our reverence. The kitchen fire that cooks our cauliflower is, in its way, as useful as the bright sun that ripens it!

A proper use of educational resources frees the mind also from superstition. By superstition I do not mean that belief in ghosts and witchcraft which prevailed in our country till a very recent date; but which, thanks to the spread of Education, is now all but extinct. Nor do I allude to such childish nonsense as the unluckiness of commencing any work on a Friday; of walking under a ladder; of spilling salt; of crossing knives, and so on. All this I venture to hope has gone out of date, together with the "dark man" or the "fair woman," that swindling gipsy fortune tellers were in the habit of promising to ignorant dupes who wished to peer into futurity. I would rather refer to the superstition which consists in giving up the judgment, bound hand and foot, as it were, to any pretender who may choose to claim superior wisdom; which in religion makes possible such miserable follies as Mormonism—or sees in the paroxysms of a hysterical or epileptic girl, a sudden conversion or revival; which in medicine gives success to quacks, charlatans, mesmerists, and others; which

fills the pockets of Yankee-showmen, who pretend that super-human agencies exert themselves to untie the ropes with which two mountebanks are bound—that disembodied spirits will revisit earth to play "Pop goes the Weasel" out of tune upon a fiddle—or that the eternal laws of nature will be suspended, that a conjuror's coat may be taken off him in the dark! I never yet was a believer in Homœopathy; I have written against the heresy and loudly decried its partisans. But I must confess when I read the other day, that the simple knot which defeated these notorious Davenport Brothers, at Liverpool, and cured their numerous dupes of their folly—I say when I learned that the tie which worked this cure was called the "Tom fool" knot, I did begin to think there might be something in the theory that "like cures like"!

Shall I be met by the question, If Education frees the mind from superstition, how comes it to pass that this very folly of spirit-rapping and its kindred nonsense of table-moving, rope-untying, et cætera, find believers to so large an extent among the well-educated classes? The answer to this involves a truly painful consideration. Education has the tendency I have claimed for it; but it cannot in all cases overcome the native bent of some minds to superstition. In considering the effects of temperance and sobriety upon the body, we may say they tend to free mankind from gout or other ailments brought on by over indulgence. Yet they will not always prevent those ailments making their appearance in

constitutions wherein the tendency to such diseases may exist. In like manner Education will sometimes fail to banish superstition from a mind already prone to the disease. I say disease advisedly, for I have no hesitation in asserting that the superstition we are now considering—that which no amount of Education can cure—is neither more nor less than a special form of insanity. A truly healthy mind, capable of judging between things true and false—aided too by the helps that Education affords—could never fall into the wretched pitfalls of superstition dug for it by impostors and their dupes. A proneness to accept all that is wild, unusual, and marvellous, for truth; to give credence to the ridiculous follies of the so-called Spiritualists and others without due examination—is as clearly insanity as is the tendency to useless and gratuitous lying, which I will call Analetheomania, or that less common madness, Kleptomania — the tendency to theft. All these kinds of mania have one symptom in common: it is vanity. I may, perhaps, go even further, and say that vanity is not alone a symptom common to them all, but is actually the exciting cause of them.

This morbid tendency to superstition may be traced in many forms. It may be seen in the manner in which members and high dignitaries even of the Protestant Church of England have latterly delighted in imitating as closely as posible the forms and ceremonies of that very Church of Rome, against which the Reformation was a protest. Let it not be supposed that I am attacking the religion of the

Roman Catholics. I am not here to enter upon any theological discussion of rival creeds. The Church of Rome is essentially a Church of ceremonials and symbols. She seeks to elevate the human mind to the contemplation of divine mysteries, by exhibiting them to the bodily eye in a symbolic form; and therefore processions, ceremonials, incense, and glittering paraphernalia are natural to her. But the Church of England is essentially the opposite of this. The spirit of Protestantism is totally and diametrically opposed to symbolism. The Protestant believes that the doctrines of the Holy Bible are plain, simple, and straightforward, and teach him that no priestly intercession is necessary. Accordingly it is a strange sight to see, as we do see frequently, in Protestant Churches, a fantastic mediæval procession of crosier-bearing, surpliced, colour-hooded priests, performing ceremonials which, from the ludicrous incongruity of the scene wherein they are acted, can only be called playing at Popery—as boys play at soldiers.

Before quitting this topic of the tendency to superstition, which I regard as a special form of insanity, I would warn my hearers that it is an *infectious* one. Let them shun it as a pestilence. Let us, too, call in, as we are doing, all the aid of Education to combat it. Education may not, as I have already admitted, be powerful enough, in every case, to cure the evil. But of a certainty it will prevent that evil spreading.

Education moreover fits a man for the exercise of civil rights. This is no place for talking politics. It

would ill become me, at a meeting of this character, to express any opinion as to extension of the suffrage, or what changes should or should not take place in our representative system ; but this I will say, whatever may be the share the working class may aspire to take in the government of their country, Education will render them the fitter for it. In fact, to talk of civil or political rights at all, without pre-supposing Education, would be as utterly absurd as to propose giving a blind person a free admission to a choice picture gallery, or to purchase for a deaf man a season ticket for the opera !

I have briefly glanced at a few of the solid material advantages of knowledge. I would crave your indulgence for a few minutes longer to consider the mental delights it brings. But upon this point I will leave a wiser than myself to speak. I quote Lord Bacon.

"For the pleasure and delight of knowledge and learning" he says "it far surpasseth all other in nature. We see in all other pleasures there is satiety, and after they be used their verdure departeth ; which showeth well they be but deceits of pleasures and not pleasures; and that it was the novelty which pleased and not the quality; and therefore we see that voluptuous men turn friars, and that ambitious princes turn melancholy. But of knowledge there is no satiety, but satisfaction and appetite are perpetually interchangeable; and therefore appeareth to be good in itself simply, without fallacy or accident."

And do I say that listening to our Readings in this room is enough to educate a man—to open up to him all these advantages, all these pleasures, I have endeavoured to exhibit before you? Certainly not! As well assert that the little streamlet, which trickles unregarded down some remote mountain's side, is the great river which bears upon its bosom the wealth and commerce of a kingdom. It is not; but it is none the less the commencement of that river. The little streamlet makes to itself a channel, into which channel tributaries flow—here possibly drop by drop—there it may be as a tiny brook. But they combine and other waters join, and others, and yet others, until before the waters of this pigmy streamlet reach the sea, they form a portion of a mighty river. So may we deem it possible that the few unpretending drops of learning or literature that we set flowing from this room may be from time to time augmented by fresh streams of knowledge, flowing into the channel we have striven to create; and may even lead to an accumulation, the extent of which we cannot guess, rushing on, and still on, and ever on again towards that vast sea of thought and intellect which is boundless and fathomless as the great ocean's self.

LECTURE DELIVERED BY DR. McLEAN AT THE OPENING OF THE MILITARY MEDICAL COLLEGE, NETLEY, OCTOBER 1st, 1863.

We have great satisfaction in reprinting this very able and eloquent address by Dr. McLean from the pages of a local Journal, feeling assured that all our readers will agree with us that such sentiments, enunciated by one of the most justly distinguished members of our Indian Medical Service, ought to be placed upon permanent record in the pages of this Journal.

Colonel Wilbraham, Inspector-General, Dr. Anderson, and gentlemen: When Professor Longmore opened the business of last session, the first held within the walls of the Royal Victoria Hospital, such was the incomplete state of the building and the imperfection of our arrangements that my colleague was under the necessity of announcing, on the part of the Senate, the postponement until now of anything like a formal opening of the Army Medical School in its new home, and the reception of such an assembly as I have this day the honour to address, and on behalf of my colleagues to welcome to this hall, from henceforth dedicated to an important educational purpose.

The removal of the Army Medical School so far from the centre of medical education, and the scientific societies of London, has often excited the astonishment of those who do not understand the reasons that led the Senate to recommend, and the authorities to sanction, the measure. It was determined to send the invaliding establishment of the army from Chatham to Netley, and this determination on the part of the Secretary for War decided the position of the school. It is only where the invalids of the British army are placed that the young medical officers, for whose instruction the school was founded, can see those special cases of disease, the result of Military service in various climes, investigate under competent guidance the causes which produce them, study the organic changes resulting from them, and become familiarised with the accidents of war, and the best methods of dealing with them. When, therefore, we are asked why we consented to forego the many advantages of nearer proximity to, and closer relations with, the civil schools of London, the above is our sufficient answer. It is no trivial compensation to us, the professors of the school, to find that we are to carry on our labours in the immediate neighbourhood of a city, fortunate above most others in this kingdom in the possession of a body of civil practitioners of medicine, distinguished for their acquirements, and for the zeal with which they cultivate the science, apart from the buisness of our common profession, and for the spirit of harmony in which they live, so becoming in the members of a liberal profession. In such society ~~he~~ can never feel professional isolation, and cannot fail to derive from its example a wholesome spur to diligence in duty.

The objects this school is intended to fulfil, as laid down in the warrants of October 1859 and March 1860, have so often been explained in the introductory addresses which have been delivered on similar occasions at

Chatham, and given to the public by the press, that I am spared the irksomeness af repeating a thrice-told tale. Before proceeding, however, to make a few observations on a subject of great public, as well as professional interest, I feel it incumbent on me to endeavour to remove some misapprehensions regarding the ordeal to which candidates for medical commissions in the army are subjected before they enter this school. I feel this to be all the more necessary, because these misapprehensions prevail in quarters of considerable professional influence, where we should least expect to find them. These it is desirable, if possible, to remove, as they have been used as arguments to deter competent candidates from entering on a useful and honorable public career.

We all know that commissions in the army medical department are open to public competition. Into the general question of competitive examinations I do not mean to enter. Like almost every important change in the conduct of public affairs which has come into operation in our time, it has given rise to much discussion, to that wholesome conflict of opinion and enquiry which it is the privilege of this nation, alone of all the nations at this particular time, freely to enjoy. Under such an ordeal, if there be truth in the principle, it will prevail, if not, it will perish —as is right it should. For my own part, I believe this principle was born in the fulness of time. The extension of education, and increase of wealth over a greater breadth of society, made it impossible to restrict public employment within the comparatively narrow limits of former days; and, if it be true, as undoubtedly it is, that some inconveniences attend its operation, it cannot, on the other hand, be denied that the recognition of this principle, and its more or less general application by the great officers of State, is, at least, one of the many causes of that political contentment and tranquillity which, above all people, past or present, we enjoy.

If we are correctly informed, objection has been taken to the principle of competition in relation to medical commissions in the army, not only is it by some desired that we should return to the old system of nomination, but it is proclaimed that an examination test of any kind prior to admission is an injustice to candidates or nominees, a work of supererogation, and an insult to the licensing bodies and universities of the kingdom. It is argued that, as nothing but a degree or a diploma is required of a civil practitioner, nothing more should be demanded of those who are to follow the same profession in the army; that the life of a soldier is not more valuable than that of a civilian. It is curious that those who so argue do not see that the two cases, put in this way, will not bear comparison. Is it true that civil practitioners enter at once into the confidence of the public and the rewards resulting therefrom? Is it not rather the case that there is for them a trial, a competitive examination if you so choose to call it, so stringent, so chilling, so long continued, that in comparison with it, that which stands at the threshold of the public service, and bars the way to incompetence, sinks into insignificance. Into the cold and rapid river of public life those who seek public confidence must adventurously plunge; in that swift stream the strong swimmers only live; the idle, the dissolute, the incompetent, sink in its waters, or are swept away, and heard of no more. To drop metaphors the public can protect themselves. With the soldier it is different; he has no choice, no freedom of selection, and the State must protect him. If the authorities could so far forget their duty to the sick or wounded soldiers as to throw open the public service without a preliminary test, the medical department would soon become the refuge of the intellectually destitute, and the hope of the

professional lounger, to whom the struggles of private practice offered nothing but starvation. In a brief time a department so constituted would become a national reproach; public indignation would be kindled against it, and consume it away.

Not only has objection been taken to an examination test, but the one now in existence has been objected to on the score not only of severity, but of partiality. It has been said that the Examining Board display hostility to the graduates of a particular University. A more reckless and unfounded charge was never brought against honourable men. Far be it from me to offend those distinguished men, by defending them from a charge that refutes itself, least of all is any defence necessary here in the presence of gentlemen who know from personal experience how unfounded it is.

The simple truth is, that at a time when the service is, for reasons into which I need not enter here, under what I hope and believe will prove only a temporary unpopularity, certain men, with slender qualifications, attempted to run this wholesome blockade, and as the examiners had the firmness not to lower their standard to meet a temporary difficulty, these contrabands of medicine were unsuccessful, and like others of whom we have read and heard, they forthwith raised a clamour at the partiality of their judges. I trust the Examining Board will excuse me for noticing a charge that might safely have been left to fall to the ground by its own weight. I would not have done so, but for the reason I have given.

When last I discharged the duty, it has again fallen to me to perform to-day, I expressed a hope that the amalgamation of the British Indian Medical Services would be soon effected, that success would crown the efforts of those who were seeking to bring about a real union between the two services, and that united under one head, and working together under one system and administration, I anticipate the final extinction of petty jealousies and conflicting authority, hurtful alike to the public interest, and the well-being of the two services. My anticipations unhappily are not to be fulfilled. The anticipated union is not to take place, the banns have been forbidden. It has been found that difficulties bar the way. What these are it is useless to enquire, as the decision has been come to, and is final. The medical affairs of India, in time to come as in time past, are destined to be conducted by two separate services, working under different administrations. Without offering any opinion on the cause of failure, I must take leave to express my unfeigned regret that this desirable amalgamation has not taken place. Some bonds of union, however, there will be. It is proposed that the medical staff corps of India shall be recruited from the departmental list of the British army. The medical officers of both services will thus own a common stock, and as all will study here, two links at least will bind them one to the other, and we may hope that the only contention between them may be such as Bacon says should alone prevail among Christains, "who should contend not as the briar with the thistle which can wound deepest, but as the vine with the olive, which bears best fruit."

I understand that the Government of India have resolved to make its medical staff corps attractive by a scale of emoluments and pensions framed with wise liberality.

Disappointed on the subject of amalgamation, the anticipations indulged in by me on another subject on the same occasion have been more than realised. The Royal Commissioners, appointed to enquire into and report on the sanitary state of the Indian army, have presented their

report. From this time forth between 70 and 80,000 British soldiers will constantly be quartered in India, requiring a large and competent staff of medical officers for their care. It is therefore certain that whatever may be the immediate destination of the young medical officers who pass through the Army Medical School, sooner or later they must take a tour of service in India, while no inconsiderable portion electing to join the medical staff corps of India will have a more permanent connexion with that country. This being the case, all that relates to India, its military and political history, its physical geography, its climate, productions, and commerce, the ethnology and strange religious systems of the races that people it, and, above all, its endemic and epidemic diseases should be to those who have such a destination subjects of anxious study.

With the suppression of the Sepoy mutiny, we may, it is to be hoped, consider that the era of conquest has closed, and that India, emerging from blood and strife, is now entering on a new and happier phase of existence. Obliged to use the term conquest, I mean to express by it, *not* the hateful tyranny of a dominant over a subject race, such as we see exemplified in the position of Russia towards Poland. Unless I am greatly mistaken, the government and people of England have a far different conception of the duties they owe to the races brought, we cannot doubt, for some great purpose, ordained in the ~~counsels~~ of God, under the mild sway of one powerful sceptre. The people of this country desire the moral, religious, political, and social regeneration of India. The conquest of India by such a people, whatever may have been the immediate motive, was the first step towards this regeneration. Without the help and guidance of a power resolved to govern it on such principles, India could no more advance out of its condition of semi-civilization than the leopard can change his spots, or the Ethiopian his skin.

The process of conquest was doubtless attended with suffering, not confined, however, as we shall presently see, to the conquered race, but so it has ever been—it is through much sorrow that nations, as well as individual men, are born again into a higher condition of life. Casting our eyes over India, everywhere we see hopeful signs, a turbulent soldiery that threatened destruction to the race it served, and oppression to that whence it sprung, has been effectually humbled, a highly-disciplined army secures peace, and does not oppress where it has subdued. Military expenditure, reduced within proper limits, leaves funds available for productive purposes, the railway, that great civiliser of modern times, is spreading its iron arms over ancient rivers, and across boundless plains, to cities renowned of old. Works of irrigation are sending fertilising streams that make glad the wilderness. The surplus population, instead of being sent across the, to them, dread waters of the ocean, to cultivate foreign lands, will soon, under the guidance of our countrymen, flood the markets of Europe with something better than "barbaric pearl and gold;" with tea, and sugar and coffee, and silk, and with that staple more precious at present than them all, for which Lancashire turning from the west to the east looks with desiring eyes. Large grants of public money are being devoted to the work of education, for the generous policy of England in India is "to spread the page of knowledge, rich with the spoils of time," before the eyes of all the people, and, most marvellous of all, she has given to this subject race that which she most prizes herself—the right of free petition and free discussion; in a word, "freedom to him that would read, freedom to him that would write," in a measure to which nations, deeming themselves in the very van of civilisation, are strangers to this day.

This, gentlemen, as it appears to me, is the career on which India has entered. It cannot be denied that it is one full of glorious promise, and that it reflects honour on the statesmen who direct, and the agents who carry out a plan of government so worthy of England. But there is another side to this picture, one which has just been unveiled, and to which I have now to direct your attention. I felt that I could not ask you to look at it with the attention and closeness it demands without first, in a hasty sketch, endeavouring to shew that if a costly price has been paid for India, it has not been altogether spent in vain.

So many improvements in the condition of the army at home resulted from the labours of the Royal Commission appointed to enquire into its sanitary state, that in 1859 a second commission was appointed to perform a similar service for the Indian army. After an interval of three years, devoted to collecting evidence and examining witnesses, this commission, towards the close of last session, presented to Her Majesty the result of their labours in the shape of an elaborate report with the evidence on which it is based. Most of my hearers remember the profound impression made on the public mind by the publication of the first report. We all remember the cry of indignant horror which followed the publication of the fact that, whereas the deaths among 1,000 of the English male population, between the ages of 20 and 25, amounted to 8·4, the mortality among the Foot Guards, at the same ages, amounted to 21·6 per 1,000. When, instead of a hearty desire to abate so shocking a mortality, a disposition was evinced in certain quarters to explain away these terrible statistics, the feeble and irrelevant criticisms of such opponents were not listened to for an instant, and Lord Herbert, riding on the high flood of public opinion, was able to carry out those reforms with which his name is imperishably associated—reforms which may be described as obedience to nature's laws. Under the old system, to borrow the language of Miss Nightingale, applied to a similar case, "the requirements of nature were disobeyed in almost every particular, and in the terrible mortality that ensued she left an everlasting vindication of her broken laws." Under the new system nature is more perfectly obeyed, and the stigma of her displeasure has almost ceased to appear. It ought not to cause surprise in our minds that the report on the army in India did not create so great a sensation. The novelty of such disclosures has worn off. People who had learnt what the state of the British army was at home under their very eyes, were prepared to hear the things were at least no better in so distant a possession as India. Making due allowance for this, I do not think that those who are interested in this important question have cause to be otherwise than satisfied with the reception given by the press, lay and professional, to this report. Accurate summaries of its leading facts, comments, and recommendations have been published for those who do not see blue books, the terrible waste of British life in India is acknowledged and deplored; and if the writers are less peremptory in their demands for reform, it is because military hygiene has so vindicated itself that it no longer stands in need of passionate advocacy. It is evident that educated men assume, as a matter of course, that Government, once enlightened as to evils so shocking as those disclosed by Her Majesty's Commissioners, have no choice but to set diligently to remove them.

What, then, is the price paid by Great Britain in flesh and blood for that possession so sorely grudged to her by other nations? The death-rate of the British soldier since the first occupation of the country down to the present day has oscillated round 69 per 1,000. "If the mortality,"

the Commissioners go on to say, "is set down at 69 in 1,000, it follows that, besides deaths by natural causes 61, or taking the English standard, 60 head per 1,000 of our troops perish in India annually. It is at that expense that we have held dominion there for a century—a company out of every regiment has been sacrificed in twenty months. These companies fade away in the prime of life, leave few children, and have to be replaced, at great cost, by successive shiploads of recruits." This, gentlemen, it must be confessed, is a terrible charge to bring against the system on which we have held India. Clearly the proof rests with those who make it. Her Majesty's Commissioners admit "the extreme difficulty of obtaing results at once, exact and precise," and they explain the pains they were at to obtain accurate data. A collection of annual casualty rolls, kept at the India house, was placed at their disposal. These were compiled upon the principle of accounting for every man becoming ineffective in the year. These documents "were all verified by the signatures of the commanding officers and adjutants of corps." They had therefore a perfect right to deem them essentially correct, and to analyse them for their purpose. The result demonstrates a mortality of 69 in 1,000 during the present century. Sir Alexander Tulloch, than whom a higher authority on this subject does not exist, gave in his evidence a series of War Office returns of the strength, deaths, and mortality of Royal Army in India during thirty-nine years, and from these shewed that the annual rate of mortality was "70 in 1,000." I have alluded to the feeble attempts made in certain quarters to cast discredit on the statistics of the 1st Army Sanitary Commission. It would have been strange if critics of the same kind had been wanting on the present occasion. Accordingly, we hear it said in various quarters that the Royal Commissioners have exaggerated the death-rate. Now, one would think that it would be an all-sufficient answer to say, in reply to such criticisms, so many men are proved to have gone to India, in the service of Government, of whom so many died. Here are the returns in which every man is accounted for; there is, therefore, no room for controversy about the matter. But this is not the way in which the statistics of the Commission are met. For example, it is said, the Commissioners have no right, to go so far back as they do, in dealing with the mortality of the Indian army; they ought to confine their enquiries to more recent times. Nothing can be more unreasonable than such an objection as this. The Commissioners, as it appears to me, were not appointed to make a report on half the case—to tell as much of the truth as would be agreeable, and to suppress the rest; it was their business to shew what India had cost this country in human life. To do this, it was plainly necessary to deal honestly with the whole case, and not to proceed upon what may be called the Hudsonian method to cook the statistics, for the sake of "making things pleasant." Moreover, all vital statists know that, in such enquiries, if we are in search of truth, not merely seeking to bolster up a system we must deal with large numbers, and long periods of time,

Again, it has been said that the Commissioners, to make out this heavy mortality, included the exceptional mortality of war. For instance, the objectors say, and they say truly, that the death-rate during the first Burmese war, and the two following years, was 129 per 1, 000, 157 per 1, 000, and 158 per 1,000. Now, if the Commissioners felt called on to reply to such an objection as this, I think they might turn round and say, "if you make war on such principles as to cause a mortality so shocking as this, you are justly chargeable with it all, all the more that the frightful lesson

taught in Burmah in 1824 was utterly thrown away, for you commenced the war in China in 1840 with the same reckless disregard of military hygiene, and the result was the same and, if anything was wanted to clench the argument, referring to the last war in China, for the first time almost in our history conducted on something like sound principles of military hygiene, the Commissioners might prove that the death-rate, wished to be excluded, was due not the exigencies of the situation, or the stern necessity of war, but to a presumptuous and ignorant contempt of the resources of sanitary science in preserving health." It is curious, too, that the objectors admit, almost in the same sentence, that the death-rate in India just *before* the Burmese war was—my hearers will, of course, expect to hear something much less than the rate for the whole period of occupation given by the Commissioners—not at all, they admit it to have been as high as 75 per 1,000.

Another objection urged against the statistics of the Commissioners is, that they allow the mortality from cholera to swell the death-rate; the mortality from this disease, like that caused by faulty health arrangements during war, should be, according to the critics I refer to, left out of the calculation. The Commissioners say that in India since 1817, cholera has engrafted itself on the ~~soils~~ of the soil, and has become a disease of annual occurrence at many of our large stations. Why then, I ask, should it be left out any more than dysentery, or malarial fevers, or diseases of the liver? Ah, gentlemen, what pleasant reading the returns of the Registrar-General would be if constructed on such a principle as this. In what a fool's paradise we should live for a few weeks, how we should hug the notion that all the foul fever breeding courts, alleys, and noisome dens in our great cities were at last purified. No more small-pox to scar the face of beauty, no more scarlatina to steal into our nurseries and rob us of our children, no more consumption to plant its hectic on the cheek, no fevers to destroy.

Endemic

I cannot, of course, tell what answer the Commission might have patience to give to such an objection as this, but I know that if it were my duty to reply to it, I should have no hesitation in saying, not one jot or tittle, not one unit can be abated from the sum total on this score. It is very true that physicians in India cannot tell what the precise cause of cholera is. But it is equally true that they can tell, and have told any time for the last twenty years and more, of many simple ways by which its ravages can be held in check. They have often told that the loss from it on the line of march during the reliefs of regiments, almost always bears a direct ratio to the distance traversed, that to relieve a regiment serving in Nagpore, by one marched from Cannanore, on the western coast of India, is the surest means that can be taken to develop the disease. Yet in Southern India this practice, so often exposed, so often protested against, was common until a very recent period. Again, to hurry a regiment on the footsteps of one already tainted with the disease, to halt it on the ground on which the cholera-stricken regiment had previously encamped, is a sure way to propagate the disease, and to increase the mortality, yet in the part of India with which I am well acquainted, that practice also prevailed until a comparatively recent period. The construction of the barracks in Fort St. George, at the Presidency town of Madras, and all the arrangements for the troops within its works, were such as to make it the almost constant abode of cholera, so much so that, when this pestilence appeared in an epidemic form, it sought out these barracks with an instinct, so to speak, as unerring as that which leads the

swallow summer after summer to the nest in which it was nurtured. And this state of things continued, all remonstrances to the contrary notwithstanding, until the vigorous but too brief administration of Sir Charles Trevelyan, who, acting where others had only talked and 'inquired," introduced such changes as led to an improvement in the health of the garrison, so striking, so signal, in comparison with the simplicity of the means used, as to confound and astonish all unbelievers; an improvement which, according to the latest information in my possession, continues to this day. Arcot, near Madras, the scene of one of Lord Clive's most brilliant exploits, has long ceased to be a place of any military or strategic importance. The barracks constructed in the pre-sanitary age are of the worst possible description. Time out of mind the place has been periodically ravaged by cholera. Yet although it is impossible to assign any sufficient reason for it, not only has Arcot been occupied by European soldiers, but this notoriously unhealthy place was actually, a very few years ago, selected as a depôt for recruits untrained in the simplest elements of military duty. There, in that cholera-haunted spot, objectionable on other grounds as one of the hottest stations in India, these unhappy young men had to pass through the ordeal of military training, an ordeal sufficiently trying, as we all know even when carried on in this climate. When, therefore, the Commissioners are accused of being unfair, because they include the mortality from cholera in their tables, for the reasons I have given, and many more of a similar kind that might be adduced, I maintain that the unreasonableness is entirely on the side of those who put forward such an objection.

The Commissioners do not, as has been insinuated, deny that of late years there has been a diminution in the death-rate of British troops in India.

They nowhere assert that things are so bad there as they were a century ago, and I too gladly bear my testimony to many improvements introduced in my time. Nor is this all. What I conscientiously believe to be sounder principles of treatment, in regard more specially to the endemic fevers of the country and dysentery, begin everywhere to prevail, with a sensible diminution of mortality under these heads, due, I do not doubt, to the fact that both the curative and prophylactic virtues of quinine are better appreciated than before, and to the substitution of ipecacuanha in large doses for the preparations of mercury in the treatment of dysentery, probably the greatest improvement in Indian therapeutics that has taken place for a century. I hail the successful introduction of the cinchona plant in the mountain ranges of India as a measure fraught with good not only for the races of India, but for the whole tropical world; great credit is due to the Indian government for its wisdom and liberality in this matter, and also to Mr. Markham, the gentleman who conducted this difficult enterprise.

It is of course quite impossible for me, even were it suitable in a discourse such as this, to enter even on an enumeration of the various causes to which the Commissioners trace up the lamentable waste of human life they have unveiled. These, in the course of the lessons it is my duty to deliver from this chair, will all pass in review, when we study together the formidable zymotics which are the chief agents in its production, and they will further be unfolded to you with a fulness of knowledge, a richness of illustration, and a power of persuasion, to which I make no pretension, by my colleague, the professor of Hygiene. But there is one point on which I must take the liberty to say a very few words, because

the subject has at this time a special interest as regards the health not only of the public services, but the whole community present and to come. You will be at no loss to guess the terrible malady to which I refer. When we are told that in this country a number of men equal to the strength of two regiments are constantly ineffective from some form or other of venereal disease, that 343 cases per 1,000 of the strength in Bengal, 249 in Madras, and 314 in Bombay, are due to the same disease, we are told a terrible truth, but it is not the whole truth. It is only physicians and surgeons doing duty in such a hospital as this, can tell what the end of all this is. We can tell what comes of our system of shutting our eyes, and leaving prostitution to work out its results without let or hindrance. Speaking for myself, I say unhesitatingly, that syphilis in one or other of its protean shapes complicates 50 per cent. of all the diseases that are treated in the medical wards of this hospital. The Professor of Pathology will correct me if I overstate the case, when I add that it is quite an exceptional thing to see a *post mortem* examination here, without palpable evidence in almost every tissue of the destructive power of this searching poison. Turning to the civil population, we find that matters are no better. St. Bartholemew Hospital registers, we are told, 15,000 cases a year, and the Westminster Hospital estimates its out-patients suffering in this manner at 50 per cent. on the whole number. It is too much to say that all this is a blot on our boasted civilisation? I rejoice to see that public attention is being called to this subject; the first burst of wholesome agitation is beginning to disturb the surface of this foul pool. Whatever may be the difficulties in the way in this country—and I believe they would all vanish if statesmen would only have the courage to grapple with them, I affirm, without fear of contradiction, that there are no such difficulties in India at all. I am quite certain that prostitution there may be made less hideous in its aspect, less destructive in its action, without offending the scruples, moral, religious, or political, of any section of the community.

The Commissioners having stated the mortality, and traced it up to its causes, conclude their report with a series of recommendations to assist the authorities in dealing with the evils they have disclosed. These recommendations are exceedingly simple themselves, and I am sure they will be assented to at once by all who have any knowledge of the state of things they are intended to correct, yet, simple as they are, they amount in the aggregate to a complete change in our whole system. We may sum them all up in five words—obey the laws of nature. So far have we gone astray "from honest nature's rule," that a vast deal is implied in the advice given. The Commissioners say in effect what I have said from this chair and elsewhere a hundred times, that all Indian cities, and in a minor degree many of our cantonments are, as regards drainage, ventilation, water supply, and removal of sewage matter, in the condition in which the cities of Europe were almost down to the period when the sanitary movement commenced. Many are in the condition in which we were during the middle ages, and they are, as a natural consequence, scourged by disease as our ancestors were. A glance at the table behind me will shew to some extent the difference in this respect between the two periods. The argument is, of course, "apply in India the same remedy that has worked such marvellous results at home, and to a great, if not the same, extent, like blessed results will follow."

There is one recommendation of the Commissioners so important that I must notice it here. I mean that in which they insist on the appointment

of Commissions of public health, one for each Presidency, so constituted as to represent the various elements, civil, military, engineering, sanitary, and medical. A Commission so constituted, consisting of men selected for their fitness and armed with sufficient authority, would take up the various stations in succession, and carry out the recommendations of the Royal Commissioners in a thorough manner on a well-considered system. Whereas, if the authorities at home are contented with sending out orders to have sanitary reform committed to the station authorities, I feel assured that this important work will in a great many instances be committed to men who are not in the least impressed with the importance of the subject, who, having lived long in the country are accustomed, I had almost said hardened, to a mortality they deem to be inevitable in such a climate, do not believe but it can be lessened by such, to them, trivial remedial measures as those insisted on by the Royal Commissioners. I know, every one knows, scores of otherwise well-informed men who will simply laugh in your face if you tell them of the bad consequences that follow from overcrowding in sleeping rooms, or from allowing men to drink water containing what, to them, would appear a ludicrously small quantity of organic matter. Against committing this important movement to such I protest, because I know that if the work is to be carried out by men so unsuited, disappointment and failure must inevitably result. Much money will be spent, and little will be gained. Calcutta is probably the most unsanitary city, I had almost said in the world. At last a municipal body has been organised, mainly for the purpose of cleansing this Augean stable. I recently read that a Mayor was appointed with a splendid income, amounting to something over £3,000 a year. When the question arose who was to be the health officer to guide the council in its labours, of course on a very modest salary, a discussion ensued as to the necessity for such an officer at all. The municipal wise men of Calcutta knew all about it, *they* did not require any advice or assistance, so it was carried by a large majority that the question whether there was to be a health officer or not was to be discussed that day four months.* This, gentlemen, was in the city where Dr. Norman Chevers lives and labours.

I must now hasten to a conclusion—I have already detained you too long. It only remains for me to say to you, gentlemen, who this day commence your labour here, that our hope is that when you leave this you will be found fit instruments to carry on the work of sanitary reform wherever you go. One of the chief reasons for sending you here is that you may learn to prevent as well as to cure disease. It cannot be denied that for this end you enjoy advantages to which your seniors in the service were strangers. We earnestly hope the time you are to pass here may be so spent that in after years you can look back to it with pleasure, and not with vain regret for lost opportunities. I am sure your conduct and discipline here will be such as to cast no discredit on this school, hitherto distinguished for the good tone that has prevailed in it. When it had its home at Chatham, the general commanding, an officer not disposed to wink at breaches of discipline, was always able to compliment the medical cadets on their exemplary conduct, and I am sure the gallant officer, the military commandant of Netley Hospital, can bear similar testimony to the behaviour of those who preceded you on these benches.

In the name of my colleagues I welcome you within these walls; and assure you that our best efforts shall be devoted to assist you in deriving the utmost possible benefit from all that the liberality of government has provided for your instruction and improvement.

* Subsequently to this, a Homœopathic practitioner was appointed Health Officer of Calcutta, on a salary of sixteen hundred rupees a month.—*Ed. I. A.*

Richmond, Whitworth, & Hardwicke

HOSPITALS.

INTRODUCTORY LECTURE.

(WINTER SESSION. 1858-59.)

BY

DR. CORRIGAN,

PHYSICIAN IN ORDINARY TO THE QUEEN IN IRELAND,

&c., &c., &c.

NOVEMBER 1st, 1858.

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Richmond, Whitworth, and Hardwicke HOSPITALS.

Alterations in Management of Institution—Hospitals for Industrial Classes—Resident Pupilships—Competitive Examination—Its defects—Value of Resident Pupils in Hospitals—Army Regulations—Present defective state of preliminary and Professional Education—Causes of—New Medical Act—Conclusion.

I HAVE the honor this day of addressing a mixed audience, of students, of governors, and of gentlemen whose official positions, as well as charitable feelings, give them an interest in these hospitals, and of members of my own profession, including my colleagues, who kindly favor me with their encouraging presence on this occasion. This varied audience must be my excuse for observations which otherwise might appear to wear a discursive or ill-assorted connexion. Since I had last the honor of opening a clinical session, the management of this institution has been greatly altered. It was on the former occasion an institution managed through the machinery of the Poor Law Board, and under the immediate supervision of one governor—it comprised a complicated arrangement for the management of sick, of lunatics, and of found-

lings. The result of the Parliamentary inquiry of 1854, and of the Act of 1856, was to place it on its present foundation, to relieve it from the complications which embarrassed it, and to enable it to have its whole machinery concentrated on its two proper objects—the relief of the sick and the instruction of students in practical medicine and surgery. Government, in making this change, determined most wisely to vest its management in a mixed Board of professional and non-professional members. In adopting this principle of management, the Government adopted the precedent set them by the other large institutions of a similar kind in the city—Steevens's Hospital, Sir P. Dun's, the Meath Hospital, St. Patrick's Asylum, and the Rotunda Lying-in Hospital—in all of which the Board of Management consists partly of medical officers connected with the institution and partly of non-professional governors. The experience of many years has shown that this is probably the best form of a Board of Management that could be devised. The non-professional members bring to the Board all that general knowledge of finance, contracts, and books, without which no great institution can be economically or satisfactorily carried on, and with which professional men are seldom familiar, while the medical officers carry into its management that intimate acquaintance with details which unprofessional persons with the best intentions could never acquire. I may, in some measure, feel myself qualified to give an

opinion on these points, as the opportunities which I have happened to possess as a member of the General Board of Management of Dublin Hospitals, justify me in saying that the institutions under this form of board contrast favourably in several respects with others in which a different principle of management is adopted.

The arrangements and management of an hospital for the relief of the sick of the industrial classes, of those classes that form the great mass of our people holding the middle place between wealth on the one extreme and pauperism on the other, require much consideration and tact. In workhouses and such other institutions, we deal with classes—in hospitals such as this we must deal with individuals, and with individuals who are as independent as ourselves through their honest labour while in health, but who cannot, when suffering under sickness or accident, provide themselves with such medical aid as they require, or even with necessaries. We are bound by policy as well as humanity to give them our best medical aid, and all the indulgence in our power, consistent with the maintenance of regularity, to maintain unimpaired the connexion and intercourse between them and their families and their friends, and with increased comforts to make our wards approximate as much as possible to the sick man's home, so that he leaves them with all his social feelings unimpaired, and anxious again to return to habits of industry and independence; uninjured by associating with the indolent or depraved,

whom he should herd with, in a workhouse, were separate hospitals not available for our hard working and honest labourers and mechanics, and when females are considered, the evils to them of workhouse contamination apply with redoubled force. From the formation of the present Board of Governors up to the present time, their most unwearied attention has been given to every point that could promote education or increase the comforts of the sick. The number of resident pupils has been increased; a recreation park has been provided for the patients; a new laundry and kitchen have been provided, and an improved dietary established; increased inducements have been given to all the minor officers and servants for increased zeal and attention on their parts, by allowing them a more liberal scale of wages; and yet such has been the attention to economy, that while carrying out all these improvements the accommodation for the sick has been maintained throughout to its full extent. I have had opportunities since last I had the pleasure of addressing you, of visiting many of the great hospitals of France and Germany, at Paris, Vienna, and Berlin. I can now, with confidence, say that, in all essential particulars, our hospitals here—not alone this institution, but our hospitals generally—can fully stand comparison with their best. On the eye of the casual or unprofessional visitor, the statuary in the halls, the frescoes on the ceilings, and the waxed floors, produce an imposing effect; but these do not

constitute the essentials of an hospital or give comforts to the patients. The casual visitor seldom goes beyond these; but when the professional scrutinizer enters into the details of ventilation, of cooking, of medicine, of clothing, of the numerous little, yet requisite, appliances for the sick, he then learns to value his own institutions more than before, and to find out that there is often little to be adopted from others. There is, however, one particular in which they do give an example, which, with advantage, might be adopted to a greater extent than it at present is in some of our hospitals—I mean the greater opportunities the foreign hospitals afford for the education of students as resident pupils, who, as such, acquire a practical knowledge of their profession, and an insight into hospital details which they cannot otherwise attain, and which are so requisite for them in after life. It very rarely happens that young men who have not been in those offices become eminent in their profession or efficient medical officers. In some institutions, such appointments are matters of purchase; and it may thus happen that the most deserving pupils who have not sufficient means at their command are debarred from those opportunities for improvement. In this institution the offices of residents are open indifferently to the whole class, and we select every six months, that being the duration of holding office, from the class at large, choosing, to the best of our judgment, those most competent for the office. This leads me to explain to you the circumstances

which guide us in making our selection, and which it is necessary you should know.

In the present day, when the bent of the public mind has turned upon competitive examination for every kind of appointment, civil and military, it would naturally occur that examination as to respective degrees of knowledge, in other words competitive examination, would afford the best test as to the eligibility of the candidates; but we tried it, and it failed, and for these reasons—The most flippant answerer, ground (you know what that means) to perfection, was very often the most wanting in all practical knowledge, and when brought to the bedside in emergencies of serious illness or accident, the most incapable in applying his knowledge. There are other equally important considerations which weighed with us in giving up competitive examinations. Far more than mere professional knowledge is required in the resident pupil of an hospital; we required other qualities—we required steadiness, attention, propriety of conduct, good temper, and kindliness of disposition and manner in dealing with the sick. Competitive examination gave us no insight into the possession of these qualities, and we knew—what will be admitted, I think, without question—that the possessor of these personal qualities, with a very moderate portion of professional knowledge, was of far more value than the possessor of the highest but purely professional attainments without these qualities. Hence,

we felt ourselves obliged to discard mere competitive examination. Still it remained necessary to ascertain that the candidate possessed a competent degree of professional knowledge.—The mode we have acted upon for a long time is this—We give abundant opportunities to all such students as desire it to become extern clinical clerks. This is a probationary stage, and it affords us the opportunity of judging if, along with a competent degree of professional knowledge, the candidate presents the possession of those other qualities to which I have referred. Pupils possessing those qualities are invaluable aids in hospitals, and while they, on the one hand, extract from such appointments the elements of future success, on the other hand, the public and the sick are deeply their debtors. There is no profession which presents among its students the same amount of devotedness in its pursuit as is presented in our profession. It is hard to overrate it. We have all seen resident pupils, night after night, without rest or pause, spending the wearisome hours watching by the bedside of some poor creature whose limb has been amputated or main artery tied, and never for a moment faltering in their care until the critical moment had been passed; or at all hours of the night, careless of sleep, deprived of rest, ready to admit, at any moment, the victim of sudden illness or accident. Their lives have often been the forfeit of their duty; a year has seldom passed in which we have not had to deplore the death of some one or more

of our most promising pupils ; and it seems but as yesterday since several whom we instructed in this theatre have lost their lives in the Crimea, or perished in the massacres of India, and all have died at their posts.

As several of my hearers may be attending here with a view to preparing themselves for the army, it may be well to give them some information on the subject. Very lately the military authorities have improved the pay and position of army surgeons, and commensurately with this, and most properly, they have raised the standard of education. It is not sufficient that the candidate shall have obtained the diploma of some college or university in medicine or surgery. He must also, before being nominated for a commission, pass an examination before the Army Medical Board; but having passed this examination, do not suppose that the final ordeal is over. The last and most searching examination is yet to come. The candidate is next transferred to a large hospital, where, under the immediate inspection of experienced officers, he is required to perform many operations, from the simple manipulation of applying a bandage on the living patient, to the capital operations of surgery on the dead body ; and in the medical wards he is required to go to the bedside and note cases of internal disease with the diagnosis and prognosis and treatment. Many young men who have thought themselves safe in obtaining their diplomas and passing the verbal exa-

minations before the Army Board, have failed to pass the final test, and have had their hopes blasted for life. The two great deficiencies which have caused the failure of success in the final examination, are want of preliminary education and want of practical knowledge of their profession ; and let me impress these two facts upon all those of my hearers who may propose to themselves to make the army their career in their profession. If your writing be illegible, if your English composition and spelling be incorrect, if your style be obscure, you are most properly not deemed competent to draw up cases and reports, and you are rejected. If, on being tested at the bedside, you show that you have not been practised in examining cases—that your knowledge is merely book memory—rejection will be your lot. The first of these essentials, a good preliminary education, you cannot get here, and if there be any who do not possess it, I would earnestly entreat of you to postpone the prosecution of your profession until you have acquired it. With regard to the second, the acquirement of practical knowledge, you will have only yourselves to blame if you are deficient. The opportunities are at your command. There is not a pupil of the numerous class here who may not have such opportunities if he desire them ; and, believe me, their value cannot be overrated. Within the last year a pupil educated here, and many of my hearers know the incident, passed the Army Medical Board, and was, with a host

of others, transferred to Chatham for the final and practical hospital test. He had little expectation of soon obtaining an appointment, for many were before him with influence which he did not possess. He was directed to note some cases as I have already described to you. Before he finished his whole number he was told by the senior officer, who was looking over him as he wrote, that he need go no farther, and within a fortnight he was appointed to the Artillery. That young gentleman was a clinical clerk here, and when put to the final test at once showed that he knew what he was about, for he had worked practically in the hospital wards. No amount of grinding will enable you to stand this test. You must also be prepared for this, that even if you have obtained your commissions, it will not follow that your promotion will go on in rotation, unless you possess the double qualification of a good preliminary education and professional knowledge. If your preliminary education be deficient, if your reports are defective in style or clearness, you will be passed over, and your hoped-for promotion long delayed or never attained, with the mortification of seeing your juniors promoted over your head.

I wish I could congratulate the profession or the public on the standard of education in the profession improving of late years. I am sorry to say the reverse is the fact, and that, on the contrary, in preliminary and professional education, there is, generally speaking, a great deterioration; and so much is preliminary

education now disregarded, that young men enter on the study of our profession ignorant of the commonest rules of English composition, and of the simplest elements of a good general education; with a preliminary education so defective that they could not pass an examination for the humblest clerkship in a public office, while for the professional part of their examination they give themselves as little trouble, as they know that without the possession of practical knowledge they may rest perfectly assured of obtaining a diploma that will carry a legal qualification for civil offices. Where does the blame of all this rest? Not with you, or your parents or guardians. The diploma recognized by law is what is sought for, and if you are able to obtain that, with a certain trifling amount of education and mental labour, it is scarcely reasonable to expect that you should incur more. Let us go a step farther—Are the colleges and universities who give the degrees to ill-educated candidates, and on deficient examination, culpable? Perhaps to some extent, but not nearly to the extent that might appear at first sight. There are about nineteen of them in the United Kingdom; many of them are dependent mainly for their income on the fees received on graduation. Some one college came down a little in its standard of education and in its examination, to attract students in preference to it—students flocked to it. Some other college or university next came down a little below the first, to attract students in turn. Another and

another followed in the same course. Step by step each college descended below its neighbour in the sliding scale, until it has come to this, that now a candidate rejected at one college has beforehand prepared for his immediately setting out for the next lowest in the scale that will gladly sell its diploma on easier terms. This is the present state. Who is to blame for this? Neither students nor colleges ; but a higher power than either—the legislature—that permits this discreditable state of professional education and examination to continue. If it merely concerned the profession itself, the legislature might very justly say—Look to your own professional interests, and take care of yourselves. But the question is not of this nature—it concerns the public much, the profession little. As the law at present stands, the legislature, by declaring all diplomas equal, gives those entering our profession no inducement to acquire a high education. It would be unreasonable to expect a student to spend additional years and incur additional expense in preliminary and professional education, when he can command an equally legal status with none of the former and very little of the latter. There is, however, strange as it may seem, but not the less true, a premium on a low qualification ; for, at the present time, in Ireland, the holder of the lowest diploma in the United Kingdom can hold public appointments from which the possessor of the highest education is excluded. These evils

have not so immediately come under the observation of our legislators as they might, probably from the circumstance that they always see in large cities a number of highly educated men, and such will always be the case. In large cities there will always be found, independently of all legislation, highly educated physicians and surgeons, because the prizes and position of professional eminence, and the competition consequent on these, will always ensure intellectual exertions that will not be called forth under other circumstances.

A bill has recently come into operation, "the Medical Act" of last session, which it is hoped by many may remove some of these defects I have noticed. I hope so, but I am not so sanguine as to its results. It declares that unqualified persons shall not assume the title of qualified persons. It provides against the efforts of quacks to get within the circle of the profession. But I cannot discern, what in my opinion is much more needed, any efficient guard against the entrance of ignorance and incompetence into the profession itself. There is no directly controlling authority to prescribe a fitting education. There is, it is true, a privilege given to the Medical Council to report to the Privy Council on any colleges that may not, in their opinion, maintain a sufficient curriculum and examination, with a view to such colleges being disfranchised; but when it is recollected that such council will mainly consist of

representatives from all the colleges, it seems rather much to expect that the representatives of the colleges called in question will concur in such report, and Marcus Curtius-like, devote themselves and their institutions to self-immolation for the public good; and the Privy Council may be very reluctant to decide between the contending parties, or to take so serious a step as disfranchising a college. But, although the bill in its present form may be defective, it will become, I trust, the foundation on which the legislature may be able to raise a good measure. I would now, in conclusion, and in entering upon the business of the session, wish to impress upon you the great importance I would attach to the habit of cultivating a habit of diligent and accurate observation. Observation of facts may seem to some, one of the simplest faculties of the mind, yet it is the rarest, the most difficult to acquire, and the most needed in the practice of our profession. Valves in the veins existed as long as animal life existed, yet it needed the accurate observation of their form and direction, by Harvey, to determine the circulation of the blood. The blue hair line on the gums, the result of lead poisoning, remained very long unknown, because our observation had not been sufficiently precise and diligent. For ages, measles and scarlatina, now universally known as diseases distinct in their nature, in their danger, and their treatment, were confounded together. The peculiar sounds, which are generated within air tubes

and blood vessels, must have existed contemporaneously with the lesions producing them, yet they remained undiscovered until of late years. These instances—I could multiply them to a great amount—all seem very simple now, when known to us; yet, think how long they escaped our notice for want of diligent and accurate observation. You will, I am sure, gentlemen, be actuated in the prosecution of your studies by a higher and better object than the mere acquisition of a diploma; by a desire to fulfil creditably the position in life which you have selected for yourselves, and to possess a well-grounded knowledge of your profession, so that, in after life, you may never have to reproach yourselves with culpable ignorance. For all who have undertaken responsibilities connected with the institution, in our several capacities of governors or instructors, I know that I may confidently say we are all only animated by the one desire of truly fulfilling the trust the State has reposed in us, of ministering to the requirements of the sick, and of maintaining the efficiency of these hospitals as a great educational institute. And here I should not do justice to my own feelings, and those of my fellow-governors and colleagues, if I failed to omit the gratification of our having a nobleman here this morning, whose name is so intimately associated with the preservation of our hospital grants—Lord Naas, our present Chief Secretary for Ireland—who took up the question when success seemed almost

hopeless, and as chairman of the parliamentary committee conducted the inquiry to a favourable result, who will see this day the good fruits of his exertions, and I trust be satisfied with his examination of the condition and working of the whole institution.

D. J. CORRIGAN.

THE END.

Printed by J. M. O'Toole, 13 Hawkins'-street, Dublin.

AN

INTRODUCTORY LECTURE,

DELIVERED IN THE

LEDWICH SCHOOL OF MEDICINE,

31ST OCTOBER, 1864,

BY

WILLIAM MOORE, M.D., T.C.D., M.R.I.A.,

FELLOW OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS; PHYSICIAN TO MERCER'S HOSPITAL, AND TO THE INSTITUTION FOR THE TREATMENT OF DISEASES OF CHILDREN, PITT-STREET; PHYSICIAN IN ORDINARY TO SIR P. DUN'S HOSPITAL; LECTURER ON PATHOLOGY AND PRACTICE OF MEDICINE IN THE LEDWICH SCHOOL OF MEDICINE; LECTURER ON CLINICAL MEDICINE, ETC.

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1864.

INTRODUCTORY LECTURE.

GENTLEMEN,

The duty of delivering the Annual Introductory Address in this Institution, on the present occasion has devolved upon me, and when I reflect for a moment on the numerical, as well as the varied character of my audience, and the influence which they may hereafter exert for good or evil, on the moral and physical condition of their fellow men from pole to pole, a feeling of deep responsibility must naturally attach to me, as one of your instructors, but more especially in my present capacity. I see before me young men, who for the first time, having left their homes and early haunts, are launched into this metropolis to set about acquiring knowledge of a profession, the very technical terms of which, at first seem not only discouraging but perplexing. On the same bench others, who having passed their probationary year, and having become familiar with the nomenclature of disease and such other "principia," are about to devote themselves with more assiduity to some of the collateral branches, which they are called on to learn ; others, still more advanced, are absorbed in obtaining their final qualifications ; and some even of a fourth class may be

present, who having possessed themselves of their diplomas, are pausing on the threshold before entering on the turmoil and struggle of professional life. But diverse as you may be in your educational stages, mentally your differences are still greater ; thus, the bent of one man prompts him to the naval, another to the military service, whilst a third prefers the civil and more quiescent path ; again, the disposition of one is ready, earnest, and speculative, another cautious, sober, and scrupulous, whilst a third may combine a happy mixture ; thus view it as you may, your subjective characters are as varied as your objective are diversified. Keeping these facts in view, it will indeed be a source of gratification, if any observations which may fall from me may prove valuable to you, individually or collectively, whilst at the same time the occasion reminds me, that these remarks should at once be simple, suggestive, and succinct. To those who may be more especially designated, as having enlisted this day in the ranks of the profession, I shall, in the first instance, more immediately address myself ; to such the importance of the study of languages in the career they have adopted, requires no confirmation from me : that they constitute at once the best training for the mind—the greatest facility for acquiring other knowledge—the happy effect of refining individual character and taste, is universally admitted. Now if these happy results are derivable from the study of languages in general, they are more especially traceable to those of ancient Greece and Rome, presenting as they do, the most admirable models of

history, poetry, or the drama, which have ever been produced. These languages in the abstract you may forget in after life, but their concrete effects, discipline, and refinement, once developed can never be effaced. No doubt I may be told that in this progressive nineteenth century, it is a waste of time on the student's part to learn these dead languages, the quotation of which has ceased to be regarded, as a proof of education suitable for the times ; thus, the inventions in connection with steam and electricity, at first sight seem to have little in common with such pristine acquirements, but a moment's reflection will shew you, that these very inventions argue for a more intimate knowledge of ancient languages. The direct result of these inventions, argue for a more intimate union and association with other countries, and for a more intimate knowledge of their respective languages. Now the pupil to master French, Italian, or Spanish, can really only do so with precision through a knowledge of Latin, as you will at once be struck with the similarity of words in an English and French dictionary, both springing from the same root. Charles the V. said, "whenever he read a foreign language he felt a new soul within him." Now a study of foreign languages is the key to treasures, which to the medical student, are inestimable. For as we see in commercial interchanges, we borrow much that is to be derived from remote or neighbouring countries, so in scientific attainments, the natural sameness is removed, and our ideas enlarged by reading foreign authors. It is impossible but the character should take a higher tone, from the

constant habit of associating in thought, with minds above the average of humanity, and as SIR JOHN HERSCHEL has told us, "it is morally impossible but that the manners should take a tinge of good breeding and civilization, from having constantly before one's eyes, the way in which the best bred and the best informed men have talked, and conducted themselves in their intercourse with each other." A well directed, systematic course of reading, insensibly influences the character and disposition,

> "Ingenuas didicisse fideliter artes,
> Emollit mores, nec sinit esse feros."

In the profession you have adopted, a taste for reading is indispensable, not mere ephemeral reading, but reading and reflecting; thus you attain a higher development of common knowledge, which has been succintly expressed by the term "science;" the infinite results of which, are attained by no mental processes, other than those which are practised by every one of us, in the humblest affairs of life. But a point of great educational importance suggests itself, what should limit "general" and what "professional" education? in short, where the one is to cease and the other to commence, or whether the student should carry on both simultaneously. For my own part, I feel satisfied, that the tendency of special professional education to overrule general education, is a matter of serious consideration, for various reasons, but more particularly, when we remember that in after life, the active duties of a profession, to a great extent, prevent further opportunities of self-education, and because the time thus

apparently gained, by shortening the general educational course, is too frequently lost, from the mind not being sufficiently matured to undertake special professional study. These important subjects have been provided for by the examining bodies, and general education has, to some extent, been secured, by requiring medical students to pass a matriculation examination, which comprises a certain, though limited, knowledge of Greek, Latin, mathematics, and perhaps French and chemistry. Still, this standard of admission, limited though it be, is a step in the right direction.

The Science with which you have more especially to do is that of "Biology," which is interwoven with the investigation of the manifold properties and relations characteristic of living beings. Within the last half century, Biologists have gained several rich provinces, but none possessed of more interest, than that derived from the use of a single optical instrument (the microscope), to which is mainly owing the recent advances in "Histology," the science of tissues, and the progress of its twin-sister "Physiology," the connection between which may be said to be so intimate, that the two terms may be regarded as synonymous. Now as regards the importance of a knowledge of the principles of Physiology to you as Students of Medicine, you have only to look around you, and see how many valetudinarians are met with, more owing to the ignorance of the commonest physiological principles, than to the accession of epidemic diseases, hence that department of your curriculum which comprehends these general truths and their

bearings on daily conduct is an all essential branch of your education. Again, the study of any of the sciences placed before you is invaluable, as well for intellectual as for moral discipline. In the various branches you will be called upon to learn, the truths must not be accepted on authority, you have every facility placed before you of testing them, every step in the respective processes is submitted to your judgment, and in proportion as you avail yourselves of these opportunities, in the same ratio, will arise that independence of character which is reflected in the thorough student. Hence, in approaching the study of Medicine, I entreat of you, to set about it with no preconceived or empirical tendencies, the conditions of a successful acquirement of the course you have chosen, depend on the abandonment of such, and the prosecution of inductive inquiry, through the media of close observation and industry, and the unbiassed acceptance of what nature reveals. For example, in the study of Anatomy, imagination will not be required of you, but a constant reference to positive objects, which will be so arranged by your instructors, that the association will assist the memory. Anatomy, it is needless to assure you, is not only the base of operations of the medical student, but in addition, if carefully learned, forms the most systematic training for the mind, becoming especially serviceable when Chemistry, Physiology, and the collateral branches of your profession come to be acquired. It was through the study of Anatomy we find VESALIUS arrived at the structure of the body, thus exalting medical science above the ignorance of

former times. HARVEY again used the same means of investigation to reveal his discovery; and it is only of late years, that the anatomy and physiology of the nervous system have met the attention they merit, more especially the anatomical relations of the vasa-motor or sympathetic nerve in the neck and within the cranium. It is to the researches of BUDGE and WALLER, BROWN-SEQUARD, BERNARD, and others, we owe some of the most remarkable advances in this department, which, when applied to the diagnosis of disease, are of immense practical importance. Thus we have arrived at the conclusion, that those branches of the sympathetic nerve which control certain motions of the pupil, have not their real origin from the "ganglia" or nervous knot in the neck, as was long entertained, but that they arise from a portion of the spinal cord between the sixth cervical and fourth dorsal vertebræ. Now when we apply this knowledge to the diagnosis of disease, we find the condition of the pupil, viz., its contraction or dilatation, aid us very materially, in pointing to comparatively remote regions for the exciting cause, and where some years ago it would have been least suspected. For example in cases of aneurism or other tumour within the chest, when there is neither visible enlargement or other objective sign of the disease present; the fact of contracted pupil (from pressure of the aneurism on the sympathetic nerve), coupled with any other negative or subjective symptom, may enable us to detect this too frequently latent malady. Hence we see what a field is open for us in an anatomico-physiological direction, and every

recorded advance should stir us up to increased exertion. It was with this course of study the science of medicine may be said to have begun, previous to its introduction, physicians had observed and argued and still only guessed at truth, since this date, they have observed, reasoned, and proved it. For the attainment of a thorough knowledge of this indispensable branch of your profession, facilities will be afforded you in this Institution, I may safely add, second to those of no other, and the more you reflect, the deeper you will see the importance of availing yourselves of these facilities, inasmuch as Anatomy, both human and comparative, may be said to launch us into the wide area of Natural History, Natural History in its turn, gently and insidiously suggesting an acquaintance with Botany, Zoology, and Geology. Chemistry, refined to a degree our forefathers never contemplated, introduces us to Materia Medica, Jurisprudence, and those subjects of vital interest with which the most comprehensive medical inquiries are interwoven; Psychology again leading us into the domain of Metaphysics, and those great moral questions on which depend our mutual exaltation, and the elevation of our species. From all this it becomes self-evident, that there is scarcely a department of literature or science, which does not become professionally interwoven with the path you have adopted. But, whilst I am thus advocating your attention to these collateral and theoretical branches, let me not be understood as making them all important, on the contrary, they must subserve the great object you

have undertaken, viz., the cure and alleviation of disease. Now where is this knowledge to be acquired? I answer, in the wards of your Hospital; there, and there only can it be obtained; all the theory and book-reading, will not make you a Physician or Surgeon, personal observation of disease at the bedside alone can accomplish that. By observation, I do not mean a mere casual look at the patient, that will not suffice, no, when you approach the study of disease, you must leave nothing unobserved, nothing disregarded, your observation should extend from the crown of the head to the sole of the foot; as often we find the symptoms of most obscure diseases reflected on remote parts. Begin by observing a few cases thoroughly, the adoption of this system gradually induces the facility of observing more "*en masse*," bearing in mind, that observation and its twin-sister memory, are qualities indispensable for the successful Physician or Surgeon.

This is not the place to dwell further on the subject of Hospital attendance and Clinical instruction. The mode of setting about this most interesting, instructive, and practical part of your course will be detailed to you in another place; but I cannot forbear tendering an advice to those more especially who are just enlisted in the ranks. *Commence your hospital attendance from this day*, let nothing interrupt its regularity, by so doing you will become the sooner conversant with technical terms and other details, which, under any circumstances must engross a con-

siderable amount of time, before the tide of actua observation may be said to be set in. Your profes. sional success in after life, depends on the perseverance and industry which you apply to this knowledge placed before you; and the science of medicine after all has only one foundation, which must be laid by observing and noting down disease in all its phases. This knowledge accumulating day by day, will give you that confidence, which experience, guided by judgment and discretion, alone can engender, and which will place you beyond the sphere of empiricism and charlatanry. Thus you must readily perceive that it is not what will be done for you by my colleagues, or myself, that will determine your professional progress; we may aid you, and point out a system, and elucidate details, but it rests with yourselves to profit from this curriculum. The Lectures which you will hear in this theatre will be profitable so far, and only so far, that they will afford you the means of exerting your faculties, by systematizing and marking the great outlines of the subjects of which they respectively treat. To exercise your faculties involves a question of energy, which at first is at least irksome, but as it gradually is exerted, becomes more grateful, till at length the student feels it pleasurable. This gratification being in direct ratio to the amount of energy we employ, therefore, our great object, as your instructors, is, to induce you to undertake and carry out a systematized course of exertion, at first irksome, I grant you, but in its results profitable and agreeable. We are told that

in the sweat of his brow "man should eat his bread," and Hesiod has sung of the irksome beginning and happy culmination of virtue thus :

Τῆς δ' Ἀρετῆς ἱδρῶτα θεοὶ προπάροιθεν ἔθηκαν Ἀθάνατοι.

But whilst I am thus endeavouring to show you the indispensability of industry and perseverance in the course you have adopted, I am not so unreasonable as to suppose that any one, the most gifted of those here assembled, can excel in all the various sciences which the curriculum before you includes; still this is no argument against your making your educational base as broad as possible—in short, laying the widest foundation for subsequent mental culture and development, as you are all well aware, that our entire life is one of education, self-culture, only terminating with our existence. We are frequently told, and with great truth, no doubt, that all are not equally gifted, and that eminence and success in life, are the appanage of the few, "*Rari nantes in gurgite vasto;*" but it embodies a far greater truth to state, that the great secret of success in life is perseverance, a firm determined resolve to obtain the desired goal. Gentlemen, depend upon it, on this perseverance, which may be better described, as the care and labour we bestow on the talents we possess, more than on any innate genius, hangs success in life.

Now, among the most laudable stimuli to exertion we must place emulation, and the desire for distinction, which are implanted in us for the most salutary purposes, but which qualities are allowed to remain dormant, in too many instances, from a variety of

causes; among the most prominent of which I may mention, that feeling of inferiority which frequently discourages the student competing for academic honors. Now, whilst I warn you against overweening vanity and precocity, at the same time, let me entreat of you to disabuse your minds of this feeling of distrust. No man is aware of the talents he is possessed of, till he is placed in circumstances where they are fairly tested, then he awakes, as if to discover his mistake. Again, even for the present, you may find yourselves somewhat behind the mark, but that should not discourage you for the future. Some of the ablest intellects have been tardy in their development, which steady and vigorous energy have finally matured. No doubt we may all run in the race, and only one can receive the first prize, still the others will obtain advantages in proportion to the energy with which they have striven: "*Prima sequentem, pulchrum est in secundis tertiisque consistere.*" Whilst I am thus impressing the importance of earnestness in the path you have chosen, do not think for one moment that I am forgetful of the duty of your instructors; now, if any proof were wanting of their zeal, I think the fact of 670 young men, having successfully completed their education, within these walls in the past twenty years, will afford it. Such a list of successful students will bear comparison with most, if not with all similar institutions in the United Kingdom; but what is more remarkable still, the small number of unsuccessful as compared with the successful, in competing for public appointments.

Now, to what is this attributable? I answer, to the "eclectic" character of the instruction, and to the fact, that your instructors do not limit themselves to forcing on a few young men of ability, at the expense of the many, as we find is too frequently done for sinister purposes, but that all confided to their care meet with similar and equal facilities for acquiring a knowledge of their profession.

Of these 670 qualified men it would be safe to say, some hundreds have entered the various public services, and are distributed over the globe; and this naturally suggests a subject of paramount interest, which at present is agitating the whole profession, and which may materially influence your future course. I refer to the anomalous position of the military surgeon. I am not about to go over in detail the numerous grievances of which the medical officers of the army so justly complain, but will give you a general outline which may serve our present purpose.

The army surgeons say, that a warrant granting them certain rank and other privileges, has not only been curtailed, but in many important points completely nullified by the military authorities. This warrant was issued in 1858, then comes a code of regulations in 1859, and another royal warrant in 1861, antagonizing and rescinding, to a great extent, the privileges conferred in 1858. Well, the consequence of this policy is, that the medical service of the army is, and for a considerable time past has been, one-third under its legitimate strength. Not only do young men decline to enter the service as surgeons, but men who have served long and faithfully

in every clime are leaving the service, when their experience and judgment would be invaluable. Further still, we find the heads of institutions which have heretofore been mainly instrumental in educating surgeons for the service, and men who have themselves served, dissuading pupils from selecting the army as their sphere. It cannot be a matter of surprise, that young men of education and members of an honourable calling, decline to enter on a career where their proper official position is not recognized, as happens on courtmartials and on other important occasions. Again, on the question of leave : every officer gets his two months' leave of absence at home, with a corresponding allowance after a certain term of foreign service. Not so with the medical officer, he can claim no leave by right or otherwise, and this has been naturally felt as a great hardship, surgeons spending years continuously in the most pestilential climes without a month's reprieve. As regards the fiscal condition of the medical officer, he is appointed to a regiment, and of course bears his part of the usual expenses ; other officers can sell out, he cannot, although the sum he has spent in qualifying for his appointment may be double that of the commission of an ensign, who can realize at will, the retirement of the surgeon at best securing an allowance, miserable in the extreme. Now when we consider for a moment, that the medical service of the army should be composed of men of scientific attainments, the educational cost of which must be expensive, to say the least of it, it is rational to think, that the pay of the surgeon, as also the re-

tiring allowance, should be increased, else the military service must cease to compete with the other channels now opening for duly qualified medical men. These and other such like grievances forced themselves on the attention of the late Lord HERBERT, of Lea, and eventuated in the issue of the warrant of 1858 already referred to, but which has been ignored, as I have shewn you in most of its main features ; however, this policy seems at length to have worked out its own cure, by keeping back from the service the best men. The late Sir B. BRODIE, Mr. FERGUSON, and Mr. PAGET, in their evidence before the Royal Commission, gave it as their respective opinions, that the inducements to enter the service were not sufficient to attract good men, yet in the face of all this, the boons promised in 1858 have proved to a great extent chimerical. No one can tell how soon the horrors of war may be entailed on us, both by sea and land, yet our authorities, so far from encouraging, have absolutely discouraged men of education from joining their service, by rendering their position disagreeable and abhorrent. Skilful men have been so affronted by regulations and warrants, by combatant and non-combatant distinctions, that they refuse to enter the service in *toto*, or leave it in disgust. It must be some consolation for a wounded soldier or sailor to feel, that under any circumstances, a brave heart and educated hand will dress his wounds, or soothe his path towards the dark valley ; and this is well exemplified in the surgeon who, with a steadfast and humane purpose in view, in the midst of the fiercest fire, is intent on saving the

lives of those committed to his care. As a verification of this fact, we have only to look at the monument at Netley, to no less than sixty surgeons who lost their lives, whilst gloriously performing their duty during the Crimean war. And in a recent gazette you may read, how Her Majesty has been graciously pleased to signify her intention to confer the decoration of the Victoria Cross, for acts of bravery in New Zealand, on Assistant-Surgeon WILLIAM GEORGE NICHOLAS MANLEY, who, during the assault on the rebel Pah, near Tawranga, New Zealand, on the 29th April last, most nobly risked his own life in his endeavour to save that of the late Commander HAY, afterwards volunteering to return and look after more wounded, and being one of the last to leave the Pah. Also on Assistant-Surgeon WILLIAM TEMPLE, whom, I am proud to say was educated in this metropolis, and with whom I had the honor of being acquainted. This latter gentleman, during an assault on the enemy's position at Rangiriri, in New Zealand, on the 20th November last, crossed the Maori Keep at a point where the enemy had concentrated their fire, with a view to assist the wounded, at the iminent peril of his own life. Thus the highest distinction in the gift of the Crown for gallant deeds, has been won by two heroes in the discharge of duties, which in the eyes of the present administrators meet with but little appreciation.

Many men, during excitement, will perform an arduous or hazardous duty, who would be incapable of performing an operation, such as tying a bleeding

artery, or amputating a limb under imminent personal danger; yet, as I have said, these are the men whom the military authorities refuse to treat liberally. However, there is one grievance occasionally complained of, which does not seem to me worthy of such an epithet, I refer to the complaint of "non-recognition of social position." Gentlemen, rely upon it, "social position" is not to be obtained by acts of parliament, warrants, or such regulations, it is a quality of a man's own making. We see daily men born to the highest social position descending to the lowest scale, whilst on the other hand, those starting in life with no such hereditary appanage, by their consistent conduct and bearing, step into the front rank.

It remains for me only to express a hope, that ere long the medical department of the army will be treated, in a manner more in accordance with its merits. At present, the colonies, turn where you will, open a field for you which, with industry and perseverance, will bear fruit more abundantly than the public services, whilst at home the work is equally arduous, and extending over a longer time, till an enviable position is attained. Still, we cannot shut our eyes to the fact that, almost daily, active men in the prime of life, are carried off by some fatal scourge, leaving their families comparatively, if not wholly unprovided for; this follows as a natural sequence, when we consider the remuneration which is extended to the medical officer, his annual income, in many instances, barely sufficing to support and educate his family, such a state of things is deplorable in the extreme.

But what must be regarded as even more trying, is the case of a man after long services, prostrated by some chronic disease, which incapacitates him from performing his public duties, the result of which is, immediate supercession, without present or future recompense. However, we find the Poor Law Board seems inclined to hold out greater inducements, by gradually increasing the remuneration of its medical officers, and if the pressure from without is steadily kept up, I have little doubt, that sooner or later, retiring allowances will be granted for long services, as we find in the cases of other civil servants under the Crown.

But to resume, gentlemen, you have adopted medicine as your profession, and I advise you if you are possessed of a shadow of ambition, or even of common self-respect, make everything that relates to that profession the object of your study and interest. To do this, as I have endeavoured to point out to you, is not incompatible with an acquisition of general information; on the contrary, whatever calling or pursuit a man enters upon, he will fulfil the duties of that pursuit far more effectually, by having a wider range of knowledge, which will in no wise interfere with the special line of study he has chosen. Enter on your duties with a sense of their solemnity, with enthusiasm and devotion, and do not become a mere pretender or dabbler in the healing art. The world at large are better informed, and they demand increased knowledge from you in the same ratio; and happily we do see men day by day standing out, examples of the perfect Physician and Surgeon, in whom are reflected the

distinction of being allied with a profession, which scorns dishonesty, insincerity, and hypocrisy. These are the men who by patient observation, gentleness, and firmness, qualities acquired in the wards of their Hospitals, apply their skill with equal humanity and tenderness, alike in the cottage of the peasant as in the hall of the peer, thus regarding all suffering as equal. You are now at a period of your life when such examples should prove most serviceable, when your whole time can be devoted to education and self-improvement; when you engage in the pursuits of life you will find it far otherwise, therefore let me impress upon you the importance of the motto, "*carpe diem*," depend upon it, if you let the present opportunities slip, your regrets will only cease with your existence. You will be somewhat in the condition so graphically portrayed by one of the greatest living statesmen, who, dwelling on the importance of students availing themselves of opportunities offered to them, and in the event of their neglecting them, he compares them to the crew of a ship entering on a long voyage, which has neglected to provide sufficient means of subsistence, and while in the middle of the storms and tempests which they may encounter in their passage, will find their strength failing them, and their means inadequate in consequence of want of foresight before leaving port. Following in the same tack, but "*Longo intervallo*," I entreat of you to look carefully in time, to the finding of the ship. This can best be done by making up the various deficiencies systematically and in detail, thus you will best make provision

for the voyage. A certain amount of knowledge of the various subjects placed before you is indispensable for a liberal education. But far advanced in this nineteenth century, when we find knowledge so widely disseminated, it behoves those who have had the advantages of a University education to be constantly on the alert, so as to keep their educational standard "at par" so to speak; whilst those who have not enjoyed a University education, or advantages as nearly equivalent thereto as possible, must feel it still more incumbent on them to supply their educational defects, so as to be "*au courant*" with the subject they have adopted. The tide of intellectual dominion is rapidly and steadily withal advancing, and in no department is its progress more evidenced, than in the study of physical sciences in general, and medicine in particular. From all these considerations you will admit, that the profession you have adopted must engross a great portion of your time and attention, and it is only by this undivided attention you will be enabled to view, as if from an eminence, the principles and practice of those with whom you may have to do. Thus you will learn, that the most volatile, the most prejudiced, and least to be relied on are those, who with an imperfect knowledge of their profession can only see matters through a narrow vista, whilst on the other hand you will learn, that the sober, candid, charitable, and forbearing, are those, who have prosecuted their professional studies in the widest range, and who, having reached the summit, can observe objects shut out from those content

to roam in the vallies. Hence we come to respect and be influenced by sound judgment, the offspring of a cultivated intellect, whilst the ignorant and uneducated are necessarily set aside and neglected. From the tenor of these observations you might conclude, that restlessness, and ambition to attain the highest position in your profession, was the paramount consideration. But do not think for one moment, that I overlook in this striving for place, that humility of a noble mind which is chary to assume a position, until it has tacitly secured it by the approbation of others. Of a very different order is that fidgetty thirst for distinction, that craving for theatrical display, which engrosses the undivided attention of the vain, and which is by far the most selfish and unsocial of all passions. Property seems capable of division, not so with fame. In the acquisition of wealth, men find out that the promotion of such pursuits must entail reciprocity. The line of conduct dictated by vanity is far otherwise; we meet with many rich, wise, and virtuous, but "*fama*" is the appanage of a few, and the attention mankind can spare in the admiration of each other is so minute, that each successful adventurer is regarded as a poacher on a very restricted preserve. But there is a delicate and modest desire for reputation, compatible in every particular with the esteem and respect of the high-minded and sagacious, and necessarily antagonistic to arrogance and assurance, this is a virtue to be steadily kept in view; such a mind discharges its duties without ostentation, is intent on realities, not on appearances, in short, is anxious to be

worthy, not to seem so. Thus you see success in life, or the desire of playing a shining part must be carefully tempered. "Success in life," as our late noble Viceroy has pointedly told us, "is apt to be made up of very coarse, obtrusive, vulgar ingredients, certainly not of heavenly temperament; while there is hardly a grace of character, a spring of self-reliance, an element of progress, with which failure, not caused by our own acts, and sustained by an even and brave spirit, may not ally itself."

Medicine, as the past half century has more especially shewn, presents a magnificent future, and this can be the earlier realized by each of you individually, by bearing in mind the close connexion between the mental and physical; and when you consider the ills to which the latter is daily and hourly subjected, you will the more charitably regard their reaction in the mental, in the form of fretfulness, melancholy, and other subjective signs, which even the most cultivated and humane too frequently exhibit. Viewing the subject in this light you will find after all that the good predominates, and thus, as if linking the science of medicine with the highest and most sublime truths, you shew insensibly in your own persons, the beneficence of the profession you have chosen.

But I may be told, medicine does not hold out the inducements and prizes which appertain to other professions. Granted; still it has advantages which counterbalance these. For instance, it is in your power to enrich the poor, health being the poor man's capital; whilst, at the same time,

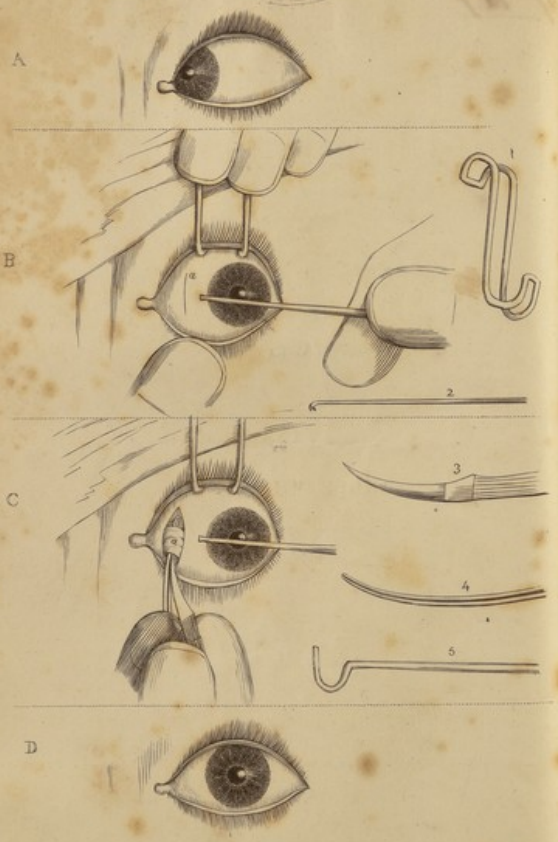
the gratifying conviction repays the medical man that he is at once increasing his own knowledge, and alleviating the poor and needy. As that accomplished physician, the late Dr. Graves, has told us: "Other professions are busied with the works of man; the jurist studies law, the historian records remarkable events, and endeavours to unfold their relation to each other, and expose the motives of the actors; but the medical man is employed in observing, not the devices of man, but the laws which regulate health and disease—laws bearing on them the impress and sanction of the Deity." Hence, our art is one of which no human power can deprive us, no region so remote that will not acknowledge its usefulness. The man who can treat a fever, or skilfully handle a broken bone, will meet a friendly reception as well in the frigid as in the torrid zones. It is to the skill of the physician and surgeon, in no mean degree, we owe the spread of the great truths of Christianity into the pathless deserts of the East, as well as the extension of British enterprize over the entire globe.

Many illustrious examples have proved, that the accomplished physician or surgeon can at least take equal rank, as a liberal and learned member of Society with that of the member of any the kindred professions. Their views are quite as broad, and their attainments, solid as they are humane; their aims are equally high, equally generous, equally noble, always excepting the divine. There is no other intellectual calling or pursuit capable of exercising more influence for general good—in the alleviation of

pain—in soothing the disconsolate—in the administering timely counsel and advice, not only in the halls of the noble, but in the cottages of the lowly. Some of the most valuable names that have adorned the history of science, have been connected with medicine ; a scinece which, taking hold of the inorganic basis of organic life, is capable of grasping the fabric of nature as a whole, by arguing from "Nature up to Nature's God."

Gentlemen, I feel I have already trespassed too long on your time and attention, and in conclusion, I have only to add, that whilst centuries ago child-birth was three times as fatal as at present, and small-pox decimated whole kingdoms, now longevity is on the increase, that of consumption well nigh doubled ; vaccination has virtually expunged variola ; and chloroform has simultaneously negatived the pains of child-bearing, and the terrors of the surgeon's knife. For these inestimable blessings of a gracious Providence, we should be deeply grateful, and they should encourage us to persevere in the path of usefulness, on which all of you may this day be said to have entered. To such my parting advice is, "sow the good seed," and although trials and vicissitudes from time to time may seem to retard its growth, rest satisfied that in the end you will reap an harvest, the abundance of which will equal, if not surpass, your most sanguine anticipations.

Addenda



A DESCRIPTION

OF A

METHOD OF OPERATING

FOR THE CURE OF

STRABISMUS OR SQUINTING.

ILLUSTRATED BY CASES AND PLATES.

BY

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DESCRIPTION, &c.

THE discovery, that by the division of one or more of the *recti* muscles of the eye, Strabismus or Squinting may be immediately cured, is one of the proudest achievements of modern Surgery.

This, I trust, will be admitted by all who are capable of giving an unbiassed opinion on the subject, when it is considered that the operation, as I am about to describe it, is in itself of easy performance, attended with no danger to the organ of vision, and productive of little suffering to the patient; and when, at the same time, the great advantages resulting from it are taken into account.

The marked improvement in the personal appearance of the patient must attract the attention of the most superficial observer; whilst, by the patient himself, the increase acquired in the power of vision, which has generally become much impaired in a

squinting eye, must be appreciated as being of paramount importance.

I do not, by any means, intend to say that the eyesight either will, or can, in all cases of squint, be improved; but a very great proportion of those I have operated on have expressed themselves as being highly satisfied with their amendment in this respect.

Being fully convinced that this operation, when efficiently performed, is one of the most valuable in Surgery, I have been induced to lay before the Profession and the public the following cases; trusting that the perusal of them will tend to disabuse the public mind of that prejudice, which in some measure unfortunately prevails against the operation, and thereby aid in elevating it to a more conspicuous position than has yet been assigned to it in this part of the country.

I shall now enumerate the instruments which I employ in the performance of the operation; next describe the different steps of the operation itself; and conclude by giving a few of the cases in which I have operated; disclaiming, as I distinctly do, all pretensions to originality, and meaning simply to submit my own practice, and the results attending it. Having had an opportunity of witnessing the method of operating practised by my friend Professor Fergusson, of King's College, London, during his recent visit to this city, I at once adopted it, considering it superior to any other I have seen; and I have had every reason to be satisfied with the result.

INSTRUMENTS.

The instruments which I employ, and which I conceive are quite sufficient for any case of squint, are:—A speculum to support the upper eyelid; a sharp-pointed knife, about an inch long, with a considerable curve, the concave being the cutting edge; a grooved director, slightly curved; a hook to secure the eye, bifurcated at the point which is sharp;* a blunt hook. All the instruments, with the exception of the speculum, are fitted into narrow handles.

OPERATION.

Before commencing the operation, it is necessary to ascertain accurately which eye is the seat of deformity, (provided the case is one of single strabismus.) The importance of this precaution will appear when I mention, that the *wrong* eye has been selected and operated on in more than one instance.

We shall suppose, then, that the left eye is affected with Convergent Strabismus, the patient being seated in a good light, and in a chair of convenient height. This I have found the most agreeable position for the

* The hook which I now employ differs in some respects from that used by the London surgeons, which I found some difficulty in disengaging from the conjunctiva after the operation. It is not so much curved in upon itself, the points being very little removed from a right angle with its body; and in justice to our ingenious cutler, Mr Hilliard, Jun., Nicolson Street, by whom all the instruments employed by me are manufactured, I cannot but state, that he at once obviated the objection, and supplied me with the hook above described, which I decidedly recommend.

patient, and the most convenient for the operator. The right eye is obscured by covering it with a compress of lint and a bandage. We thus render the affected eye steadier during the operation, and at the same time put it in the power of the patient to evert it more than he could do were the other allowed to remain at liberty.

The upper eyelid is next elevated with the speculum, (previously dipt in warm water,) which is to be hooked under the supra-orbitar ridge, and held by an assistant towards the inner canthus. This assistant stands behind the patient, whose head he supports on his chest. In insinuating the speculum below the eyelid, the eyelashes must not be inverted by the instrument, otherwise the operator's proceedings will be obscured to a certain extent, in consequence of the conjunctiva covering the eyelids projecting forwards.

The patient is now requested to look outwards, and the sharp hook is fixed about two lines to the inner margin of the cornea.* The hook so inserted, and with its handle parallel to the transverse axis of the eye, is given to a second assistant, or to the one holding the speculum. I have found, however, that in several cases the eye continued sufficiently steady without the hook, and sometimes I have even been obliged to dispense with it, in consequence of the great irritation produced. †

* I consider it necessary to mention here, that I conceive this instrument to be of little use in fixing the eyeball, unless it passes through the conjunctiva, and penetrates the sclerotic to a certain extent.

† In some cases where the hook has not been employed to fix the eye, some little difficulty was experienced in introducing the director under the muscle, in consequence of the rolling about of the eyeball. I would

The operator then, moderately depressing the lower eyelid with his left thumb, pierces the conjunctiva with the small knife, about midway between the insertion of the hook and the caruncula lacrymalis. He divides the membrane freely, cutting from below upwards, and thus exposes the muscle. Into the lower end of the incision he passes the curved director, and insinuates it between the muscle and sclerotic, until he sees the point of the instrument emerging from the aperture above the muscle. He then divides the tendon by running the knife along the groove of the director.

Provided that due care has been taken to elevate the whole tendon on the director, the operation will now be found complete, and the eye quite straight and somewhat prominent, when the other is uncovered and directed forwards; but should there still be a tendency to squint, it must arise from some fibres remaining undivided, or from the fibro-cellular membrane beneath the muscle being unusually tense, and in either case the blunt hook must be insinuated beneath them, when they can be easily divided with a pair of common scissors.

The operation, as thus performed, I consider to be free from many objections to which other methods are liable; there is no alarming of the patient by placing him on a table covered with blankets and pillows, —a proceeding sufficient to deter many from undergoing it. All pinching of the conjunctiva by means of forceps, and removing a portion of it by means of scissors, is avoided, and all painful methods

therefore recommend its use in the surgeon's first operation, and until he has acquired by practice complete dexterity in the introduction of the curved director.

for depressing the under eyelid, either by hooks or spring-forceps, loaded or unloaded, are dispensed with; thus saving the patient from much present suffering, at the same time that all risk of subsequent inflammation is averted; whilst by cutting the muscle by one sweep of the knife, the operation is completed within a minute, and not protracted to ten or fifteen, as when cut snip by snip with a pair of scissors, and at the same time we are much more certain that the whole of the muscle is divided. I have performed the operation, as now described, in a great many instances, and have never found it attended with much pain during its performance, nor succeeded by any inflammation of the surrounding textures. There has been very little effusion of blood under the conjunctiva. The wound, in all cases, has healed kindly and speedily. The only treatment required has been the application of cold water to the eye for twenty-four hours after the operation. There has, in no case, been the smallest constitutional irritation; in fact, many of those operated upon have not been confined to the house for a single day, but have continued to go about as if nothing had been the matter with them. In some cases, it has been found necessary to touch the granulations in the cicatrix with some escharotic.

Case I.—D. G. æt. 25, a printer, has had a convergent squint of the left eye since he was four years old. He ascribes its commencement to inflammation. The sight of the squinting eye is very much impaired. I performed the operation according to the method described, and found nothing unusual. The tendon was seen very distinctly after the division of the conjunctiva; it was completely raised on the director at the first attempt, and when it was cut across, the eye became not only straight, but remarkably prominent. The whole time occupied did not exceed a minute. Eight days after the operation, the squint was quite gone, and the incision in the conjunctiva occupied by granulations.

Three weeks after, the cicatrix of the conjunctiva scarcely perceptible, the squint completely cured, and the eyesight slightly improved.

II.—B. B. æt. 21, has convergent strabismus of the right eye, said to be congenital. The sight of the affected eye is pretty good, but less perfect than that of the other.

In this case, also, the whole muscle was raised and divided at once.

The result has been most satisfactory, both in regard to the motions of the eye, which correspond exactly with those of the other, and also to the power of vision, which the patient assures me is very considerably increased.

III.—A. N. æt. 19, has divergent strabismus of the left eye. When the right eye is directed to an object, so as to bring the cornea into the centre of the orbit, the left is so much everted, that the outer margin of its cornea is nearly obscured by the outer canthus.

The sight of the affected eye is so imperfect as not to enable her to see objects with any distinctness. The external rectus was here divided with greater facility, I think, than is generally experienced with the internal.

The result is quite successful, and the healing pro-

cess was so rapid, that on the seventh day after the operation, it was difficult to distinguish the line of incision.

The patient returned to her employment on the fifth day. The eyesight is slightly improved.

IV.—P. A. æt. 11, squints inwards with the right eye, the sight of which is cousiderably impaired. Although this boy was somewhat restless from timidity, I succeeded in completing the division of the muscle at the first attempt.

There was more bleeding in this case than in any of the preceding, but this I have invariably experienced in young patients.

A fortnight after the operation, it would be impossible to say, from the appearance of the eye, that it ever squinted. The sight is much improved.

V.—Miss B. æt. 15, has a very marked convergent squint of the left eye, which was first noticed when she was six weeks old.

The whole operation did not occupy more than three quarters of a minute. The eye instantaneously became quite straight, and the prominence it exhibited was remarked by all present.

Fifteen days after the operation, the incision in the conjunctiva is cicatrized, and the eye continues as free from squint as immediately after the division of the muscle. The sight is also very considerably amended.

VI.—A. D. æt. 17, has a convergent squint of the right eye, the sight of which is much impaired. This patient applied to me in consequence of having heard

of the successful result of the second case I have given here.

The operation was completed with much facility, and its success in rectifying the motions of the eye has been very satisfactory. The healing process has been as rapid as in any case I have yet operated on. This boy returned to his occupation—that of an iron-turner—on the eleventh day after the operation, with his eye quite well, and his sight very much improved.

VII.—Miss H. has a marked convergent squint in the left eye, of long standing. The sight of it is so imperfect, as not to enable her to distinguish objects at the distance of a few inches. The operation was completed in a minute, and its result has been highly flattering.

This patient remarked that the sight of the affected eye was strengthened immediately on the division of the muscle, but she saw double for some days. This, however, gradually wore off.

After the operation in this case, the eye became more prominent than in any I have yet witnessed.

VIII.—M. B. æt. 19, has a divergent squint in the left eye. The squint here is much less apparent than in the case I have marked No. III.

The muscle was elevated and divided with great facility.

Fourteen days after the operation, the squint has disappeared.

IX.—G. D. æt. 10, has had a confirmed convergent squint of the left eye from infancy.

In this case, after the sharp hook had been insert-

ed, so as to fix the eyeball, the conjunctival covering of the eyelid became so much swollen, as completely to obscure the inner canthus. On removing the hook, however, this puffiness of the conjunctiva immediately disappeared; and as the eye remained perfectly steady, I was enabled to complete the operation in the most perfect manner, without the use of any instrument to fix the eye.

Eight days after the operation, the eye is nearly well, quite straight, and the sight much improved.

X.—J. W. æt. 22, has a convergent squint of the left eye, which he attributes to inflammation.

Eyesight slightly impaired.

The conjunctiva was unusually tense towards the inner canthus, and the internal rectus, behind its insertion, more firmly connected to the sclerotic than we commonly find it.

After the division of the tendon, the patient had still the power of inverting the eye to a certain extent, and it did not become so straight and prominent as to satisfy me; and on using the blunt hook, I found a dense membrane lying beneath the muscle, and closely connected to the sclerotic. This membrane being divided, the eye became straight.

In this case, no hook was employed to fix the eyeball. The irritation consequent upon the operation was so slight, that on the second day after, the patient was so well, that he had returned to his work. The eyesight slightly improved.

XI.—W. H. æt. 12, the brother of the preceding patient, squints inwards with the right eye. The internal rectus was here preternaturally strong. It

was completely divided at once. In this case, in consequence of the patient being rather unruly, I deemed it necessary to use the hook, which completely secured the eyeball, notwithstanding his unsteadiness. The eye became remarkably prominent the moment the muscle was divided. There was a greater degree of irritation than in the previous case, still the operation was most perfect and complete.

EXPLANATION OF THE PLATES.

1.—INSTRUMENTS.

Fig. 1. Represents the speculum, by means of which the upper eyelid is kept elevated during the operation.

2. The sharp hook employed to fix the eyeball.

3. The small curved knife.

4. The slightly curved director upon which the muscle is divided.

5. The blunt hook which is sometimes, though rarely, required.*

* The only cases in which I have found this instrument necessary, were where the eye did not become straight immediately after dividing with the knife what I supposed to be the whole muscle, but where either, on the contrary, some fibres of it had remained entire, or the sub-muscular tissue was prematurely strong. Either of these structures being elevated with the hook, may be divided with scissors.

2.—EYE.

A. Representation of the left eye affected with convergent strabismus, or internal squint.

B. Represents the first stage of the operation. The upper eyelid is elevated by means of the speculum held by an assistant. The eyeball is kept steady by means of the sharp hook also held by an assistant, while the under eyelid is depressed by the thumb of the operator's left hand. The line *(a)* between the insertion of the sharp hook and the caruncula lacrymalis, shows the situation of the incision to be made in the conjunctiva.

C. Represents the other steps of the operation. The upper eyelid being still elevated, and the eyeball still fixed, the conjunctiva has been divided, and appears retracted, (as it always is when divided,) exposing the internal rectus muscle *(a)*, under which has been insinuated the grooved director, which is now held in the left hand of the operator, while the right one is in the act of running the knife along its groove, and dividing the muscle.

D. Represents the eye of Case V. fifteen days after the operation.

SMALL-POX AND VACCINATION HOSPITAL.

MEDICAL REPORT FOR 1866.

TO THE GOVERNORS

OF THE

SMALL-POX AND VACCINATION HOSPITAL.

We have in this, as we have had to do in each of our three preceding Reports, to request attention to the existence of an epidemic of small-pox which, judging from the facts supplied to us by the Small-Pox Hospital, has, in the length of time it has continued, and in the number of persons attacked, very far exceeded any similar visitation within the memory of the present generation.

It may be interesting, and it will certainly be useful, as affording a means of comparing the present with previous, but still recent, epidemics of small-pox, if we give in a tabular form the number of patients admitted into the hospital in each year since the opening of the present building in 1850. We have bracketed the periods of epidemics, so as to mark their date and duration, and the number of patients they have each of them brought to the hospital.

1851	682	1482
1852	800	
1853	143	
1854	714	2321
1855	972	
1856	635	
1857	212	
1858	368	

1859	1185	2060
1860	875	
1861	289	
1862	417	
1863	1537	5691
1864	836	
1865	1249	
1866	2069	

It would thus appear that in this period of sixteen years there have been four severe epidemics of small-pox in the metropolis; the first, that of 1851 and 1852, giving to the hospital 1482 admissions; the second, that of 1854, 1855, and 1856, giving 2321 admissions; the third, that of 1859 and 1860, with 2060 admissions; and the fourth, that of 1863, which still continues, giving, up to the 31st December, 1866, no less than 5691 admissions.

It may not be irrelevant, as showing the progressive increase of claim which each succeeding epidemic has made on the resources of the hospital, to add that the yearly average of admissions in the first of the above-mentioned epidemics was 741; in the second, 773; in the third, 1030; and in the fourth, 1422.

This last epidemic, judging from the admissions of patients into the Small-Pox Hospital, commenced about November, 1862, and reached a high degree of intensity by May and June, 1863; soon after which it began to decline, and continued doing so until the middle of 1864, at which time the monthly admissions into the hospital (although still very largely in excess of what is observed in non-epidemic periods) had fallen to less than a half of what they had been in the corresponding months of 1863. In the winter of 1864-5 the epidemic acquired increased violence, and the lowest monthly

admissions in 1865, namely, 75 in December, were but a trifle less than the highest monthly admissions in 1864, namely, 83 in January and in April. The epidemic acquired greatly-increased activity in 1866, and the admissions in that year exceeded by 532 those in 1863, the year of largest admissions in the whole history of the hospital prior to 1866.

The following tabular view of the monthly admissions of patients into the hospital will illustrate these statements, and convey a correct idea of the rise and progress of the epidemic. For the sake of contrasting the disease as occurring merely in the sporadic form, with it when epidemic, we begin with May, 1862, during which month but 9 patients sought admission into the hospital:—

1862.	May	9	1864.	June	55
	June	15		July	55
	July	18		August	69
	August	22		September	52
	September	34		October	81
	October	35		November	70
	November	70		December	73
	December	137	1865.	January	115
1863.	January	137		February	111
	February	130		March	128
	March	141		April	140
	April	136		May	135
	May	145		June	93
	June	149		July	111
	July	140		August	95
	August	129		September	79
	September	109		October	83
	October	118		November	84
	November	101		December	75
	December	102	1866.	January	131
1864.	January	83		February	119
	February	72		March	214
	March	73		April	195
	April	83		May	205
	May	70		June	196

1866. July	177	1866. October	160
August	185	November	164
September	141	December	182

2069 patients were admitted into the Small-Pox Hospital in the year 1866, and of these 32 were suffering from various forms of disease not small-pox. Of the 2037 cases of small-pox, 425 occurred in unvaccinated persons, and 1605 in persons who had been vaccinated. There were 3 cases occurring after a previous attack of natural small-pox, 2 cases after inoculation, and 2 cases after vaccination and small-pox.

In the course of the year there were 272 deaths, or a general mortality on the whole admissions of 13 per cent. Of the 425 unvaccinated cases, 152 died, being a mortality for this class of 35·7 per cent.; whilst of the 1605 vaccinated cases, but 118 died, or 7·3 per cent., or deducting, as we may fairly do, 10 deaths caused by antecedent or superadded disease, 6·7 per cent. only. One of the 3 cases which occurred after natural small-pox died, as did also one of the 2 cases occurring after vaccination and small-pox.

Comparing these results with those of the three previous years, we find that the disease has become less severe, and decidedly less fatal, than it was in 1863, the first year of the epidemic. The general mortality has decreased from 17 per cent. in 1863 to 13 per cent. in 1866. This, with other facts of considerable interest, will be best shown in the following table. The average death-rate at the hospital, as deduced from a series of sixteen years ending Dec. 31, 1851, was, we may add, 21·38 per cent. of the whole admissions. The death-rate in the unvaccinated, for the same period, was 35 per cent., and in the vaccinated 6·76 per cent., after deducting the deaths from antecedent, coincident, or superadded diseases:—

——	1863.	1864.	1865.	1866.
General Mortality	17·0	12·9	13·0	13·0
Mortality in the Unvaccinated	48·0	36·0	38·0	35·7
After deducting superadded Disease	47·0	35·0	..	..
Mortality in the Vaccinated	12·0	8·7	7·4	7·3
After deducting superadded Disease	9·9	7·9	7·2	6·7

The ratio of vaccinated cases to the whole admissions of small-pox patients, as calculated from a series of sixteen years, ending with 1851, was 53 per cent., a proportion which has gone on progressively increasing. In the epidemic of 1851-1852 it was 66·7 per cent.; in that of 1854, 1855, and 1856, 71·2 per cent.; in 1859 and 1860, 78 per cent.; and for the four years of the present epidemic it has been 81·1 per cent. This increase of vaccinated cases will account in a great measure for the decrease of *general* mortality since 1851.

The deaths, 11 in number, from antecedent, coincident, or superadded diseases, may be thus arranged—

In the Unvaccinated—	
From Scarlatina	1
In the Vaccinated—	
From Pyæmia	2
Erysipelas	1
Gangrene	1
Hospital Fever	1
Severe Pelvic Inflammation, accompanying Small Pox	1
Diarrhœa	1
Typhus and Small Pox	1
Disease of the Heart	1
Disease of the Chest	1
	11

As respects the vaccination department of the hospital, we have to report that in the course of the year 1866, 388 persons have been vaccinated, and 580 charges of vaccine lymph have been supplied to members of the medical profession.

WILLIAM MUNK, M.D., F.S.A., F.R.C.P.,
Physician to the Hospital.

J. F. MARSON, F.R.C.S.,
Surgeon to the Hospital.

February 1, 1867.

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THE PROGRESS OF OPHTHALMIC SURGERY

FROM THE INVENTION OF THE OPHTHALMOSCOPE (IN 1851) UP TO THE PRESENT TIME.

BEING AN ORATION

DELIVERED BEFORE

THE NORTH LONDON MEDICAL SOCIETY

ON FEBRUARY 11, 1863.

BY JOHN ZACHARIAH LAURENCE,
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SURGEON TO THE SURREY OPHTHALMIC HOSPITAL.

LONDON:
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1863.

ANNUAL ORATION DELIVERED BEFORE THE NORTH LONDON MEDICAL SOCIETY, BY J. Z. LAURENCE (FEBRUARY 11, 1863).

Mr. President and Gentlemen,

According to the strict letter of the law of this Society, the Annual Oration is to consist in an exposition of 'The Advance of Practical Medicine or Surgery during the past Year.' But a review of some of the previous Orations held before this Society justifies me, by precedent, in selecting as my theme a subject which may be said, in point of time to be wider, in point of material narrower, in its scope than that indicated by the law I have just quoted. This subject is—The Progress of Ophthalmic Surgery since the Invention of the Ophthalmoscope in 1851. In approaching so vast a field of human intelligence and research, I may well say it is not the want, but the excess of subject-matter that renders its adequate elucidation embarrassing. 'Hujus autem orationis difficilius est exitum, quam principium invenire.'

Arrangement of Material.

To overcome this difficulty, some systematic arrangement became imperative. Two methods suggested themselves: an arrangement according to time, or one according to locality—a chronological system, which displayed each successive step of progress in the order of its date of publication; or one which, disregarding the individual eleven years comprised in our epoch, discussed each improvement in practice according to the special part of the eye to which it referred. The former system I found, on reflection, was, if perhaps preferable in some respects, so much outweighed by considerations of clearness of apprehension, that I altogether rejected it for the

latter, which alone appeared to me capable of affording a clear retrospective contrast of the Past and Present of Ophthalmic Science.

Ocular appendages.

Not much advance has been made in the surgery of the ocular appendages. The most striking is undoubtedly a slight, but important, modification Mr. Bowman has introduced into the treatment of the various obstructions the

Lacrymal strictures.

lacrymal passages are liable to. These obstructions or strictures involve principally either the canaliculus or the nasal duct. In the former case, the method of slitting up the minute canal, and subsequently dilating it by fine probes, was very closely foreshadowed by Jünken.* In the latter case, the idea of dilating a stricture of the nasal duct from the punctum lacrymale through the canaliculus was too obvious, to long escape the attention of surgeons. Accordingly, we find Anel, Travers, and Jacob advocating this practice; but it never found favour. Mackenzie characterises it as 'painful, dangerous, and ineffectual; apt to end in incurable atony of the puncta, by causing them to split or ulcerate.' It was reserved for Mr. Bowman to point out that all these disadvantages depended on the anatomical fact that the punctum lacrymale, analogous to the meatus urinarius, was one of the, if not the, narrowest parts of the entire track of the canal, and that, if we opened this up by a cutting instrument, we were at once placed in a position of readily introducing probes of sufficiently useful size, and of thus dilating the nasal duct from the punctum without the disadvantages incidental to the older practice. This method of treatment has found much favour both at home and abroad, and possesses great advantages over the old style, which I now only regard as a last resource, after every other plan of treatment has failed. The treatment of lacrymal strictures by the modern method is as superior to that, by the style, as the periodical

* He removed a portion of the eyelid and strictured canaliculus together, and kept the new punctum lacrymale (nearer the inner canthus) dilated till cicatrisation took place. — *Vide* his 'Lehre von den Augen Krankheiten,' p. 628. Berlin, 1832.

dilatation of an urethral stricture would be to that of the life-long retention of an instrument in the urethra. On its first introduction, it shared the common fate of all novelties: it was either rejected *in toto* by those who either could, or, what is worse, would not recognise its advantages; or, on the other hand, its value was, I believe, overrated by those who adopted it. I have myself pursued it from its very first appearance, but must admit that, whilst I have found it easy and efficient in many instances, in others it has proved difficult and unsatisfactory in its application. In these latter cases, I find the best treatment is to make a small opening with a bistory directly into the lacrymal sac, and hence dilate the nasal duct by periodic probing, leaving the superior lacrymal passages altogether intact. I know, however, of no class of affections that tax the surgeon's patience and ingenuity greater, than these lacrymal strictures. Some will not yield permanently to any plan of treatment hitherto suggested. As an extreme measure, the lacrymal sac has been destroyed by caustics or the actual cautery — a procedure which, however apparently illogical in theory, has proved successful in practice.

Eversion and closure of the puncta.

There are two very common conditions of the puncta lacrymalia, which may, if overlooked, originate long-protracted and ineffectual treatment. We may find them everted, turned away from the surface of the eyeball, or skinned over by chronic inflammation (especially in old people). In either case the puncta no longer fulfil their physiological function — that of receiving the tears as they distil down over the surface of the eyeball. Hence arise watering of the eye, chronic conjunctivitis, and even ectropion — all three effects acting and reacting on each other, so as to form an accumulated fund of discomfort to the patient. Such cases, after having been treated *ad infinitum* by all varieties of lotions and ointments, I have over and over again seen at once cured by slitting up the canaliculus. Effects had previously been mistaken for causes.

A great variety of operations has in modern times been devised for the cure of in- and e-version of the eyelids, but none appear to me to present any striking novelty or

The eyelid-tourniquet.

advantages over the older operations. All, however, have been wonderfully facilitated by the 'eyelid tourniquet' of my friend Dr. Snellen—a vast improvement on the old ring-forceps (pince-anneau) of Desmarres. I have myself slightly modified Snellen's forceps, and very recently adapted the same principle to the lower eyelid.* With these instruments, all operations on the eyelids may be performed with the same facility and precision as on the dead subject, the flow of blood being entirely checked, and sensibility greatly benumbed. No one who has not actually used these 'tourniquets' can form a conception of their extreme practical value.

Pathology of the ocular muscles.

No part of ophthalmic surgery has made greater advance, than the pathology of the muscles of the eye; and it is but right to say, that it is chiefly due to the labours of Professor v. Gräfe, whose elaborate papers will be found in the 'Archiven f. Ophthalmologie.' No more striking evidence can, I think, be adduced of the genius of this great ophthalmologist than the spirit of research and the logical acumen which pervade these papers, more especially when we consider how apparently exhausted the subject was before he took it up. The basis of these researches was the determination of the true normal actions of the various ocular muscles. This had been previously most ably investigated by Meissner, Donders, and v. Gräfe himself. To give an at all adequate account of this important branch of our subject would lead me far beyond the limits of this discourse. These researches start with certain—in part experimentally, in part inferentially—ascertained actions of the ocular muscles. These actions are either those of association, or of concurrence of the eyeballs. On looking, say, to the right, the external rectus of the right eye is associated with the internal rectus of the left, and *vice versâ* on looking to the left. Here we have an example of the associated action of the two muscles. But in regarding an object in the middle line, the two internal recti act together in harmony with the ciliary muscle. Here we have

* These instruments may be had of Messrs. Weiss or Coxeter.

an example of concurrent (or accommodative) action of the ocular muscles. In either case, if the natural equilibrium of force of the muscles is disturbed, the optic axes are no longer directed to the same points, and double vision ensues. If a convergent squint is thus induced, the resultant right-hand image belongs to the right eye, the left-hand one to the left. But if a divergent squint arises (either from excessive action of the external rectus, or deficient of the internal rectus), then the images are no longer corresponding, but crossed ones—i.e. the right-hand image will be perceived by the left eye, and *vice versâ*. We can artificially produce these double images, either by mechanical pressure on the eyeballs, by their voluntary distantial misconvergence, or by prismatic glasses. In the above instances the double images exhibited simply a lateral separation; but you will readily understand that if the superior or inferior recti or obliqui be involved, the double images will also present corresponding differences of elevation and inclination. You will further easily conceive that the ocular muscles may be so slightly affected (paralysed or contracted) as to render any deviations of direction of the eyeballs quite inappreciable to your eye. In such a case, we may, by an inverted order of ratiocination, utilise the relative positions of the double images for the determination of which of the muscles, and how, are affected?—in a word, substitute for an objective, a subjective method of diagnosis. It is in the elaboration of such often highly complex problems, their solution by different degrees of tenotomy, by prismatic glasses, &c., that Prof. v. Gräfe has so largely contributed to our exact knowledge of the subject.

Double vision.

Operations for strabismus.

I may here remark, that for the cure of squint I have practised both the subconjunctival section of the ocular muscles and the old operation of Dieffenbach; and I must confess that, prepossessed as I was at first with the former operation, I have again reverted to the older one, which I believe, performed cautiously, with the addition of an *ad libitum* limiting suture, surpasses the subconjunctival one—not in certainty, but in the power it affords us of very nearly regulating our

operation in proportion to the amount of effect we wish to produce.*

Inflammations of the eye.

The various inflammations of the eye have always commanded a large share of attention, on account of their frequent occurrence, their obvious characters, and their occasionally serious consequences to the visual functions of the organ. In comparing their present and past pathology and treatment, no very marked difference is apparent, if we except that tendency against active depletion which characterises generally the practice of the day. There are certain affections of the eye which, from their extreme speciality, fall, by nearly universal consent, to the almost exclusive lot of the ophthalmic surgeon; but there are others which the practitioner in general surgery is quite as competent, and is as frequently called upon, to treat as the specialist. Of these, perhaps none exceed in their importance the various forms of ophthalmia. I shall, therefore, not consider it superfluous to direct your attention in some detail to two methods of treatment which are not very generally known, but which I have found most effectual in practice. The various inflammations of the eye may be divided into two great groups—(1) those of the superficial tunics, the conjunctiva and cornea; (2) those of the deeper structures, the sclerotic, iris, choroid, and retina. The symptoms of both groups will be often found combined, but still those of the one or the other generally to predominate to a degree that justifies us, both diagnostically and therapeutically, in referring any given case to one or other of these two categories exclusively. It would be misplaced to enter here into the diagnosis of these two groups: it is rather to a peculiar treatment of them to which my remarks will apply.

Treatment of conjunctivitis.

If you examine a large number of cases of any member of the first group—e.g. of mucous conjunctivitis ('catarrhal ophthalmia')—and adopt the practice in every instance of everting both eyelids, you will be surprised to find in how large a majority of the cases the palpebral conjunctiva is the starting-point of the disease—the origo et fons mali. Acting upon this fact, the rational treatment of these forms of ophthalmia is to direct your remedies to the part primarily and principally affected. All such cases I am in the habit of treating by everting both eylids, and bringing the mucous membrane at the palpebral sinuses so together, that whilst the palpebral conjunctiva is completely exposed, the ocular conjunctiva (and sclerotic and cornea) are as equally protected from the useless and positively injurious action of the eye-water we may think proper to apply. I for this purpose generally use solutions of nitrate of silver (of strength from iv.—x. gr. ad ℥j.); these I with a camel's-hair brush freely apply to the everted conjunctiva of the eyelids, allow them to exert their action (as indicated by the whitish bloom they produce on the scarlet surface of the conjunctiva) for a few seconds, and then carefully and completely wash off any residuary eye-water with a second brushful of warm water. The old and still common method of dropping strongly astringent and caustic eye-waters 'into' the eye, I regard as highly pernicious, but calculated, by continuous irritation, to protract and extend the inflammation they are intended to cure, and also thus unnecessarily prolong the immediate pain to the patient to whose eye they are applied. In some exceptional cases (especially of conjunctivitis purulenta) we find the ocular conjunctiva inflamed equally to that of the palpebral: to such cases alone is the old method rationally applicable. The treatment I have advocated I first learned in Utrecht, to which city I believe it was transplanted from Berlin.

Treatment of Sclerotitis, etc.

The second group of ophthalmiæ embraces the inflammations of the deeper structures of the eye. They are, as a rule, of a much more grave and dangerous character than those of the preceding group, with any member of which, however, they may be, and often are, combined. These deep-seated inflammations are commonly treated by depletion, counter-irritation, and mercurialisation. I treat them simply by the

* The author may here perhaps allude to a very simple little instrument he has constructed for the linear measurement of the exact amounts of deviation of the eyeballs in cases of strabismus. It may be had of Messrs. Weiss.

Treatment by opium.

internal administration of opium, in combination with sedative local applications. This method was, as far as I know, first systematically investigated and practised by myself in 1859.* Since this I have published in the *Edinburgh Journal* for December 1862, a complete memoir on the subject, exhibiting the histories of twenty-nine cases thus treated, twenty-three of which were cured.

Glaucoma and iridectomy.

Following out the natural order of ocular disease, we now come to the much-vexed question of glaucoma and iridectomy. Under the term 'glaucoma,' Hippocrates comprehended all opacities behind the pupil.† But the term soon became limited to those which were of a greenish colour, and were irremediable by operative measures. Brisseau,‡ in 1779, originated the view that 'green cataract' was an affection of the vitreous humour. A century later, Wenzel§ sought the seat of the disease in the retina and optic nerve—a view which was also taken up by Wardrop. Later still, we find the arthritic and choroiditic nature of the disease assumed by Beer and Sichel. Weller then gave a very faithful picture of the symptoms, and speaks of the 'great hardness' of the globe, and of a 'feeling of tension in the eyeball as if it would burst.' In 1830, Mackenzie gives as precise a history of the symptoms and intimate nature of the disease as would be possible at the present day without employing the ophthalmoscope. After the invention of this instrument, Ed. Jäger‖ gave a faithful delineation of the appearances of the optic nerve entrance and retinal vessels, in a case of 'amaurosis arthritica (glaucomatosa).' V. Gräfe¶ then described still more definitely the peculiar appearance of the optic disc (erroneously considering it, however, as an undue *prominence* of that structure), and added a new sign in the 'arterial pulse' of the retinal vessels. Later still, he placed the true interpretation on the apparent

* *Vide* Medical Times and Gazette for 1859.
† Aphorism. Sect. iii. 31.
‡ Brisseau's Traité de la Cataracte et du Glaucome. Paris, 1709.
§ M. de Wenzel, Manuel d'Oculiste. Paris, 1808.
‖ Über Staar u. Staar Operationen. Wien, 1854.
¶ Archiv f. Ophthalmologie, i. 1, p. 371.

bulging of the nerve, by insisting upon its being really of the nature of an excavation, or 'cupping,' as it is technically termed, and was thus able to refer the whole series of phenomena of glaucoma to one cause—a morbidly increased tension of the ocular tunics, produced by intra-ocular hydrostatic pressure of their contained fluids. In 1857, v. Gräfe, in an elaborate memoir on the entire subject, introduced his operation of iridectomy. He states as a matter of experience that this operation yields different results, according to the period of its performance. In all acute cases it completely restored vision, if performed within a fortnight of the attack. At later periods of the disease, the results varied: in some cases, restoration of vision ensued after several weeks, or even months; in others, especially those attended with extreme limitation of the field of vision and marked excavation of the optic disc, the amelioration of sight was at the best but temporary; whilst in a third class of cases, in which all perception of light had been lost, iridectomy might relieve pain, but had no influence on vision. My esteemed friend Dr. Haffmanns, to whose excellent *résumé* of the entire subject* I owe the greater part of the preceding epitome, remarks that in no other country did iridectomy meet with greater opposition than in England. This opposition, however, lost, I believe, much of its force from its frequent origination in surgeons, who rejected the operation so unconditionally as not to hesitate to condemn it upon purely speculative considerations, without their having had any personal experience of its effects. Indeed, so high did this tide at one time rise, as to seduce gentlemen, otherwise of the highest professional standing, to descend to expressions and methods of discussion that reminded one rather of the virulence and acrimony of byegone days than of that temperate moderation that should prevail in questions so momentous, I will not say to science, but to humanity at large.

We may discuss the effects of this operation, firstly, as

* Arch. f. Ophthalm. viii. 2, p. 124, *et seq.*

pure matters of fact. From this aspect, my own opinion and experience is, that its influence on the restoration of vision is inversely proportional to the duration of the disease. In chronic glaucoma I have never seen it remarkably successful. Contrary to this observation, however, it is only right to add that Dr. Haffmanns states (Op. cit. p. 173), in Donders's practice, an arrest, or even a diminution, of impending blindness has been noticed not only in many cases of chronic glaucoma, but even in those of 'amaurosis with excavation' ('glaucoma simplex'), in which tension of the tunics was a prominent sign. V. Gräfe himself says (Arch. f. Ophthalm. viii. 2, p. 303) he can adduce numerous cases, which had been progressing from six months to three years, in which he has obtained the same results with a permanence, which he had the opportunity of testing for periods varying from one to three years. We may next discuss the *rationale* of the operation. In this point of view iridectomy is singularly weak, unless we consider the division of the attached border of the iris as the essential of the operation, in accordance with the opinion of Mr. Hancock, to whose operation I shall presently advert. Whilst (nearly) every other operation, not only in ophthalmic, but in general surgery, has some tangible reason to exhibit for its performance, iridectomy stands (almost) alone in the utter insufficiency of the various far-fetched explanations that have from time to time been assigned for its assumed efficiency. I cannot help thinking the greater part of the benefit of the operation results from the largeness of the corneal incision, necessarily preliminary to the actual excision of the iris, and the consequent completeness of the relief to the intra-ocular tension thus implied; that a limited paracentesis corneæ is as inferior to 'iridectomy' precisely in the same ratio as the temporary relief afforded by the mere puncture of an abscess is to the permanent relief given by a free incision. V. Gräfe assumes there can no longer be any question as to the comparative merits of iridectomy and paracentesis corneæ. A perusal of Professor Sperino's recent work on the effect of repeated paracenteses corneæ, exhibits

a widely different view of the question.* I must now say a few words on Mr. Hancock's operation of Division of the Ciliary Muscle. From a careful perusal of his latest paper on the subject,† I glean that he regards a constricting action exercised by the ciliary muscle on the constituents of the eyeball, as if not the primary, the efficient cause of several morbid conditions. Thus, he considers glaucoma to have 'its origin in some peculiar condition of the blood . . . the ciliary muscle, losing its elasticity and contractility, is converted into a rigid, unyielding cord;' and hence, as a secondary result, the subsequent intra-ocular pressure. Assuming this theory to be correct, division of the ciliary muscle as a curative measure is rationally indicated; and I must say, the cases of glaucoma Mr. Hancock reports, although not given quite so detailed as desirable,‡ still appear to prove the efficiency of his operation. But Mr. Hancock does not confine division of the ciliary muscle to cases of glaucoma. He narrates several instances of staphyloma, leucoma, ceratitis, myopia, &c., in which very striking results have followed the operation.

Artificial pupil.

In the operation for artificial pupil, the most marked improvement has been effected in this country by Mr. Critchett, in his operation of iridesis.§ This consists in opening the cornea with a broad needle, drawing out a portion of the iris between its ciliary and pupillary margins, and confining the slight prolapse by a fine ligature. The advantages of this operation are that the pupillary margin of the iris is preserved intact, the pupil being, as it were, only dislocated into a more favourable position than it before occupied, in the iris not being wounded in the operation, and in its general innocuous nature. Its author has made a very practical application of it in certain cases of stationary partial opacities of the lens: by dislocating the pupil from an opaque to a transparent

* Études cliniques sur l'évacuation répétée de l'humeur aqueuse dans les maladies de l'œil. Par C. Sperino. Turin, 1862.

† *Lancet* for 1862, Nos. V. and IX.—XI.

‡ Case (26) reads more like one of retinitis pigmentosa and hemeralopia than of glaucoma.

§ Ophthalmic Hospital Reports, No. V.

portion of the lens, the patient's vision is restored without any destruction of the lens-substance, and without, therefore, any necessity of his wearing glasses after the operation.*

Cataract.

The capital operation of ophthalmic surgery is undoubtedly the extraction of a hard cataract through the cornea. The ordinary flap operation, originated by Daviel in the middle of the last century, has held its ground up to the present day, notwithstanding the many dangers, both immediate and secondary, incidental to its performance. The question as to whether the flap should be made from the upper or lower half of the cornea, has given rise to much discussion. Daviel practised the lower section, which remained the ordinary one till Wenzel, Richter, and Benjamin Bell recommended the upper section, which was first introduced by Santarelli. This is the one generally practised in this country, but many eminent continental operators still adhere to the older section. In the fifth volume of the Archiven (Part. 1, p. 158), v. Gräfe describes a method of extraction applicable to cataracts with a moderately hard nucleus, but a soft pulpy envelope. Such cataracts he describes as bulky, pressing forward the iris, —beset with bluish, glistening, broad striæ, and possessing a yellowish centre. They occur at and after the age of thirty. The operation consists in making an incision with a broad lance of about one quarter of the cornea at its temporal margin, then excising a corresponding portion of the iris, dividing the capsule of the lens horizontally through the whole breadth of the natural and artificial pupil, and finally scooping out the cataract with a modified Daviel's spoon. Subsequently, Dr. Schuft introduced a graduated series of spoons (not unlike miniature fire-shovels), better adapted for their purpose. Since that time the operation has somehow acquired the name of 'Schuft's operation,'† although it is quite clear v. Gräfe was its originator, and that he again primarily derived his first ideas from Gibson of Manchester. I have

Schuft's operation.

* The operations on the iris and parts within the pupil are often much facilitated by the use of Charrière's valuable canula forceps.

† Die Auslöffelung des Staars. Ein neues Verfahren v. Dr. A. Schuft.

performed this operation several times myself, and have seen it done many more times by others; but I must say that I perfectly coincide with Dr. Mooren (of Oedt, near Crefeld) — who in thirty-two cases had ten failures — in considering it an operation, however neat, satisfactory, and comparatively free from danger in its immediate performance, as one attended with the most imminent after-consequences—iritis, closed pupil, suppuration of the cornea, &c. This I ascribe to the large and repeated amount of manipulation involved in its performance. It is one thing to see a series of brilliant operations done by others—another to do them oneself, and be compelled to follow them out into their ultimate consequences. The more a surgeon assumes the position of a responsible operator, the more must he become impressed with the unfortunate consequences that almost invariably follow any protracted instrumental interference with the parts behind the cornea.

I have, to my repeated regret, remarked the unfortunate results that follow the slightest injuries—especially those of a contused character—inflicted on the iris; injuries which, as far as their immediate evidence is concerned, may completely elude the first observation of the operator. No living structure hardly inflames so readily as the iris; in none is there a greater tendency to propagation to the adjacent tissues.

Mooren' operation.

Dr. Mooren has recently introduced a modification of Gräfe's operation*—applicable, however, to cataracts of all degrees of consistence. He first excises a portion of the iris; then allows an interval (generally from a week to a fortnight) to elapse, till the effects of this first operation have subsided; and, finally, extracts the lens by the ordinary flap operation (by the lower section) of the cornea. He gives the details of fifty-nine operations. Two only of these failed. A very important additional element is, that most of the cases were highly unfavourable ones. Under any circumstances, the

* Die verminderten Gefahren einer Hornhautverciterung bei der Staar, Extraction von Albert Mooren. Berlin, 1862.

results of this operation are the most remarkable ever submitted to the profession.*

Ophthalmoscope.

In 1851, Helmholtz published the first account of his immortal discovery—the ophthalmoscope. Up to that time nothing exact was, or, indeed, *could* be, known of the diseases of the deeper structures of the eye, except such scanty information as could be gathered from the comparison of the anatomical conditions of extirpated eyes, either during or after life, with the symptoms previously observed. Such inferences were, however, unsatisfactory for several reasons. The opportunities afforded to individual practitioners of dissecting eyeballs could be but few, compared with the number of diseases of the deeper structures they would probably meet with in practice. Such anatomical examinations indicated, at the best, only the ultimate physical condition of the parts of the eye, after all the mischief was done, leaving the commencement and progress of the disease altogether a matter of conjecture. To speak then of the 'progress' of our knowledge of the diseases of the deeper structures of the eye, since the year 1851, would be a misnomer: we should rather speak of the first foundation of any precise knowledge we have acquired of what, up to that time, was at best but a pure matter of individual hypothesis.

It may, therefore, not perhaps be considered out of place to enter here into a slight digression on the influence physical science in general has exerted on the progress of medicine and surgery; preceding these remarks by a brief sketch of the successive phases, so to say, the tendencies of the human mind have undergone in their appreciation of the essence and functions of medical science.

Schools of medicine.

In the middle of the seventeenth century, Sylvius propounded the chemiatric school, which had been previously advocated by Paracelsus, who went the length of publicly burning the writings of Galen, asserting the body was governed by purely chemical laws. A perpetual fermentation was thought to be

* My friend Dr. Carter of Stroud and myself have performed the operation successfully.

going on in the organism—an excess of acid, or alkali, engendering what was recognised as disease. Thus says Sprengel, 'He degraded the physician to the level of the brewer.' In England this school was especially taken up by Willis; whilst in France the Hippocratic and Galenic were the prevalent doctrines.

The iatro-mathematical school originated in Italy with Borelli's treatise, 'De Motu Animalium' (Portal's History of Anatomy, iii. 246), in which the principles of mechanics were applied to the actions of the muscles. John Bernoulli even went so far as to introduce the differential calculus into such investigations.* Then we have Van Helmont's school of Vitalism—a principle supposed to preside over the body, and directly opposed to the influence of mechanical and chemical agents.

At last, however, the empirical or inductive school, first steadfastly insisted on by Haller, under the auspices of the illustrious Sydenham, gradually asserted its legitimate supremacy.

Were I asked to designate with one word the prevailing characteristic of the Medicine of to-day, I should say it was Materialism. Indeed, the more our senses have been assisted by physical science, the stronger has the material nature of disease stood out in relief. The first grand application of such aids to diagnosis we find in the sciences of percussion and auscultation, which, alluded to upwards of 2,000 years ago by Hippocrates, and still more definitely by Hooke, was in 1761 made the subject of a formal discourse by Leopold Avenbrugger; to be again forgotten for nearly half a century, till rescued from oblivion, and established on an undying basis, by the genius and energy of Corvisart and Lænnec. Nothing has, however, more strongly impressed medicine with its present material character, than the revelations of pathological anatomy, which is daily tending more closely to connect the symptoms of disease with material changes in the organism

* However far-fetched this may appear, it is being strictly imitated by several of the modern speculative German writers on ophthalmic 'surgery.'

after life. Here again has physical science stepped in with the microscope, and laid bare such a multitude of before unsuspected facts as to almost warrant us in invariably ascribing the seeming absence of post-mortem appearances rather to imperfections in our powers of observation, than to their actual non-existence.

Vision is undoubtedly the most perfect of our senses, whether we regard it for its range of comprehension or the precision of its information. If, then, a, so to say, but second-rate sense, as that of hearing, has shed such a flood of light on the diseases of the chest, we need not feel surprised at the results of the ophthalmoscope—the eye's eye, if I may be permitted such a laconicism.

Luminosity of the eye.

The luminosity of the eye, especially in the tapetum of dogs and cats, had been observed from the earliest times. It was regarded as evidence of a voluntary nervous irritation on the part of the animal, and thus came to be viewed with a degree of popular superstition. In 1704, Méry observed the retinal vessels of a cat under water (on the principle of Czermak's orthoscope). In 1810, Gruithuisen and Prevost showed the luminosity was not intrinsic to the eye, as it did not take place in the dark, but referred it rightly to an extrinsic cause—to reflected light from without. In 1846, Cumming published his paper 'On a Luminous Appearance in the Human Eye' (Medico-Chirur. Transactions, vol. xxix.). Rarely has an observer approached closer to an important discovery without actually reaching it. 'The establishment,' he says, 'of a similar reflection from the healthy human eye to that from the eyes of animals, appears to me chiefly important in its adoption as a mode of examining the posterior part of the eye. The retina and choroid hitherto concealed in the living eye, and little opportunity being afforded of examining their condition after life, in consequence of their diseases not terminating fatally, considerable uncertainty has attended the diseases ascribed to these structures; but the existence of this luminosity having been recognised, its non-existence or abnormal appearance may enable us to detect changes in these structures heretofore unknown, or

satisfactorily to see those which we only suspected.' Cumming then distinctly pointed out the luminosity of the human eye, the method of observing it, and its true *rationale*. About this time, Brücke arrived at the same result.* His method was to allow the light from a lamp to enter the observed eye, whilst he protected his own eye from the glare by a screen, much in the same way as in Helmholtz's 'simplest form of ophthalmoscope.' He at the same time refers to an observation of Dr. Carl v. Erlach, who simply observed the luminosity of a second person's eye by light reflected from his own concave spectacle lens (which acted as a concave mirror). Both Cumming's and Brücke's principle was for the observer to regard the eye in a direction nearly parallel to the entering (external) rays of light. But it was reserved for Helmholtz, in 1851, to first clearly perceive the true optical relations between the incident and reflected rays, and thus to be led to the invention of the ophthalmoscope.† He used as his reflector a series of thin plates of glass, *correcting the direction of the emergent rays by suitable concave lenses*. Thus did it for the first time become possible to observe the details of the fundus oculi—its nerve and vessels. All previous observations on the human eye had been limited to observing simply its luminosity. Notwithstanding, however, the magnitude of Helmholtz's discovery, the difficulty of manipulation, the feeble illuminating power, and the limited field of view of his ophthalmoscope, would in all probability have restricted its application to that of a philosophical instrument, had not Ruete of Leipsic ‡ given to it its present world-wide diffusion, by introducing two important improvements—1st, the use of concave mirrors as reflectors;

Helmholtz's discovery.

Ruete's instrument.

* E. Brücke: 'Über das Leuchten der Menschlichen Augen.'—Müller's Archiv for 1847, p. 225.

† Beschreibung eines Augenspiegels, v. H. Helmholtz. Berlin, 1851.

‡ Der Augenspiegel und das Optometer, v. C. G. Theod. Ruete. Gottingen, 1852. He says, 'Much more comprehensive and instructive is the view, if we, in the examination of the eye, instead of a concave glass use one or two convex glasses, and thus convert the eye into an astronomical telescope' (p. 9). Helmholtz (op. cit. pp. 24—28) discusses theoretically the application of convex glasses, but does not appear ever to have put them into actual practice

2nd, the application of a convex object-glass, with which we may view the fundus oculi by its reversed image.

Binocular instruments.

It forms no part of my design to enter into the theory of the ophthalmoscope. Zander, in his work on the Ophthalmoscope*—by far the most complete yet produced—enumerates no less than twenty-seven distinct forms of the instrument, and since several others have been proposed. Indeed, it appears to have been the aim of every ophthalmic surgeon to invent his own instrument, just as every physician does his own stethoscope, every obstetrician his own forceps. A really great step has, however, been made by Dr. Giraud-Teulon, of Paris, who has invented a binocular ophthalmoscope. It would be inappropriate to discuss here the advantages of binocular over monocular vision. Solidity of form, precise localisation of the various objects seen in the fundus oculi, a natural play and entire absence of fatigue to the eyes (as everyone must have felt after any prolonged use of a monocular instrument), are amongst the chief advantages of the binocular ophthalmoscope. Of this I am convinced, that anyone who has once learned to use the binocular instrument will prefer it to the monocular one (except for the direct image).

Giraud-Teulon's instrument.

Giraud-Teulon's instrument is on the combined principles of Helmholtz's telestereoscope (reversed) and Brewster's stereoscope. I have myself improved the instrument, by substituting Wheatstone's principle in its construction. In the 'British Medical Journal' for November 1st, 1862, in a paper on 'Binocular Ophthalmoscopy,' I have briefly described the principle of my binocular ophthalmoscope and the advantages I conceive it possesses over that of Giraud-Teulon's, to whom, however, I wish it to be distinctly understood, the entire merit of the fundamental idea is due.† To expatiate on the inestimable advantages the ophthalmoscope has con-

Author's instrument.

* 'Der Augenspiegel,' von Adolf Zander. Leipzig, 1862. I may here refer to the excellent work, 'A Practical Treatise on the Use of the Ophthalmoscope,' by my esteemed friend Mr. J. W. Hulke.

† The author's instrument is to be had of Messrs. Murray & Heath, 43 Piccadilly.

ferred on the pathology of the eye—how it has opened out an inexhaustible mine of enquiry; how it has shed its light on an heretofore chaotic darkness; how it has, in brief, completely revolutionised all our preconceived notions of the diseases of the deeper structures of the eye—I hold to be superfluous. But a very striking fact it is, indeed, that the almost unparalleled strides ophthalmic surgery has made within late years, date, by a remarkable coincidence, with Helmholtz's immortal discovery. Nor has the greater part of this progress the most remote connection with or dependence on the ophthalmoscope; on the contrary, it relates to researches in ophthalmology which might have been pursued with equal prospects of success a century ago. Thus has one great discovery given an impulse to an entire science.

Optics applied to the eye.

The analogy of the eye to an optical instrument has from the earliest times attracted the attention of philosophers; hence their efforts to apply the ordinary laws of optics to the resolution of the various problems of vision. By none have these been adapted with greater felicitude than by our great countrymen, Young and Porterfield. But nearly all these researches referred to physiological optics. The study of the pathological deviations of the dioptric system of the eye is of comparatively modern growth. All I know is, that when I was a student, the knowledge I had imparted to me was limited to the fact that concave glasses improve myopia, convex ones, presbyopia, and that the selection of the precise power required for any given case was an entire matter of rude empirical trial.

Donders's researches.

The basis of the exact knowledge we now possess of pathological optics were the discoveries of Cramer and Helmholtz, who have for ever solved the much-vexed question of the adjustment or accommodation of the eye to different distances, when they proved it to depend on a change of convexity of the crystalline lens, and that this was effected by the ciliary muscle. We then come to the researches of Professor Donders, of Utrecht. He, for the first time, insisted on the absolute necessity of separating the two factors,

refraction and accommodation; to adopt the language of mathematics, the 'constant from the variable.' None but those who have intimately studied the subject can form any conception of the importance of this one simple step: of the precision it has conferred on our ideas—how it has smoothed the path for all future researches. Donders recognises three conditions of refraction—1st, normal; 2nd, excessive (myopia); 3rd, deficient (hypermetropia). The first step in the investigation of any given case is to refer it to one of these three classes, then to estimate the precise amount of refraction—the 'power'—of the eye. Having thus determined the constant, we may examine the variable—accommodation—and thus finally form a complete analysis of the case. To adopt a familiar simile—if we wished to investigate the qualities of a telescope, we should first test its powers of defining distant objects, as the heavenly bodies, and then those of adjustment for near objects at variable distances. The first elements of science appear in the form of isolated facts. As these multiply, a kind of mutual connection appears possible. Possibility becomes successively probability; probability, certainty. And thus the individual truths of science, like the wheels and pinions of the engine, become all subservient to one great common end. In no branch of science has this been better exemplified than in what has almost become a speciality of a speciality—viz., our knowledge of the deviations of refraction and accommodation of the eye. Within the last year, Donders has again added to our knowledge of this subject by an elaborate treatise on Astigmatism.

Astigmatism.

Astigmatism (coined by Professor Whewell, from α privativum and στίγμα, point=focus) is an inequality of refractive power in the different meridians of the eyeball—understanding by the term meridian, as in astronomy, a great circle passing through the poles. Practically we may limit our investigations to the horizontal and vertical meridians of the eyeball. Thomas Young, in 1793,* was the first to discover this

* Philosophical Transactions, vol. lxxxiii. p. 169.

peculiarity in his own eye: this 'in a state of relaxation collects to a focus on the retina those rays which diverge vertically from an object at the distance of ten inches from the cornea, and the rays which diverge horizontally from an object at seven inches distance.'* Consequently, the refraction of his globe was greater in the horizontal, than in the vertical meridian. In 1827, Professor Airy published a remarkable instance of the same anomaly in his own (left) eye.† In this, the furthest point of distinct vision for vertical rays was three and a half inches; for horizontal ones, six inches; the eyeball thus being nearly double as myopic in the vertical, as in the horizontal meridian. To Airy likewise belongs the merit of first having applied cylindrical glasses to the cure of astigmatism. This has been shown by exact measurements to depend generally on an inequality of curvature of the vertical and horizontal meridians of the cornea. It may, however, as in Young's case, originate in an irregularity of curvature or position of the crystalline lens. Astigmatism is remediable by cylindrical lenses. These represent sections of cylinders parallel to their axes. Such lenses have the peculiarity of exerting a lenticular (refracting) influence on rays striking them transversely to the axis, allowing those striking them parallel to the axis to pass through no more refracted, than they would be by a piece of plane glass. Thus we may add to or subtract from, by cylindrical, convex or concave lenses, the refractive power of one meridian of the globe, leaving the other unchanged, and thus restore the equality of refraction in the two meridians—correct the astigmatism.

Up to the period of Donders's recent researches, only eleven cases of this optical defect had been recorded. He has shown that astigmatism is really a very common disturbing cause of vision, and that many cases hitherto but imperfectly correctible by ordinary (spherical) lenses, are almost completely so by

* Philosophical Transactions for 1801.

† Transactions of the Cambridge Philosophical Society for 1827, vol. ii. p. 267.

cylindrical ones, either alone or conjoined with spherical ones.*

Conclusion.

After all I have said, no one can fail being struck at the almost incredible rapidity with which discovery has succeeded discovery, in ophthalmic science, within the last ten years. Assured of the fact, he will naturally be led to enquire into the reason. This may, I think, be attributed partly to the attractive nature of the science itself, partly to the genius it has enlisted in its cause, partly to the exclusive nature of its speciality, which thus demands a more than ordinary preparatory knowledge and concentration of ideas for its successful pursuit. What more brilliant example have medicine and surgery to offer of the advantages of specialism? The diseases of the chest, of the nervous system, and lately of the throat, have all been first reduced to states of science by specialists. Without ignoring the advantages—nay, the necessity—of a comprehensive knowledge of general medicine and surgery for everyone, whatever be his special predilection, is it not quite an open question whether the indiscriminate anathemas that have been launched against specialism may not be taken as so much evidence of the narrowness rather than of the assumed comprehensiveness of mind of those from whom they have emanated? Differently constituted minds will instinctively seek different spheres of action. Well-directed intelligence, energy, and earnestness of purpose, will gradually enlarge these spheres by a sort of simultaneous centrifugal expansion of the two elements, mind and matter; whilst, on the other hand, a species of mutual attraction appears to be constantly tending to unite these separate spheres into one harmonious whole, whose ultimate form or dimensions are as impossible to foresee, as the bounding horizon of the ocean for the mariner to measure—that perpetually expanding circle, whose limits the waves never reach, the eye never spans.

* Astigmatismus und Cylindrische Glaeser, von F. C. Donders. Berlin, 1862.

RETURN

OF THE

PRINCIPAL OPERATIONS ON THE EYE

PERFORMED

DURING THE YEARS 1848, 1849, 1850, & 1851,

IN THE

CALCUTTA EYE INFIRMARY.

BY

WILLIAM MARTIN, F.R.C.S.,

LATE SUPERINTENDENT CALCUTTA EYE INFIRMARY, AND PROFESSOR OF OPHTHALMIC SURGERY, CALCUTTA MEDICAL COLLEGE.

(*From the "Indian Annals of Medical Science."* *No.* 1. 1853.)

LONDON:

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1859.

RETURN

OF

THE PRINCIPAL OPERATIONS ON THE EYE

PERFORMED DURING THE YEARS 1848, 1849, 1850 & 1851,

IN THE CALCUTTA EYE INFIRMARY:*

BY

SURGEON W. MARTIN,

LATE SUPERINTENDENT CALCUTTA EYE INFIRMARY.

INTRODUCTORY REMARKS.

It seemed to me, that it would be useful to collect various data regarding the principal operations which it is requisite to have performed on the eye, into a tabular numerical form, for the purpose of showing the result of operations on the natives of India, and having these results compared with those of operations performed on Europeans in Europe, and on the inhabitants of other countries.

I have not found, in works on eye diseases generally, or in any statistical works which have come under my notice, any but information of the most general nature regarding the result of ophthalmic operations.

We are told that, at certain institutions, a certain number of patients are operated upon in a certain way, and that the general result is so many "cured;" but in order to arrive at accurate deductions as to methods of treatment, it becomes

* Received July 6th, 1853.

necessary that our success or failure in treating the most important diseases should be noted in a more detailed form, and more accurately tested in such a manner that it may be compared conveniently with the success or failure of treating these in various countries, and under different circumstances.

The Return now submitted contains information in a numerical form somewhat more precise than we have hitherto had opportunities of noting; and although it is still incomplete, it may be hoped that similar statistical returns may be made by those who have the opportunities, and that a comparison of many of these may finally lead to valuable results.

I have thought that the experience of four years operative practice in the Calcutta Eye Infirmary, during which 781 cases of importance have been operated upon, including 586 cases of cataract operations, is sufficient to show the amount of success that has been attained in this institution with operations generally, and with each individual operation in particular as far as a numerical abstract can show positive results. In my succeeding remarks I have endeavoured to show to what extent allowances for accident or error should be made in calculating the amount of these results, and it is hoped that an approximation to accuracy has thus been brought to the notice of the medical profession.

In this return, operations on Europeans are not included, because, as a general rule, they are not admitted into the Eye Infirmary as in-patients; and the cases in which I have been called upon, officially, to operate upon them have been so few in comparison that no important results are deducible from them.

REPORT OF CASES OF CATARACT

OPERATED UPON IN THE CALCUTTA EYE INFIRMARY, DURING THE YEARS 1848, 1849, 1850, AND 1851.

Out of 586 cases of cataract, there were of single operations,

Extraction,	No. ..	14 or	2.389 per cent.
Depression,	,, ..	194 or	33.105 ,,
Division or solution,	,, ..	88 or	15.017 ,,
Drilling,	,, ..	1 or	.17 ,,
Laceration of capsule	,, ..	49 or	8.361 ,,

Of Combined Operations.

Extraction with depression,		1 or	.17 ,,
Division with depression, ..		75 or	12.798 ,,
Depression with laceration of capsule, ...		106 or	18.088 ,,
Division, depression with laceration of capsule, ..		16 or	2.73 ,,
Division, with laceration of capsule, ...		40 or	6.825 ,,
Drilling with depression .		1 or	.17 ,,
Drilling with laceration of capsule, ...		1 or	.17 ,,
			99.993

Out of 586 cases of cataract, there were,

Of firm or hard cataract ..		25 or	4.266 ,,
soft,	,, ..	116 or	19.795 ,,
fluid,	,, ..	24 or	4.095 ,,
mixed,	,, ..	372 or	63.481 ,,
capsular,	..	49 or	8.361 ,,
			99.998 ,,

Out of 586 cases of cataract, there were,

Lenticular cataracts,	..	373 or	63.651 ,,
Capsulo-lenticular,	..	164 or	27.986 ,,
Capsular cataracts,	..	49 or	8.361 ,,

Out of 586 cataracts, there were,

Number of patients operated on		550 or	93.856 ,,

Out of 550 patients operated on, there were,

Operated in both eyes, ..	36 or	6.545 per cent.
In the right eye only, ..	248 or	45.09 „
Left, ...	266 or	48.363 „

Out of 550 patients, there were,

Operated in both eyes, ..	36 or	6.545 „
In a single eye, ...	514 or	93.453 „

Out of 586 cases of cataract, there were,

Cured, ...	340 or 58·02	} Benefited.
Relieved, ...	132 or 22.525	} 80.545
No better, ...	66 or 11.262	
Result not known, ...	48 or 8.191	„

Out of 14 cases of extraction, there were,

Cured, ...	2 or 14.285	} Benefited.
Relieved, ...	3 or 21.428	} 35.713
No better, ...	7 or 50.	
Result not known, ..	2 or 14.285	

Out of 194 cases of depression, there were,

Cured, ...	113 or 58.247	} Benefited.
Relieved, ...	27 or 13.917	} 72.164
No better, ...	31 or 15.979	
Result not known, ..	23 or 11.855	

Out of 88 cases of division or solution, there were,

Cured, ...	42 or 47.727	} Benefited.
Relieved, ...	21 or 23.863	} 71.590
No better, ...	11 or 12.5	
Result not known, ..	14 or 15.909	

Out of 1 case of drilling, there was,

Cured, ...	1 or	100 per cent.

Out of 49 cases of laceration of capsule, there were,

Cured, ...	25 or 51.02	} Benefited.
Relieved, ...	16 or 32.653	} 83.673
No better, ...	5 or 10.204	
Result not known, ..	3 or 6.122	

Combined Operations.

Out of 1 case of extraction with depression, there was,

Cured	1 or	100 per cent.

Out of 75 cases of division with depression, there were,

Cured, ...	46 or 61.333	} Benefited.
Relieved, ...	23 or 30.666	} 91.999
No better, ...	3 or 4.	
Result not known, ..	3 or 4.	

Out of 106 cases of depression, with laceration of capsule there were

Cured, ...	73 or 68.867	} Benefited.
Relieved, ...	27 or 25.471	} 94.338
No better, ...	3 or 2.83	
Result not known ..	3 or 2.83	

Out of 16 cases of division, depression with laceration of capsule, there were,

Cured, ...	11 or 68.75	} Benefited.
Relieved, ...	5 or 31.25	} 100 per ct.
No better, ...	0	
Result not known ..	0	

Out of 40 cases of division with laceration of capsule, there were

Cured	27 or 67.5	} Benefited.
Result not known, ..	10 or 25.	} 92.5
No better, ...	3 or 7.5	

Out of 1 case drilling with depression, there was,

Cured, ...	1 or	100 per cent.

Out of 1 case of drilling with laceration of capsule, there were,

Cured, ...	0	
Relieved, ...	0	
No better, ...	1 or	100 per cent.
Result not known, ..	0	

Out of 550 patients operated upon, there were,

Number under 10 years of age, ...	5 or	.909 „
„ between 10 and 20	5 or	.909 „
„ „ 20 and 30	13 or	2.363 „

Age, between	30	and	40	20 or	4.727	per cent.
„ „	40	and	50	123 or	22.363	„
„ „	50	and	60	154 or	28	„
„ „	60	and	70	165 or	30	„
„ „	70	and	80	33 or	6.	„
„ „	80	and	90	25 or	4.545	„
„ „	90	and	100	1 or	.181	„

REMARKS ON CATARACT OPERATIONS.

Nature of Operations.

As regards the kind of operation found most requisite, it will be seen that depression was most employed, *i. e.* in about thirty-three out of every hundred cases; this is accounted for by the fact that the kind of cataract most frequently found has been lenticular, in the proportion of sixty three per cent. The other operations employed in the lenticular cases having been division or solution, extraction, the combination of division with depression, and next in frequency we find the combination of depression with laceration of the capsule in eighteen cases out of one hundred, the number of cases of capsulo-lenticular cataract being about twenty-eight per cent., the remainder of these cases being treated by combinations of division, with laceration of capsule, &c., &c.

I may here remark that since the termination of the period reported upon, viz., the end of 1851, I have had comparatively fewer cases of simple depression, and depression with laceration of the capsule, and a larger number of cases with a combination of those two operations with division. These two, with or without division, constitute by far the largest proportion of operations which will be found necessary with the Native patient.

Division or solution, with or without combination, come next in frequency, being for the most part employed where the cataracts have been soft or fluid; also in many cases where they have been of "mixed" consistence.

The cases of "extraction" have been few, only about two per cent. of the whole; indeed among natives, the proportion of cases in which this operation is considered preferable to any other is very small indeed.

The cases of laceration of the capsule, uncombined, form a small number, eight per cent., but in combination have been frequent, about twenty-seven per cent.

This is in accordance with the well-known fact, that pure capsular cataract is a rare disease; indeed I have operated upon few capsular cases in which the lens had not previously become absorbed; and, as a necessary result of the operation, the lens, if it existed, has become opaque, and in most instances subsequently absorbed; operations for its removal have been occasionally necessary.

Other operations, in addition to those adverted to, have been rare, and only rendered necessary by peculiar contingencies.

Consistence of Cataract.

It will be seen that the proportion of the harder cataracts is very small, only about four per cent. A good number of the soft form, but by far the largest proportion have been "mixed." By mixed consistence, I mean to designate those which are as far removed from the small hard cataract, as the soft or fluid, which had not sufficient density to become depressed; it is more nearly that of a firm gelatinous substance than anything I can describe. It is consequently capable of being absorbed entirely in many cases, and partially, *i. e.* in all the circumferential parts in a larger number; there was, in by far the largest proportion, a central nucleus of firmer consistence, and more opaque, the colour being of different shades of amber.

Locality of Cataracts.

It seems that there is a large proportion of opacities of the lens when the cataract arises spontaneously, as it has done in the great majority of the cases reported upon; but, if the cases of closed pupil in which the capsule has become opaque had been included under the head of cataracts, the proportion of capsular cataracts would have been greater.

I may add that the cataracts marked "capsular" have almost all been secondary to previous operations for removal of the lens.

The traumatic cases operated upon have been put under the heads capsulo-lenticular, or capsular, according as the disease affected principally the capsule, in the first instance or otherwise.

Relation of the two Eyes to Cataract.

It appears that only thirty-six, or six and a half per cent., have had the operations performed on both eyes. It would however be a great mistake to suppose that this is the proportion in which cataract occurs in both eyes; the fact is that in so few instances does the native patient care to have the second eye cured, after sight has been restored to one. Of those who have remained in the Hospital to have the second eye operated upon, most had been relieved in the first, but a few have been willing to have the second eye operated upon after the first had been unsuccessfully treated.

A few more cases have occurred in the left eye than in the right, but the difference is, I believe, accidental.

In the large majority of cases both eyes were affected with cataract; but in almost all one was in a more advanced state than the other, and that one only was treated.

General Result of Operations.

In order to ascertain exactly the amount of benefit derived by the patients, it is necessary that I should explain to what extent they are said to be "cured," and "relieved". I have noted them "cured" when, as the result of the operation, they have attained useful vision sufficient to enable them not only to find their way about, but to carry on the ordinary business of life; and "relieved" when their vision, short of being good, is in any way improved by the treatment. We see a large proportion, eight out of every ten, benefited in this way decidedly, but that does not exhibit all the benefit derived, as a fair proportion of those marked "result not known" must also have derived some benefit. In eleven per cent. only of the whole the vision has been irremediably lost.

The amount of sight actually regained by the native varies very much; their ability or inability to read forms no criterion, as so few have ever had that ability. The greater number are enabled to find their way about with facility, and many see well enough to pursue their ordinary avocations. Those who had originally very good sight, and had been in the habit of employing their eyes upon minute objects in the way of reading, &c., have been generally able to read as well as before, with the aid of cataract glasses: the large majority are so well contented with their ability to find their way about, and distinguish large objects, that they do not care

to remain to have the second eye treated, or to have their vision improved to a still greater degree by treatment of the eye operated upon, nor will they go to any expense to procure suitable artificial lenses.

In those cases in which the eye has been lost as a consequence of the operation, the loss has been caused in many instances by a very acute inflammation of the globe, commencing on the second or the third day after the operation, and rapidly producing mortification of the cornea. This result I have observed is not confined to any season of the year. The remote cause has almost always been obscure; in very few cases I have been able to trace it to any morbid diathesis or peculiarity of constitution; the exciting cause, no doubt, has been the action of sudden changes of temperature, of cold or of great heat, upon the native constitution; in others, it has been internal inflammation leading to closed pupil, which the patient has not been desirous to have remedied by any further operation.

The rapid destructive inflammation of the globe has not been confined to natives of Bengal; it has occurred after some operations upon the native officers, sepoys, &c., natives of the Upper Provinces, Oude, &c.

I may here mention that, although those patients have no doubt a stronger constitution naturally than the Bengallee, they have not borne operations better. The loss of sight after an operation in this class has in most cases been caused by an unusual irritability of the organ, evinced by a succession of attacks of iritis or conjunctivitis, sclerotitis, &c, leading to closure of the pupil, or to a permanently irritable state of the eye precluding useful vision.

The cause of this want of success among the strong and well-fed natives of Upper India must in my opinion be attributed to their suffering from the confinement of a hospital, probably from a plethoric state of the circulation, the want of their usual exercise, &c., and not to any local cause of disease, as malaria, &c., prevalent in the Infirmary; for I have often observed, that while the comparatively plethoric sepoy has lost his sight, at the very same time many feeble decrepid Bengallees have regained very good sight, although perhaps they might at the same time be suffering from dysentery, cough, or other debilitating disease.

It is to be observed that the poorest class live while in hospital in a purer air than they have been in the habit of breathing, and enjoy all the comforts of life; their food allow-

ance, two annas a day, being amply sufficient to provide them with food, tobacco, &c. The same cannot be said as regards the air for the native soldier, although his diet may generally be kept to the standard considered most suitable for a patient.

It will be seen that a rather large proportion, about eleven per cent., are noted as "result not known." The reason of this is, that the native is, from his natural apathy and ignorance, impatient of the slow and gradual progress which must necessarily take place in by far the largest proportion of cases of cataract. In many cases he expects an almost instantaneous cure. Should its progress be arrested, or relapse take place in consequence of inflammation, or some unforeseen complication, he becomes at once disheartened, and takes his departure without leave. Again, should he be doing well, and vision be in the process of restoration, he absconds without waiting to express his obligations, or to have his cure completed. However, when any decided benefit has been obtained at the time of his departure, the case is noted as "cured" or "relieved" but there are many doubtful cases among the absconded, which might, if the patient had remained, have been benefited by further operation or treatment, and those come under the head of "result not known."

Result of Extraction.

It seems that, whereas depression gives fifty-eight per cent. cured, and of benefited seventy-two per cent., extraction gives only fourteen per cent. cured, and thirty-five per cent. benefited; and this I think gives an accurate estimate of the relative advantages of these two operations upon the native of Bengal.

As extraction is no doubt in itself the most perfect operation for removal of the opaque lens, I have been induced to practise it, but in only about two per cent. of the whole number of cases. A few successful operations induced me to try it a little more extensively than I otherwise should, for my predecessors in the charge of the Eye Infirmary were not in the habit of performing it; but the success upon the whole has been so small that I have since abandoned its use, except in peculiarly favourable cases. I have found however as the occasional result, that the sight has been restored to a greater extent after extraction than after any other operation, and I have had some peculiarly fortunate cases as double extraction successful, and with extraction in one eye, and

depression or other operation in the other eye, the sight of the "extraction" eye has been decidedly better than the sight of the other, although the other operation has been of the most successful kind in its way.

The result of my experience during the four years reported upon, and the succeeding years, has impressed me with the conviction that extraction is not an operation generally suited to the Bengallee.

The causes are to be found partly in his physical conformation rendering the operation in its perfect form very difficult. The chief of these are his prominent brow, small sunken eye, with a proportionally large lens, and partly in his comparatively feeble constitution, which renders union of the section made in the cornea uncertain, and rare compared with the same in the European patient.

Result of Depression (including Reclination.)

As this is the operation used in the majority of lenticular cases, the numbers are large, and proportion of "benefited" also large. I consider fifty-eight per cent. cured and seventy-two per cent. "benefited," besides a certain proportion of those noted as "result not known" to be a fair average result of this operation with the native patient. The causes of failure have been sometimes destructive inflammation of the globe, at others a secondary inflammation, probably occurring for the first time after a second or third repetition of the operation, more often a slow inflammation of the iris and internal structures of the eye, leading to either closed pupil, or a permanently irritable eye.

Result of Division.

This operation suited to the soft and fluid cataracts, gives a result not quite so favorable as depression, the number of "cured" being less. As division is an operation well suited to a large proportion of cataracts, and I find the combinations of division with depression, and with laceration of the capsule eminently successful, I am inclined to think that the amount benefited by solution, has been brought below the proper average by accidental causes.

Result of Drilling the Lens.

In the single case treated, there was some adhesion of the lens to the iris, which prevented my being able to adopt an ordinary operation. No general rule can of course be deduced from its successful result.

Result of Laceration of Capsule.

The average of success, amounting to eighty-three per cent. shows that this operation performed in general after a primary operation of depression or division, or after an injury which had caused cataract from inflammation, is no less successful than those more generally called for.

COMBINED OPERATIONS.

Result of Depression with Extraction.

The remarks upon the single case noted above, will apply to this case, in which extraction was resorted to, in consequence of the rising of a lens after attempt at depression.

Result of Division with Depression.

As this is a combination applicable to the great majority of that class of cataracts which is most prevalent with the Native, viz., the mixed, which are generally bulky, and to a certain extent capable of absorption, it is gratifying to find that its success has been proportionably great—its average both of "cured" and of "benefited" being larger even than is the case with simple depression. The advantages of this operation in my opinion are that the preliminary act of division, which causes the solution of the softer circumferential parts of the lens, leaves a less bulky substance, the central lens only, to be depressed in the succeeding operation; this being comparatively small and solid, will be less likely to rise again above the level of the axis of vision, and to produce irritation by pressure on neighbouring parts as the iris and retina. On these accounts I consider this combination, although less speedy in its results, more certain in its ultimate good effects upon the organ than any other. In many cases of the mixed cataracts, the preliminary act of division produces no appreciable improvement in vision; but it most probably causes solution of some portions of the lens, and it can do no harm. It is simple, consisting merely in passing a needle posteriorly through the back part of the capsule, and moving it gently within the outer substance of the lens, and also has the advantage of giving little pain and no alarm to the patient; it often causes improved vision within six days, and this improvement is progressive. In about a month after, when the eye has had ample time to recover from the effects of the slight injury it has received, and the lens has

become less bulky, the more formidable operation of depression is performed. I have been confirmed in my opinion of the superior advantages possessed by this combination of operations, by the additional experience of the years succeeding the four years reported upon.

Result of Depression with Laceration of Capsule.

This operation applicable to the greater number of capsulo-lenticular cataracts, also to the lenticular in which the capsule has been rendered opaque in consequence of the wounds received by the operations of depression, division, &c., has been also successful, showing indeed a higher average than even the combination last noted.

This superior average is possibly in some degree accidental. I believe, however, that the combination is as successful as simple depression, and I have invariably found that the operations of laceration of the capsule, which often require to be repeated several times, do not create so much irritation as the previous operation of depression; the cause of this I conclude to be, that in the one case there is that which acts on the eye as a foreign body, viz., the displaced lens; that having become absorbed, the manipulation, still greater, to produce removal of the capsule, produces in the majority of instances much less irritation than might à priori have been expected.

Result of Division, Depression, with Laceration of Capsule.

This operation has been found necessary in so few cases of mixed lenticular, and of capsulo-lenticular cataract, that, its very high average of success forms no reliable criterion as to the comparative advantages of operations. It however shows that the eye will bear repeated operations with safety.

Result of Division with Laceration of Capsule.

This gives a high average, which may be attributed to the fact of its being only employed in cases of soft lenticular and capsulo-lenticular cataract.

Result of Drilling with Depression, and Drilling with Laceration of Capsule.

These combinations used in single cases, seem only to demand the remark, that in many cases in which the lens has become adherent to the pupil, success may be confidently expected from them.

Ages of Patients affected with Cataracts.

I believe this tabular statement gives a fair idea of the prevalence of the disease at particular ages in Bengal. The cases of undoubted congenital cataract have been very rare, although young children have been operated upon in whom there was every reason to think cataracts had existed, undetected by the patient's friends, from birth. After the age of forty the tendency to cataract advances rapidly, the greatest number appearing between the ages of forty-five and sixty-five. In most cases it has existed, at any rate in one eye, for many years before the patient has applied for relief, the failure of sight in the second eye having already existed for a considerable time before that also. This may account for the apparent advanced age of the cataract patients; for I believe the disease in the native commences at an earlier age on the average than among Europeans, although the difference may not be very great.

REPORT OF CASES OF ARTIFICIAL PUPIL

DURING THE YEARS 1848, 1849, 1850 AND 1851.

Out of 62 cases of artificial pupil, there were,

For closed pupil, ...	58 or 93.548	per cent.
For central opacities of cornea,	4 or 6.451	,,

There were,

Cured, ...	9 or 14.516	Benefited.
Relieved, ...	26 or 41.935	56.451
No better, ...	19 or 30.645	
Result not known, ...	8 or 12.903	

Operations.

Simple,

Central excision, ...	41 or 66.129
Lateral excision, ...	11 or 17.741
Division, ...	4 or 6.451

Compound,

Central, and lateral excision,	5 or 8.064
Lateral excision and separation,	1 or 1.612

Out of 41 cases of central excision, there were,

Cured, ...	7 or 17.073	Benefited.
Relieved, ...	19 or 46.341	63.414
No better, ...	10 or 24.390	
Result not known, ...	5 or 12.195	

Out of 11 cases of lateral excision, there were,

Cured, ...	2 or 18.181	Benefited.
Relieved, ...	5 or 45.454	63.635
No better, ...	3 or 27.272	
Result not known, ...	1 or 9.090	

Out of 4 cases of division, there were,

Cured, ...	0	
Relieved, ...	0	
No better, ...	2 or 50	per cent.
Result not known, ...	2 or 50	

Compound.

Out of 5 cases of central and lateral excision, there were,

Cured, ...		Benefited.
Relieved, ...	2 or 40	40
No better, ...	3 or 60	
Result not known, ..	0	

Out of 1 case of lateral excision and separation, there was,

Cured, ...	0	
Relieved, ...	0	
No better, ...	1 or	100
Result not known, ..	0	

REMARKS.

Nature of disease requiring Operation.

It will be seen that I have very rarely performed the operation in any case, but that of the original pupil more or less closed and distorted. This in almost all cases has been united with cataract, sometimes capsular, more often capsulo-lenticular, so that the operation performed has generally included division of the lens, laceration of the capsule, &c. The only cases of "central opacities" in which I have ven-

tured to try the formation of a lateral pupil, have been those in which they have been very dense, and light altogether prevented from passing to the retina.

In all cases I have made it a rule never to operate, with a view of making a central or lateral pupil, or enlarging the original pupil, when there has been a possibility of giving vision useful to any extent by other means.

The hazard of irremediably injuring the eye is so great, that I have never felt justified in operating, if the patient has been enabled even to discern objects with distinctness. In the great majority of cases the incision of the iris has been followed by some lymphatic effusion interfering with the success of the operation, and in many by permanent adhesions, or even disorganization of the organ.

General Result of Operations.

The remarks I have made above, will account for the small success compared with cataract operations, fourteen per cent. "cured," and fifty-six per cent. "benefited," the amount of benefit both from cure and from relief being smaller than with cataract cases; probably the power of distinguishing light from darkness, as a relief from total blindness. It is to be observed that only two kinds of operation have been attended by any cures.

Nature of Operations.

Central excision of the iris, with the view of affording a clear space in a position as nearly as possible the same as the original pupil, for the transmission of light, has been the operation adopted in most cases: the pupil having become closed without any central opacities of the cornea. When these opacities have also existed, the other operations named, but more commonly lateral excision, with the view of forming an opening of the iris in the situation next best adapted for the transmission of light, have been used; and it has only been where the complications have been such from opacities of the cornea, smallness of the globe, etc., as to preclude a fortunate result from one of those two, that recourse has been had to the other (combined) operations. As might be expected, with an operation attended by so much danger, the result even with the best has not been very great—"cured" eighteen per cent., "benefited" about sixty-three per cent.; in most cases the operation has required repetition, in many several times, or it has been necessary to substitute another operation in place of the first.

Result of Central Excision.

With reservations above stated, the amount of benefit has been considerable; the proportion still of "no better" is large; but it may be stated that these cases were no worse than before the operation.

Result of Lateral Excision.

The same remarks are applicable to this as to the last, but the amount of vision restored by cure and by relief, has not been so great.

Result of Division.

In the only four cases in which the presence of unusual irritability, or some complication, induced me to try it, no success, as far as I am aware, resulted: the divided iris having become re-united, and thus completely obstructing vision.

Result of Central and Lateral Excision.

This combination in which a portion of iris was removed from the central and lateral parts, was found necessary in a few cases, where a sufficiently large central opening was not practicable, or had become re-closed by adhesive deposits. Amount of benefit received, forty per cent.

Result of Lateral Excision and Separation.

This was resorted to in a single case, in which closed pupil was complicated with a cornea densely opaque, except at one part opposite which it was necessary to open the iris. There was also a flaccid and disorganized state of the globe, which left scarcely any chance of a good result.

REPORT OF CASES OF STAPHYLOMA

OPERATED ON IN THE YEARS 1848, 1849, 1850, AND 1851.

Out of 14 cases of staphyloma, there were,

Cured	.. .. ..	11 or 78.571	Per cent. 85.713 Benefited.
Relieved	.. .. ..	1 or 7.142	
No better	.. .. ..	0	
Result not known	.. ..	2 or 14.284	

Operations.

Out of 14 cases, there were,

Treated by ligature	.. ..	6 or 42.857
Excision	.. .. ..	6 or 42.857
Seton	.. ..	1 or 7.142
Caustic	.. .. ..	1 or 7.142

Out of 6 cases treated by ligature, there were,

Cured	.. ..	5 or 83.333 { Benefited. 83.333
Relieved	.. .. ..	0
No better	.. .. ..	0
Result not known	.. ..	1 or 16.666

Out of 6 cases treated by excision, there were,

Cured	.. ..	5 or 83.333 } Benefited.
Relieved	.. .. ..	1 or 16.666 { 100 per ct.
No better	.. .. ..	0
Result not known	.. ..	0

Out of 1 case treated by seton, there was,

Cured	.. ..	0
Relieved	.. .. ..	0
No better	.. .. ..	0
Result not known	.. ..	1 or 100 per cent.

Out of 1 case treated by caustic, there was,

Cured	.. ..	1 or 100 { per cent. Benefited.
Relieved	.. .. ..	0
No better	.. .. ..	0
Result not known	.. ..	0

REMARKS.

General Result of Operations.

It will be seen that the success has been great; there being the large proportion of seventy-eight per cent. "cured," and about eighty-six per cent. "benefited." By "cured," I mean that the projection caused by the disease has been removed

altogether, so that nothing has been left to cause irritation of the globe, vision of course being out of the question; and by "relieved," that the annoyance caused by a staphylomatous projection has been mitigated.

Nature of Operations.

An equal number has been treated by excision and by ligature, and these two are the operations found suitable in the large majority of cases. That which I prefer is the plan of double ligature. A curved needle armed with a ligature, is passed through the base of the tumour, the closed end of the ligature divided, and one part passed above, the other below the tumour, and secured as near possible to the junction of the tumour with the remains of the cornea, or the substance of the globe. This possesses the great advantage over excision, that it does not cause any large portion of the humours of the eye to be evacuated.

With excision, it is not always certainly, but often impossible to avoid the escape of a large portion of them, consequently the globe collapses to such an extent, that it exerts no support on the lids, which fall in, and the remains of the globe form an unsightly object. This is altogether avoided in successful cases of ligature, which causes sloughing off of the tumour but leaves the globe nearly as full and prominent as in the natural state. Small tumours have been sometimes treated by caustic, or by seton passed through the base of the tumour; the caustic causing sloughing of a small prominence, but inapplicable where the tumour is of any size; the seton reducing the tumour, by causing a gradual draining of humours. I have not found the irritation caused by the double ligature intractable, and look upon it as by far the most suitable operation for the greater number of cases of troublesome staphyloma, as well as being more complete in itself.

Result of Ligature.

This gives a large proportion of benefited.

Result of Excision.

This gives a still better result. Since the time reported on however, I have performed this operation only upon exceptional cases, and substituted the plan of double ligature; although the instances of "cured," so far as removal of irritation goes, are numerous, the globe has been left in a more imperfect state than after the ligature.

Result of Treatment by Seton and Caustic.

These operations are only suitable to small tumours, and will be found generally successful; but the majority of small staphylomata may be prevented from keeping up any irritation by general treatment; and if a little prominence is left, the lids will get used to it in many cases.

REPORT OF CASES OF PTERYGIUM

OPERATED UPON IN THE YEARS 1848, 1849, 1850, & 1851.

Out of 58 cases of pterygium operated upon, there were,
Number of patients 44

Out of 44 patients, there were,
In both eyes ... ... 14 or 31.818 per cent.
Right ... ... 15 or 34.090
Left ... ... 15 or 34.090

Out of 58 cases, there were,
In the right ... ... 15 or 25.862
Left ... ... 15 or 25.862
In both ... ... 28 or 48.275

Out of 58 cases operated upon, there were,
Cured ... ... 58 or 100 { per cent. Benefited.
Relieved 0
No better 0
Result not known 0

Out of 58 cases, there were,
Operations of excision ... 43 or 74.137 per cent.
Division ... ... 9 or 15.517 ,,
Treated by nitric acid ... 5 or 8.620
Compound Operation.
Treatment by acid and excision
1 or 1.724

Out of 43 cases of excision, there were,
Cured ... ... 43 or 100 { per cent. Benefited.

Out of 9 cases of division, there were
Cured 9

Out of 5 cases of those treated by acid,
Cured 5

Out of 1 case treated by acid and excision,
Cured 1

REMARKS.

Inclination of either Eye or both to the Disease.

It will be seen that almost an exactly equal number of patients were affected in both eyes, in the right or left eye only; *i.e.* one third had it in both, another third in the right only, another third in the left only.

General Result of Operations.

In all cases the disease was cured, *i.e.* all or most of the accidental growth removed, and all that could be troublesome at any rate removed from the surface of the cornea.

Nature of Operations.

In those cases in which the growth has extended beyond the edge of the cornea, no treatment seems effectual but to excise. This has been done most effectually with a toothed forceps, and a narrow double-edged knife; by these means it can be removed almost entirely from the surface of the cornea, and this cannot be so completely effected by scissors.

Where the growth does not extend beyond the edge of the cornea, it will be enough to divide it, with the view of severing the connection between the part nearest to the cornea, and the blood-vessels which proceed inwards from the circumference; this effect will also be produced if a line be drawn with nitric or sulphuric acid perpendicularly down the growth, but the plan has this disadvantage, that the adhesive inflammation caused by the acid, although it interrupts the vascular communication between the two parts, produces some adhesions between the conjunctiva and sclerotica, which are unsightly, and may interfere with the free motions of the globe. It is much preferable to remove all or the greater part of the growth from the surface.

REPORT OF CASES OF ENTROPIUM

OPERATED ON DURING THE YEARS 1848, 1849, 1850 AND 1851.

Out of 54 cases, there were,
Number of persons operated upon, ... 40 or 74.074 per cent.

Out of 54 cases operated upon, there were of
Excision only, ... 3 or 5.555 per cent.
Excision with sutures, .. 49 or 90.740 „
Excision and nitric acid, .. 2 or 3.703 „

Out of 54 cases operated on, there were,
Cured, ... 54 or 100 { per cent.
Relieved, ... 0 { Benefited.
No better, ... 0
Result not known, .. 0

Out of 3 cases of excision, there were,
Cured, ... 3
Out of 49 cases of excision, with sutures, there were,
Cured, ... 49

Out of 2 cases of excision, with nitric acid, there were,
Cured, ... 2

Out of 40 patients, there were,
In both eyes, ... 14
In one eye, ... 26

REMARKS.

Nature of Operations.

The only operations found applicable to the greater number of cases, have been the excision of a portion of integument, and the closing up the wound by sutures. Where there is only a slight tendency to inversion, it will be enough to excise a pretty large portion, trusting to the contraction caused by the cicatrizing process being enough to keep the lid well away from the globe. This contraction will be greater, if the exposed surface be touched with acid, with the

view of causing superficial sloughing of the part. Neither of these plans however will succeed in cases of great and inveterate inversion, particularly if the tarsal cartilage has become involved in the disease. In many cases the tendency to inversion has been so great that it has been found necessary to repeat the operation. In those cases in which there has been a special inversion at the outer canthus, often congenital, and adding much to the irritated state of the globe, at the same time that a portion of the lid has been excised, I have made a free incision so as to separate the lids well on the outside, and prevent their too close union afterwards.

Result of Operations.

All cases have been by one or other of these means cured, *i. e.*, the lid has been prevented from exercising any undue pressure on the eye-ball.

REPORT OF CASES OF ECTROPIUM

OPERATED UPON DURING THE YEARS 1848, 1849, 1850 AND 1851.

Out of 2 cases of ectropium, there were,
of excision of conjunctiva, .. 2

Out of 2 cases, there were,
Cured .. .. .. 1 or 50 } 100 per cent.
Relieved, ... 1 or 50 } Benefited.
No better, ... 0
Result not known, ... 0

REMARKS.

It will be observed that the number of patients requiring to be relieved from ectropium is very small. The fact is, when bad cases have appeared, they have been complicated with so much disease of the neighbouring parts, as caries of the bones of the orbit, disease of periosteum, degeneration of large portions of the skin of the face, &c., &c., that the patient has either declined from the first any extensive operation, or after having consented, has absconded before any remedial measure has been undertaken.

The only two operations performed were excision of the conjunctiva on the inner side of the lid to the requisite extent.

REPORT OF CASES OPERATED ON FOR RELIEVING

OBSTRUCTION IN THE LACRYMAL PASSAGE.

Out of 2 cases operated on, there were of
Introduction of style, .. 1
Opening of abscess, ... 1

Out of 2 cases operated on, there were,
Cured, ... 2 or 100 { per cent. benefited.
Relieved 0

Out of 2 cases, there were caused by
Disease internal to the passage, 1 or 50 per cent.
External, ... 1 or 50 „

Out of 1 case from internal disease there was of,
Introduction of style, .. 1

Out of 1 case of external disease, there was of,
Opening of abscess, .. 1

REMARKS.

The number operated upon, only two, bears no proportion to the large number of persons who have applied for relief, both as in and out patients, for this affection; but in most cases the obstruction caused by acute or chronic inflammation of some portion of the lacrymal passages, or as was the case in the great majority of instances, by the tumefaction consequent on abscess formed exteriorly to the sac, was removed by treatment, or its unpleasant effects so much alleviated, that operative measures were considered unnecessary. In those cases in which obstruction had become permanent, the patient would hardly ever consent to the introduction of a style or tube, which it must be confessed often only substitutes one cause of irritation for another, that other being to the native patient by no means intolerable.

Nature of Operations.

In the only case in which a style was introduced the result was favourable.

REPORT OF CASES OF MALIGNANT TUMOURS

OF THE EYE OPERATED ON IN THE YEARS
1848, 1849, 1850 AND 1851.

Out of 3 cases operated on, there were,
Persons operated on, .. 3

Out of 3 cases, there were,
Extirpation of contents of orbit and tumour, ... 3

Out of 3 cases, there were,
Operated on during Mesmeric coma, ... 1 or 33.3 per cent.
Under the influence of chloroform, ... 2 or 66.6 „

Out of 3 cases operated on, there were,
Cured, ... 0
Relieved, ... 3 or 100 { per cent. Benefited.
No better, ... 0
Result not known, .. 0

Out of 3 persons operated on, there were,
Under ten years of age, .. 1 or 33.333 „
Between 10 and 20 ditto, .. 1 or 33.333 „
Between 50 and 60 ditto, .. 1 or 33.333 „

MALIGNANT TUMOURS.

Nature of Disease.

In the three cases which presented themselves, the tumefaction had proceeded to so great an extent, and caused so much irritation by its pressure on neighbouring parts, that the removal of the entire tumour seemed to be the only plan likely to be attended by any beneficial result, and in all three the globe had become disorganized; so that nothing remained to be done but extirpation of the whole contents of the orbit, together with the tumour.

In two cases, those of a man aged about fifty, and a girl aged sixteen, the swelling was so great, that the lower end of the tumour was in both nearly on a level with the floor of the nostrils; in both the disease seemed to have originated

in the same way. The patient said that a small tumour had appeared in the lower eyelid; for this a native doctor had prescribed some caustic application. This had led to inflammation of the globe, which eventually resulted in tumours, chiefly painful on account of the pressure exerted on the walls of the orbit and surrounding structures. In the man's case, the remains of the globe were not to be distinguished; in the girl's, the remains of the retina and choroid were with difficulty to be found at the lower part of the tumour, nearly enveloped in its substance. The third, a case of a boy, ætat. nine, had a nearly similar origin, but it was not so far advanced; and it is probable, that a better result may have been attained with this than with the other two. In these, the patients were indeed relieved of the pain and irritation caused by pressure, but at the time of their leaving hospital there were evident signs of the growth of some tumefaction around and within the orbit; and this in my opinion was the chief sign of malignancy of the disease; for in neither was the constitution in appearance seriously affected. The tumour in the case of the man seemed to be in nature akin to encephaloid disease, as was that of the boy; but in the case of the girl was more nearly of the nature of scirrhus, in respect of its hardness, fibrous appearance on section, &c., &c.; but it contained numerous spiculæ of bone. A section of each of these two last mentioned tumours may be seen in the Museum of the Calcutta Medical College.

Nature of Operation.

The man was operated upon during coma, brought on by the Mesmeric process; the other two under chloroform. In all three, after the lids had been freely divided at the outer canthus, as much of the tumour as was without the orbit was removed first; then that within the orbit, and for this purpose the instrument found most useful was a narrow, curved, probe-pointed bistoury; without some such instrument, there would be, in my opinion, always danger of piercing the very thin roof and sides of the orbit, and injuring the brain. With this instrument it is perfectly easy to remove all the contents of the orbit, without the practicability of doing injury to its osseous walls.

ILLUSTRATIONS

OF

THE USE

OF THE

OPHTHALMOSCOPE.

BY

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ILLUSTRATIONS OF THE USE OF THE OPHTHALMOSCOPE.

It has for some time seemed to me desirable to collect together some of the most precise data that we have as yet been able to find recorded regarding the actual appearances, under the ophthalmoscope, of the characters distinctive of the various ophthalmic affections, the results of which are recognisable by the aid of this instrument. Notwithstanding the appearance from time to time of various valuable works on the subject, some of them elegantly illustrated, such as Jäger's Plates, with the annexed descriptions, &c.; others with elaborate descriptions of morbid appearances, as the last edition of Desmarres' *Treatise on Diseases of the Eye*, etc.—the student will have felt, as I have myself, the great difficulty of making an accurate diagnosis of the efficient causes of the loss of sight, and concomitant ophthalmic affections, by the method of examination with the ophthalmoscope. No doubt very great exercise with this instrument is required before its proper use can be mastered. It is probably as difficult, if not more so, to attain an accurate insight into the information that may be gained by its use, as regards internal diseases of the

eye, as it is for the neophyte to attain an accurate knowledge of diagnosis of diseases of the chest by the aid of the stethoscope. In addition, we must remark that the knowledge of its use may be said to be, if not in its infancy, in a state far removed from what we may hope will be the case when we have had time and opportunity for greater experience. It is still difficult to attain an accurate diagnosis of the several diseases of the posterior parts of the eye; to define accurately choroiditis, retinitis, etc.; to determine the actual causes of the innumerable conditions which we must still be content to call amaurosis, amblyopia, glaucoma, etc.

We may hope to be able to enlarge our knowledge by the opportunities now offered to all engaged in the study of ophthalmic surgery at the various special eye hospitals. Having enjoyed the benefits of the ophthalmoscopical department, as well as of the splendid collection of drawings and museum now in progress of formation at the London Ophthalmic Hospital at Moorfields, I have thought that a collection of some of the facts positively known on the subject might be useful in supplying a want that I have experienced in my own case in the study of the ophthalmoscope. The great desideratum at present is the accumulation of real facts; that is, the exact appearances indicative of the diseases of the several component parts of the eye. In the course of time, with the aid of a more exact knowledge of the minute anatomy, physiology, and pathology of the eye, such as we may hope to attain, but by no means so likely as by the collections now forming at the Moorfields

Hospital and elsewhere, the facts which have been elicited by the observation and comparison of numerous inquirers will receive their due value; and we may expect as much success in the diagnosis and treatment of diseases of the eye by the use of the ophthalmoscope, as has been attained, since the time of Laennec, in the diagnosis and treatment of diseases of the chest by the use of the stethoscope, in combination with increased knowledge of general physiology and pathology.

In addition to the works of Desmarres and Jäger, above mentioned, the student and practitioner in opthalmic surgery, who may not have varied opportunities of extending and comparing his acquisitions on this subject, as well as the kindred one of the anatomy and physiology of the eye, will find much useful information in Mr. Hogg's little work on the *Ophthalmoscope*, and in the several numbers of the London *Ophthalmic Hospital Reports*, which contain ophthalmoscopical illustrations, the researches of Hulke, Bader, etc. But, above all, his acquisitions would be increased by some time spent in the ophthalmoscopical department of that hospital, and in examining the collection of drawings and the museum now being formed, principally by the zeal and industry of the medical officers of that institution, and under charge of Dr. Bader, the curator, whose valuable services in improving our knowledge of this branch of science are bearing fruits in the admirable catalogue now in course of preparation, and cannot be too highly appreciated.

CRYSTALLINE LENS.

The information we are enabled to get with regard to diseases of the eye by the aid of the ophthalmoscope is not by any means confined to the fundus of the globe. We can ascertain the state, morbid or healthy, of all the parts which lie posteriorly to the cornea; and its use is particularly applicable with reference to the state of the crystalline lens and its capsule, and especially to the degree of transparency of these parts. Thus we are able to distinguish true from spurious *cataract* in any spots which there may be on the capsule, etc. Appearances, which on an ordinary examination we should be inclined to attribute to cataract, are often proved by a careful ophthalmoscopical examination to be due to disease, probably irremediable, of the posterior tunics of the eye. As regards cataract, we detect, in cases in which the disease has advanced to the slightest degree of impairment of vision, a certain amount of obscuration or interruption of the quantity of light which would otherwise pass to the fundus of the eye. The obscuration may be partial or entire, according to the amount of opacity. We also find, even in incipient cases, particularly near the margin, opaque striæ, and occasionally over the surface, spots: in more advanced cases, the appearance of opaque septa, showing fibrous alterations of the lens; and between these opaque striæ or septa, are generally seen pretty transparent intervals. We find also frequently, after synechia posterior, patches of pigment which have become detached from the uvea, lying upon the anterior surface of the capsule; so that by this means

we are enabled to detect with certainty alterations constituting cataract, which would not be always ascertainable by means of a magnifying lens, or by the catoptric test. We also detect in the lens the presence of *cholesterine*, and the different *foreign bodies* which it may contain, as animalcules, etc.; the peculiar change of the lens which corresponds with the arcus senilis of the cornea (Desmarres); also any form of *dislocation of the lens*, entire or partial; and it is not necessary that there should be any loss of transparency in the part in order that we may detect it.

VITREOUS HUMOUR.

In inflammation of this part, which almost always accompanies that of the deep seated tissues of the eye, we find a general obscurity of the part, and often a quantity of flocculent shreds, whitish, often in constant movement. In this state the natural bright pink colour of the fundus is not reflected, but gives place to a dull yellowish-white appearance, and the optic papilla* and macula lutea are more or less obscured. Then we may have purulent and other deposits. In *synchysis* of the vitreous body, we find the flocculent shreds move very rapidly to the lowest place.

In the changes of the humour which accompany a *syphilitic condition* we constantly find flocculi — in reality white, but from the blaze of light present

* Optic nerve entrance would probably be a more correct designation, as there is in reality no prominence at this part; but as the term optic papilla has been generally accepted, I shall continue to use it in this memoir, for the sake of convenience.

during the examination, appearing black—constantly moving in all directions with the movements of the head. Others have a white or grey appearance. These are to be seen also as a result of iritis and other internal inflammations. They are not generally to be seen by the patients themselves.

There is also a condition of the vitreous humour which is described by Desmarres as *jumenteux*. He states that it is often present in inflammation of the deeper textures. There is a general turbidity, with numerous dark points in motion.

It is to be remarked that the impossibility of lighting up the fundus in cases where the lens and capsule are clear is not always to be attributed to disease of the vitreous body. There may be disease of the hyaloid membrane, or there may be infiltration from extravasated blood, or from what has been described as flakes of exudation. Sometimes, without any very apparent cause, as of the states of disorganisation before alluded to, all the light seems to become absorbed, so that there is no reflection of light whatever from the fundus.

Extravasations of blood, when found in the vitreous humour, may be from the retina or choroid. We generally see the clot low down, behind the lens, and it may be of a bright red colour. If it be from a retinal vessel we may be able to trace its origin by finding a black spot on the track of one of the vessels at the fundus, after time enough has elapsed for some clearing to take place; but if from a choroid vessel, we find deep seated ecchymosis, without a spot on a retinal vessel.

Various *floating bodies* are observable throughout the vitreous humour. These may have a motion corresponding with the ordinary movements of the eye; that is, as the patient moves his eye upwards they will be seen to move downwards, and *vice versâ*; or they may move in the same direction as the globe. This would depend upon the comparative densities of the bodies and the vitreous body; if lighter than the vitreous, they will be carried along with it. This is the case with the floating particles which we so often see in disease arising from a syphilitic condition. The more dense bodies, as some forms of muscæ volitantes, etc., etc., are seen, after motion, to sink to the bottom of the humour. These may or may not be perceptible to the patient.

We may also find the various kinds of *parasitic animalcules* (cysticercus, etc.); and it would appear that none of the internal parts of the globe are free from being infested with these objects. They are found even in the retina.

We may also find many *foreign bodies*, pieces of iron, stone, which may be projected to that extent. These may become fixed to the sides or may float through the substance of the humour. In either case we shall find them often surrounded by a membraniform exudation.

Cases exemplifying all these are related by Anagnostakis, Ruete, Gräfe, and other authors.

CHOROID.

Congestion of the Choroid may be diagnosed by a hyperæmic state of the chorio-capillary layer. Choro-

idal inflammation, in various degrees, may then be expected to ensue, and to cause atrophy, maceration of the pigment, layers of exudation, etc. These again, would, in the end, bring on disorganisation of the retina.

In the first instance, we may find an unusually pale condition of the fundus. It does not light up well, and the appearance is rather of a pale orange yellow than the natural bright pink colour. We shall be likely, also, to find some discoloration of the fundus; instead of a uniform field, we see pigmental patches in parts. If these appearances last long the disease progresses to disorganisation. The effects on vision will be more evident according as this disorganisation —whether it be maceration of the pigment, or anything else—affects the macula lutea, or its immediate vicinity. The yellowish tint of the fundus becomes of a paler hue. We see the choroidal vessels through the retina, which before only formed part of a uniform red field. After a time we cannot distinguish the vessels.

We may see patches of a rounded form, arising from the discoloration of the choroid, and want of pigment; at the same time the retinal vessels covering these become more tortuous, and probably varicose.

This state, which is called *maceration of the pigment*, there are strong grounds for thinking invariably leads to atrophy of the choroid and retina. According to Desmarres, the patches arising from disorganisation the result of choroidal disease, may be distinguished from patches arising from exudation, by being of a rounded form; the exudation patches being almost

always of an elongated, or oblong form. The pigment becomes collected into spots, which look dark, and have jagged edges. Between these pigmental spots are often portions, red from extravasated blood. We may have, at the same time, patches from disorganisation and the other form. (See *Cases of Subacute-Choroiditis*, in Desmarres, at pages 419, and 421.)

Choroidal congestion is generally serious according to the length of time it has lasted.

Hyperæmia, of an acute character, is a concomitant of most internal ophthalmic inflammations; but is in many cases remediable, and goes off with the cessation of the primary disease. The exudation patches, which are by no means rare in choroidal affections, besides having an elongated form, like that of a fillet or band, present a colour more or less bluish, easily contrasted with the white rounded patches, indicating disorganisation, absorption of pigment, and obliteration of the vascular layer of the membrane.

Sclero-Choroiditis, which is often either a primary disease, or a concomitant of other internal affections, when it has become advanced is known by a peculiar appearance, situated in immediate contact with the optic papilla. We shall find this part surrounded, totally or partially, by a patch, which begins by being semilunar, apparently prominent, but in reality concave. This is often far from being regular in its outline; it is jagged too at the borders; and if the disorganisation has gone on to any extent, it is in turn partly surrounded by a black mark or border, arising from deficiency of the choroid, and accumulation of pigment in this part. As the disease proceeds, this

white patch, or arch, extends, forming at length a complete circle, but of irregular breadth, round the papilla.

In bad cases, the papilla looks as if concealed in a large white patch, having the appearance of a double cone; and if the disorganisation proceeds, we shall have the state called *posterior, or sclerotic staphyloma;* when, in consequence of the total absence of the retina and choroid tunics, we see only the sclerotic beyond; or we may see it through a transparent retina. This is shown by our observing the retinal vessels traversing this white patch.

The entire absence of pigment epithelium, and other elements of the choroid, as well as of the retina, which has been noted in these and similar cases, by Desmarres, and other writers, we must remark is not observable in all cases, for Jäger states that in twenty-three instances he found the choroid a continuous membrane. (See Hogg *On the Ophthalmoscope*, p. 80.)

Apoplexy of the Choroid. We often find by itself or in conjunction with the deep-seated inflammations, apoplectic or bloody effusions. These may be in the form of a red patch, which may evidently raise the retina; there may be several of these, of different size, scattered over the fundus, and they may traverse the retina and pass into the vitreous humour, where they may become diffused, or appear as distinct clots. These clots are capable of absorption, and the time occupied by this process varies much in different cases. Some are very rapidly absorbed. While undergoing this process, they lose their bright red appearance, and become more or less brown; but those

which remain unabsorbed a long time, often retain their primitive vivid red colour and character. As in other local changes in the fundus, the impairment of vision altogether depends upon the situation of these deposits. If they involve the immediate vicinity of the macula lutea, vision will be very much affected; but considerable bloody deposits may exist in other parts, and be more or less permanent, without materially impairing vision. Intermixed with these collections, we often see the white patches which indicate the disappearance of pigment. (See Desmarres, vol. iii., p. 437, in which a bloody patch is seen, having its original appearance, after ten months' duration.)

Atrophy of the Choroid is a concomitant or consequence of many of the internal inflammations, and is always a grave symptom. The ophthalmoscopical appearances differ according to the particular portion of the membrane: if it affects the first layer, the fundus, instead of the usual rose colour, presents a pale orange yellow or brown tint, and perhaps we find brownish patches and streaks, giving the appearance of a scratched picture. (Desmarres.) Secondly, where the arterial layer *(chorio-capillary)* has become affected, we have obliteration of the capillary network, and we see the larger vessels beyond with unusual distinctness. Thirdly, where the venous layer has become involved, we find pigmental deficiencies and accumulations in such a manner, that the fundus has a spotted appearance, like that of a tiger's skin.

In cases of *congenital insensibility of the retina*, we find an anæmic state coexisting with a minute condition of the vessels. This is particularly observable in the circulation at the papilla. In certain cases, an *entire absence of blood-vessels* has been found; and this has been supposed to be congenital (Desmarres, vol. iii, p. 445). In many cases of amaurotic insensibility of the retina, we find a partial anæmic state; and the change is particularly observable in the papilla, which is unusually contracted, and presents the appearance of a pearly whiteness, with vessels few and small, etc.

Atrophy of the Retina is known by similar appearances—the pearly white contracted state of the optic papilla, etc.; a general pallor of the fundus; want of circulation, etc. In such a state we must expect to find many other signs of severe internal disease and disorganisation, patches of exudation, patches of denudation, etc.

Varicosity of the Retinal Vessels is troublesome as a complication of the severe choroidal and retinal affections. It is said also (Desmarres) to exist in those who suffer from hæmorrhoids or habitual cerebral congestion, without producing any appreciable impairment of vision.

Retinal Patches of Exudation may be either nearly transparent, in which case we see a blueish white tint, scarcely perceptible; or in the form of thick patches, in which we find vessels of new formation, the original vessels being lost. The new vessels are

said to be recognisable as being contrasted in direction with that of the normal vessels.

Hyperæmia of the Retina is frequently seen as a consequence of acute or chronic inflammation. It is recognised by the unusually brilliant colour of the fundus, and the want of the usual distinguishing clearness of the papilla, in consequence of its becoming masked by vascularity. It seems to be blended altogether, or in great part, with the rest of the fundus. Sometimes it is so red as to resemble pannus of the cornea, or it may present the appearance of fascicular redness, similar to what we see in pustular corneitis, etc.

Chronic Retinitis. We find a general obscurity of the fundus, arising either from exudation of some kind, or simply congestion, or possibly alteration, of the choroid tunic beyond. This obscurity is to be distinguished from that of the vitreous humour by its not being nearly so perceptible at a distance from the optic papilla (as in the direction of the ora serrata), and from its evident existence often also, but not invariably, behind the vitreous body. The obscurity arises from light being reflected in less quantity from the fundus. We often see also the borders of the papilla irregular and ill defined; the rest of the fundus is sometimes overlaid with regular stripes of a dull red colour. The vessels, instead of pursuing a regular course to and from the papilla, sometimes disappear, and then after an interval reappear. This is a phenomenon often seen in œdema of the retina also. The vessels, at the same time, are more developed than usual, and the minuter

ramifications come into view. Under this head Mr. Hogg relates a case at page 133—a case where there was excessive congestion of the fundus, so that the papilla could not be distinguised: the retina was raised by effusion. Also, at page 134, a case is related in which, with this obscurity of the papilla, floating bodies were discerned in the vitreous humour.

Acute Retinitis. In this, as we may expect to be the case, we find various signs of plastic exudation. The fundus is more or less obscure, and looks often as if covered by a bluish grey varnish. Along the course of the vessels on both sides, we may find small white tracts. With this obscurity we may expect to find vision very defective; and it is so, particularly if the exudation or vascular disturbance extends in the direction of the macula lutea; otherwise the disturbance of sight seems in many cases to be hardly commensurate with the changes which have taken place. See an instance in Desmarres, vol. iii, p. 465, where, with a considerable patch of exudation (but which, however, does not extend to the vicinity of the macula lutea), the patient has very good sight. The exudation sometimes contains newly formed vessels; more often the normal vessels disappear in certain spots under the patch, to reappear at the farther edge of it, and then to pursue their regular course.

Œdema of the Retina. We find true thickening round the optic papilla. The vessels present a convex appearance, and the papilla has an unnatural yellow tint, which renders it less brilliant than usual. This affection occurs as a consequence of choroidal

and retinal congestions of a chronic nature, and is a frequent concomitant of syphilitic affections of the posterior tunics. It may disappear gradually, as the primary affection subsides. Desmarres describes the appearances of the œdema which exists in conjunction with syphilitic cachexia as being of a dirty rose-colour, the raised portion of the membrane encroaching upon the papilla, which is always hyperæmic. Mr. Hogg, at page 137 of his book, relates a case in which the papilla displayed a circular grey ring within the regular margin, with mottling of the fundus; vessels large and irregular. The retina was found in an œdematous state. Also, at page 138, another case.

This *Mottling of the Fundus* is a very characteristic appearance. There is a want of uniformity of the red field, which presents the appearance of a pale yellow membrane, covered over with dark blue streaks in very many places. It occurs pretty often, and seems to indicate great disturbance of the chorio-capillary circulation, and possibly obliteration of many of the minute vessels, with a very irregular and deficient distribution of pigment. It is, therefore, a concomitant of many of the more serious posterior congestions or inflammations.

Fatty Degeneration of the Retina has been found in certain cases, but the characters to be discovered by the ophthalmoscope are unsatisfactory. It may be suspected where there is albuminous urine, if at the same time we find defective vision, and the fundus generally obscured, and partly covered with yellowish patches, apparently prominent. (See Desmarres; Hogg, p. 70, etc.)

Apoplexy of the Retina is found, but not necessarily as a concomitant of special diseases, both in the plethoric and anæmic subject; the local circulation being affected in one case with positive, in the other with relative plethora. We see the fundus, perhaps more highly coloured than usual, overspread in places with bloody clots of very various sizes. These may present the appearance of circles surrounded by other circles, and this is observable in cases of albuminuria; effusions at the central parts of the field have a radiated form. We may be able to see the point of rupture of the vessel, in the form of a dark red patch along its track; but generally we are obliged to wait until some absorption has taken place before we detect the exact point of rupture.

Sangineons Effusions on the Retina are often observed in acute inflammations of the retina and choroid; also in many states of local and general debility, particularly in conjunction with albuminous nephritis, heart-diseases, amenorrhœa, and hæmorrhoids. In Desmarres, vol. iii., p. 774, is figured a case in which effusion of blood, with great impairment of vision, occurred from a sudden rush of blood to the head; absorption subsequently took place, and all morbid symptoms were removed.

Subretinal Dropsy and Serous Effusions on the Retina. A portion of the fundus we shall see covered by a floating mass, of a bluish white colour, with vessels upon it or mixed up with it: this will retain its size and appearance a long time. Together with this we may see white folds, appearing as if stretched out from the optic papilla. This mass, with the liquid in it, is seen to be in a constant state of fluctuation,

but rests more often at the lowest part of the fundus. Upon it are seen stretched the vivid red lines which are the retinal vessels; sometimes the mass, instead of floating freely, moving in all directions, and then, settling below, becomes fixed to a portion of the choroid. The neighbouring retinal surface having been raised into folds, these folds seem to be pasted together by the effusion. Sometimes bloody matter is mixed with the serous effusion. We may see so large a portion of the retina detached, that it presents the appearance of a funnel stretched from the ora serrata to the papilla. The most striking and characteristic appearance is the floating vessels in the posterior part of the eye. The symptoms are those of amaurosis.

Softening of the Retina. This affection has been described by Dr. Bader, in the *Ophthalmic Hospital Journal* for January, 1858. He gives some instances, such as—

1. In a case—W. F., aged 34—where there was little but perception of light, both optic papillæ too well defined, the surface of the papilla presented the appearance of blue-grey dots in a watery ground; and near its margin, on the fundus, were irrregular white patches, dotted with pigment; many brown pigment-islands in the field.

2. In another case—E. G., aged 55—in whom there was also only perception of light, the papilla well defined, a portion of it blue-grey, the inner portion presented a dirty white, finely dotted appearance; vessels normal, but unusually curved over a narrow ring, white, which forms its margin.

3. In another case—J. W., aged 57—vision of one

eye lost; with the other he can with difficulty manage to find his way about. Optic papilla too well defined, and its surface blue-white, dotted on a watery ground. On the side nearest the macula lutea is a bluish grey crescent. On the fundus there are many brownish pigment-islands. Appearances of the two eyes similar.

As the disease advances, Dr. Bader describes the grey-blue appearance more marked; the circulation becomes less; and the vessels seem more bent over the margin of the papilla. Arterial pulsation is often seen. We also often see pigment-islands—that is, the hexagonal pigment layers—instead of the uniform choroidal red. He remarks it is an extraordinary circumstance, that the retina, although in this as in many other affections, it is liable to become disintegrated, is still a transparent medium. This disease is one of the complications likely to result in acute glaucoma.

Detachment of the Retina. It has been above stated that, among other causes for this condition, may be enumerated subretinal serous effusions; and that it often presents the appearance of a funnel-shaped body, extending from the vicinity of the ora serrata to the optic papilla or other portion of the fundus. Mr. Hogg, at p. 72, relates a case of traumatic amaurosis, where, with signs of exudation, the retina was becoming detached round the papilla; and notices cases of Gräfe, in which the retina was affected by various exudations, and had become detached. At p. 128 he also relates a case of Sichel's, in which, with general œdema of the retina, there was a partial detachment of it. The papilla could not be distinguished. Fundus much congested. At p. 131 he also relates a case in which the most prominent symtom was hemiopia. In both regions of the macula lutea were dark spots and pigment accumulations; in the right eye was detached retina.

Crystals of Cholesterine have been found mixed up with exudations of various kinds, as a consequence of retinal disease.

Malignant Diseases of the Retina. In certain cases we find, in an early stage of the disease, a portion, if not all the fundus, covered by a brilliant coloured prominence, convex in shape, with blood-vessels which have become fixed to the surface, and do not fluctuate as in the partial detachment which arises from subretinal serous effusion. Sometimes, however, both conditions exist in combination. (Desmarres).

Abnormal Insertion of the Optic Papilla, without any special disease, is described; but further observation is required on this point.

Anæmia of the Papilla is observed in all cases of atrophy arising from chronic retinal disorders, also as a functional and temporary change in many cases in which there is no organic alteration of the retina, but where the retinal circulation has become interrupted. It is known by the papilla being unusually distinct from the rest of the fundus, the want of blood making it look white; and, besides, we see what vessels there are unusually small and colourless. It seems sometimes to be smaller and more convex than natural, and is often somewhat irregular at its edges; at other times, it seems to be flattened out, and larger than usual. Around it the circula-

tion sometimes has the appearance of being unusually active.

Hyperæmia of the Papilla—a state coexisting with many affections, acute orchronic, of the posterior tunics—is characterised, on the other hand, by a want of distinctness of the optic papilla; it becoming as highly coloured as the rest of the fundus, and often so very vascular that, even in cases where the entire fundus is hyperæmic, it cannot be distinguished, particularly at its margin, from the rest. The chief guide we have in that case is the course of the enlarged vessels. At the same time, we may find, particularly on compression, pulsation of the vessels which are enlarged, isochronous with the pulse at the wrist.

Aneurism of the Papilla has been spoken of by some writers.

Spontaneous Pulsation of the Vessels of the Papilla is a sign of severe disease. It is particularly noticeable as a sign in glaucoma, and is not always easily detected. We must observe carefully, to find the movement in the arteries; and this can generally be ascertained to be isochronous with the pulse.

Varicosities of the Vessels of the Papilla are often to be observed, in conjunction with various choroidal and retinal disorders. It is of consequence, as it is, of course, apt to lead to organic derangement; but some observers assert that considerable varicosities may exist without apparent derangement of vision.

Softening of the Papilla is a bad sign, and generally indicates approaching atrophy. The papilla looks unusually large and flattened out, with portions of it puffed; its colour a dirty yellow; borders very irregular; and there is often found, in combination, infiltration of the retina, exudations, etc.

Apoplexy of the Papilla, said to be confined to that part in some instances in which the disorder is not one of the most severe.

Atrophy of the Papilla is a sign of serious disease. It presents an unusually brilliant white appearance, the colour of mother-of-pearl, and is generally small and arched in the middle; the vessels sometimes small, at others rather dilated, and possibly varicose, seeming to disappear at the edges, and then reappear at another place. In cases in which the diminution of size is combined with unnatural prominence, and seems to arise from compression of the optic nerve at its entrance into the eye, the name of mushroom atrophy has been given. (See Desmarres, vol. iii, p. 515, fig. 66.) In other cases, we have a depression of the optic nerve at its entrance, or cupped atrophy (*A. en godet* of Desmarres), said to be due to retraction of the central fibres of the optic nerve. The essential disease, which must have given rise to this phenomenon, will have advanced to a considerable degree before it is observable.

Fibrinous Degeneration of the Papilla. Mr. Hogg, at p. 101, notices Gräfe's statement, that he has found a case in which the papilla appeared flattened out, with its vessels atrophied. On a *post mortem* examination, the papilla was found to consist of tendinous tissue, with here and there a few nerve-fibres interspersed.

The affections called *amaurosis* and *amblyopia* will be noted together. Although these are not accurate scientific terms, they do well enough, in the present

state of our knowledge, to indicate the physical symptoms and the derangement of vision attendant upon a well known condition, involving local and constitutional changes, the causes of which are, in the very large majority of cases, not ascertainable. It is only now that, since the introduction of examination by the ophthalmoscope, we are beginning to discover the local conditions upon which the derangements depend. In time, we shall be able to know something of the efficient and proximate causes of these conditions. We may even at present classify, in most instances, amaurosis as being organic or incurable, or only functional or curable; as being caused by disease of the brain or of the optic nerve, retina, or choroid, principally; and this we do chiefly by our observation of the state of the fundus, and of the condition of the optic papilla and its vicinity. If the disease, however, lie somewhere between the optic nerve and the brain, it will not be discoverable by the ophthalmoscope; and if we find changes in the optic nerve, we may not know whether this is the essential disease, or whether it may be only symptomatic of diseased brain. It may be observed, that where we find the papilla compressed and atrophied, we have one indication for concluding that the efficient cause of the disease is external to the globe. The great practical utility of this improved means of diagnosis is, that whereas formerly, in a very large number of cases of amaurosis, various heroic measures were resorted to in the way both of depletion and stimulation, where we find a state of organic amaurosis, or have seen strong reason to suspect that such a state exists, we shall

avoid any such heroic remedies. On the other hand, whereas in many cases of amaurosis, they were set down from the first as incurable, and treatment was considered absolutely useless, we shall now find a certain proportion in which we have every reason to conclude that the cause is of a functional or curable nature, and that appropriate treatment, sometimes of an active character, in the way of depletion or stimulation, will be likely to be attended with the best results.

Amaurosis in connexion with Albuminuria. We shall see portions of the retina, generally near the papilla, covered with small patches of a vivid red colour; and in these, again, small white spots, as in retinal apoplexies. These spots enlarge as the red patch diminishes, and seem to be due to absorption of pigment at the same time with that of effused blood; and concurrently we may have signs of œdema with infiltration of the papilla, white tracts in the course of the retinal vessels; and this may end in fatty transformation of the retina. Vision will become deteriorated according as the macula lutea becomes encroached upon, and will be gradually lost altogether. Desmarres figures a case in vol. iii, p. 520. Hogg, at p. 70, notices some observations of Quadri, who found, in some cases, the retina almost entirely detached, with œdema; in other cases, great hyperæmia, sanguineous effusion, fatty deposits, etc.

Amaurosis with Glycosuria or Diabetes Mellitus. Observers have found the fundus of a pale grey colour; turbid vitreous humour; patches, the result of old ecchymoses which have become absorbed; patches of accumulated pigment; maceration of pig-

ment. Cases are figured at pages 524 and 526, Desmarres, vol. iii.

Amaurosis with Syphilis. Two things are generally observable in eye diseases, where the constitution has become affected by a syphilitic taint. First, there are flocculi floating in the vitreous humour; secondly, a disorganised state of the retinal circulation. One or the other, or both these in combination with other morbid changes, were observed in the following cases :—In a case of Mr Poland's, May 31st, 1858 (see Bader, in *Ophthalmic Hospital Reports*, October, 1858), there was primary syphilis. The right eye was affected with frequent inflammation; the left suddenly failed lately; there was no pain or inflammation. The fundus in both was lighted up naturally. The retina was hazy; there were no flocculi in the vitreous body. The papilla was ill defined, surrounded by a yellow halo; its surface was grey, with a greyish white centre. The vessels were irregularly dilated; at certain parts of the fundus, in the left eye, chiefly at and near the macula lutea, were brilliant yellow white and brown patches. Dr. Bader remarks, that the brilliant cherry red œdematous appearance of the fundus, with well defined optic papillæ, are often met with in syphilitic persons, particularly if they have taken much mercury or quinine. Vision in this case was very bad. In a case of Mr. Wordsworth's, January 27th, 1857 (see Plates 4 and 5, *Ophthalmic Hospital Reports*, October, 1858)—inflammation had existed in both eyes—the right had recovered. In the left there was, during the intervals between the attacks, only perception of shadows. The general appearances were those of hereditary syphilis. In both, the papillæ were unusually distinct; they could be seen without the convex lens. The right one was normal, but was surrounded by a brilliant white patch, well defined by a line of pigment between it and the choroidal red: in the left, the same patches appeared; the vessels were tortuous. Further from the papilla were many small patches, some with a dot in the centre. The macula lutea was normal in both eyes. It is remarked, that the patches round the papilla in the left eye were not enough to account for the bad sight. It is probable that some change has taken place in the optic nerve; and it is unusual to see the larger choroidal vessels next to the white patches. In normal eyes, it is only uniformly red. There are no positive evidences of syphilis, but many indirect signs.

Cerebral Amaurosis. The ophthalmoscopical signs are by no means satisfactory.

Acute or Inflammatory Amaurosis. Mr. Hogg, at page 117, notices a case related by Ruete, in which the amaurosis was sudden; the papilla was hazy, and there was over the centre a black spot with a grey ring; there were retinal exudation, with anæmia of the optic-nerve vessels. And, at page 123, he gives a case of amaurosis complicated with inflammation of the posterior tunics, in which the papilla in the left eye was covered by a dark spot which extended as far as the macula lutea; there was also excessive vascularity of the choroid and retina.

Traumatic Amaurosis. Mr. Hogg, at page 117, relates a case of amaurosis from injury; there were

found besides lenticular opacity and some floating bodies in the vitreous, serous effusion on the retina, and beneath it irregular white patches.

Amaurosis with Congestion. Mr Hogg, at page 57, relates a case in which the patient had lost the faculty of seeing any but large letters, and a bright star seemed to be constantly floating before the eyes; there was no pain or inflammation. The principal appearances in both were great congestion of the retinal vessels; and the centre of the fundus, over the macula lutea, was covered by a small black spot.

Amaurosis with Effusion. Mr Hogg, at page 58, relates a case where, with symptoms somewhat like those of glaucoma, in the right eye, the papilla was surrounded by an irregular margin and dark lines of pigment; in the left, the portion of the fundus in which most vessels were conspicuous was covered by a grey film.

Amaurosis with Hemiopia. Mr Hogg, at page 39, notices a case in which this was the most prominent symptom. There was cupping of the papilla; a black patch over the fundus, partly covering the papilla; floating pigmental masses, etc. And, at page 40, he describes another case, in which the retina had become partly detached. At page 41, he quotes one from Anagnostakis, in which floating flocculi were observed in the vitreous humour; and a mass which sank to the bottom when the eye was at rest, which he suggests was the remains, probably, of an old hæmorrhagic clot.

Amaurosis with Anæmia. Mr. Hogg, at page 59, gives a case from Anagnostakis, in which an amaurotic state supervened upon attacks of dysentery. An examination showed much congestion of the retina, with many hæmorrhagic patches.

Amaurosis with Exudation. Mr. Hogg, at page 122, relates a case of amaurosis, partial or temporary, where he found the fundus covered in certain spots with irregular white patches. A pinkish cloud looked as if suspended before the papillæ, which were quite undefined at the margins.

Amaurosis Congenital. Mr. Hogg relates a case at page 141, in which, with congenital defect of sight, there were many signs of want of development of parts, a very pale fundus, and general want of pigment. The papilla looked unusually distinct and white. The vessels were very small.

Amaurosis with Nyctalopia. Mr. Hogg, at page 115, notices a case given by Anagnostakis, where, as a result of injury, nyctalopia came on. He found the vessels of the fundus much congested, and haziness of the tunics from effusion. Near the papillæ were three cretaceous scales, slightly raising the surface.

Myopia, Presbyopia, etc. The defective power of adjustment of the eye to distances, including the affection called asthenopia, may generally be distinguished from amaurosis by negative signs. If we find the fundus and papilla and media in a natural condition, we may conclude that the derangement of vision is caused by loss of this power. Myopia may generally be detected by the ophthalmoscope, by two signs principally: firstly, an unnatural distictness of the choroid, as well as the retinal circulation, which enables us to see the fundus, often even to trace the papilla, the macula lutea, etc., without the aid of the

convex lens; secondly, the myopic arch or crescent, which consists of a bluish white crescent, describing the half or more of a circle, concentric with the margin of the papilla, comprising, at the thickest, about two lines in breadth, often irregular at the margin, and surrounded by a black line or mark, showing accumulation of the pigment. The cause of this appearance in myopic subjects is at present involved in obscurity; but the appearance seems to answer in great measure to that described above, from Desmarres, under the head of "sclero-choroiditis." In both cases, there must be a change in the choroidal circulation, and in the distribution of the pigmental elements. The above may be the only ophthalmoscopical signs observable; but, in aggravated cases of myopia, we have others superadded. Dr. Bader, in *Ophthalmic Hospital Reports* for April, 1858, states, that he has known this crescent, as well as the myopia, disappear in a woman after her bearing a third child; and, in another case, observed it disappearing gradually, losing its crescentic shape, and normal and choroidal red appearing in its place. The fundus seems to become pale red before the spreading of the crescent. In some cases he states that great myopia is present without the crescent, and the only peculiarity is that we can see the fundus, etc., quite clearly without the convex lens, and sometimes we find cases of weak sight with patches similar to those above described, but without myopia, concave glasses giving no benefit.

Asthenopia is the disease, the essential nature of which is inability to keep the attention fixed long on letters, etc., with loss of adjusting power. We

commonly find no signs, but Mr Hogg, at page 110, relates a case where he found the fundus pale. The retinal vessels covered by a greyish red; the vessels few; anæmic retina, as shown by an unnaturally white papilla.

Glaucoma. There are three principal signs by which we diagnose this affection as regards the ophthalmoscopical characters. Firstly, the optic papilla is altered and cupped. Secondly, the vessels are altered in direction. Thirdly, there is spontaneous pulsation of the arteries. First, cupped papilla. There is a clearer distinction between the papilla and the rest of the fundus than usual; the outer border looks prominent, like a picture frame, and has a yellowish appearance, while the interior has a greenish hue. The choroid in the vicinity shows some maceration of pigment. The vessels at the border are seen to curve over and disappear, and to reappear in a position differing from what they would have if they had proceeded in a straight direction. This is best seen as regards the veins. Then the vessels are seen to have a pulsation isochronous with that of the heart. All, or any one of these signs may be present. As regards the pulsation, it is to be observed that spontaneous pulsation is observable in some other eye affections, of which amaurosis is the result; and even in the healthy eye of persons in whom general pulsation and muscular action are unusually strong. We can also often produce it by pressing upon the globe while we are observing with the ophthalmoscope. If we press the globe until we distinctly see the arteries pulsate, we shall find the patient's vision diminish from the circumference

inwards, until it ceases altogether. This fact may give us some measure of the amount of deterioration of vision following the changes which occur from pressure in glaucoma; but in some cases, where we find a great amount of compression exerted, the vision is not proportionately affected. Mr. Hogg, at page 59, notices a case of glaucoma in which the principal appearances were great congestion of the fundus, with œdema of the retina; the papilla was discoloured by pigment deposit. Also, he mentions other cases in which there were signs of bloody effusion, or simply hyperæmia of the retina. For information on the subject of glaucoma, the reader is referred to articles in the *Ophthalmic Hospital Reports*, by Critchett, Bader, etc.; in the *Medical Times and Gazette*, by Hulke; also reports of a paper on the subject read by Mr. Hulke before the Royal Medical and Chirurgical Society; etc., etc.

PARASITIC BODIES IN THE EYE.

By means of the ophthalmoscope, we are able occasionally to detect parasites, animal and vegetable; and these are by no means confined to the anterior parts of the globe. An interesting case is described and figured in Desmarres (vol iii, pp. 757-8 of cysticercus in the retina. There were signs of turbid vitreous humour—floating false membranes; the greater portion of the fundus, including the papilla, entirely hid; but, by making the patient look a little below and to the inside, there was discovered a cysticercus thus described. The neck is of a bluish white, evidently agitated at the slightest movement. Once M. Desmarres saw it become shorter, and the

head hide itself almost entirely in the body of the tumour. The body is of a brilliant yellow-white colour, seven or eight times the size of the optic papilla.

INJURIES OF THE EYE FROM FOREIGN BODIES.

Mr. White Cooper, in his recently published and beautifully illustrated work on *Wounds and Injuries of the Eye*, remarks, at p. 41, that the ophthalmoscope, in doubtful cases, may render us valuable assistance. If a chip of metal, for instance, has lodged in the vitreous humour, without traversing or wounding the lens or its capsule, it will readily be discovered by the ophthalmoscope, unless buried in such a position as not to admit of its being brought into view. If the lens has been wounded, it will become opaque, and of course prevents the use of this apparatus. And he gives extracts from the works of Jäger, illustrative of this subject; also, at p. 233, he gives instances of the value of this means of observation, in a case in which, after a wound from a cricket-ball on the globe, sight became extinct; and, on close examination, there were found a number of brownish flakes floating on the vitreous humour; and effusion, varying in parts from pink to a chocolate hue, pervaded the retina, covering the entrance of the optic nerve. A distinct dark clot of blood was discernible near the lower and outer portion of the retina. In another case, by means of this mode of examination, he was enabled to speak of the nature of an injury with confidence and precision, where, without it, he could only have hazarded an opinion of what was probable. The eye of a farmer having been struck by a missile,

sight was lost. Externally, nothing abnormal, but a dilated and motionless pupil, was seen. The ophthalmoscope showed the seat of a rent in the retina, as an opaque irregular line, nearly in the axis of vision; and there were many small spots around this, evidently the remains of the coagulum of blood (detected previously by Mr Dixon) which had not been entirely absorbed. "In our report we were enabled to state with confidence that, though Mr J. might retain a certain amount of sight in the injured organ, we were of opinion that it would never be restored to its former perfection."

Among many interesting examples Mr W. Cooper's book contains of the value of this instrument in the elucidation of injuries of the eyes and their effects, are the following:—At page 140 is related a case, in the practice of Gräfe, of a student in whom, after recovery from injury, the ophthalmoscope showed detachment of the retina in the lower half. The upper half was normal, and the lens and vitreous humour remained transparent. The patient only lost the sight in the upper half of the visual field. At p. 163, he gives an instance in his own practice, in which he was enabled to detect by this means the changes which had taken place in the posterior part of the eye, from an injury, causing retinal effusions, etc. He also relates a case at page 176, where he was enabled to trace double vision, after a blow, to an opaque line on the posterior surface of the capsule; the media otherwise transparent. At page 178 he gives an instance of a man rendered almost totally amaurotic in consequence of a blow near the eyebrow. In former days this would have been attributed simply to injury of the frontal nerve and its branches; but Mr. Cooper was enabled to detect partial detachment of the retina, bloody coagula, and other changes much more likely than any injury of tho external nerves to cause the amaurosis; in fact, such organic alterations as must be to a great extent incompatible with the due performance of the functions of the retina. At page 180, he gives a case of Mr. Bowman's, in which there were detected, after concussion of the brain, abnormal appearances of the retina and choroid, with numerous black spots both before and behind the retina; another case, under Dr. Williams, in which he found the "retina elevated by a turbid liquid, such as is often observed in pericarditis and other serous inflammations." At page 181, he gives a case, under the care of Dr. Van Dommellen, in which, after concussion of the brain, the ophthalmoscope showed the papilla replaced by a reddish disc; veins alternately raised and depressed; arteries very small and pale. At page 235, in a case in which, after a blow, the patient saw a dark cloud before his sight, Mr Cooper detected a greenish grey mass at the posterior part of the vitreous humour obscuring the retina. As the eye moved, this was jerked up, and then settled slowly down—evidently a coagulum of blood, intercepting the rays of light.

In concluding these notes, we may remark, that formerly it was one of the most rare things to have an opportunity of verifying by subsequent or *post mortem* examination, any morbid changes which had been supposed to have taken place in the eye, with the exception of cases of malignant tumours for which the globe had been extirpated. Now that it is the

practice of ophthalmic surgeons to remove the diseased globes more often than formerly, instead of leaving them in the orbit, to create irritation and endanger the existence of the sound eye; and that more pains are taken to form collections of the diseased globes which are removed,—the facilities of comparing diseased appearances with the revelations of the ophthalmoscope have become vastly increased, and thus a wide field is open for improvement of our knowledge of this branch of science, and particularly in the minute anatomy and pathology of the regions; and, as a result, for more decisive and more certain methods of practice.

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A few Additional Suggestions, with a view to the Improvement of Hospitals for the Sick and Wounded.

By Mr. John Roberton.

[Read March 31st, 1858.]

In a former Paper, on defects in the construction and ventilation of English Hospitals, read March 20th, 1856,* I endeavoured to shew that the insalubrity of a number of our Hospitals arises mainly from two causes — first, the difficulty, owing to faulty construction, of securing a free circulation through the wards, and a continual renewal therein, of the external atmosphere; and second, the intimate connection existing between the different wards in each storey by means of doors and passages, and between the different storeys by inside stairs — an arrangement which favours the rapid diffusion over the house of the foul air generated in any one of the wards, and consequently the creation of an Hospital atmosphere. I further attempted to shew that, by adopting a plan of construction such as may be seen in the beautiful Hospital at Bordeaux — the structure which has supplied a model for the best Hospitals in Paris and Brussels — all the difficulties hitherto experienced in English Hospitals, with reference both to the ventilation and to the proper isolation of every single ward, may easily be surmounted.

* Reprinted in the form of a Pamphlet (including the lithographed sketch of the ground plan of the Bordeaux Hospital) from the Transactions of the Manchester Statistical Society, May following, and forwarded to the medical officers of the London Hospitals; to the heads of the Army medical department; to the officers of the General Board of Health, &c.

Moreover, in the Paper referred to, I took occasion to state that, though so-called "scientific" modes of ventilation by fans, pumps, flues, pipes, and furnaces may answer in saloons and public offices, they fail when applied to an Hospital, for the purification of which, and the maintenance of whose purity, no description of ventilation ever has, or, I venture to think, ever will be found to answer, excepting *that* by means of properly contrived lateral windows, other kinds of openings facing each other in the walls, and open fire places.

As exception has been taken to my comments on what is called "scientific" ventilation,* I beg to observe that I have little to say regarding it, unless as applied to Hospitals; but I here repeat what I formerly stated, that so wide is the difference between the wants of a ward filled with the sick and wounded with respect to ventilation, and the wants of every other kind of apartment in which people in health congregate or lodge, that the means which are found sufficient to maintain the purity of the one fail in maintaining the purity of the other; and an architect who has not submitted to make himself familiar with the state of the atmosphere in, for example, the crowded wards of a badly constructed Hospital at those hours of the day and night when the admission or the exclusion of air is left to the nurse and patients, is ill qualified to form an opinion on ward ventilation. Until the architect will consent to give his organ of smell a few minutes' practical training, about six or seven o'clock in the morning, in a crowded surgical ward, he can never realize the importance of a truth, which can hardly be enunciated with too great emphasis—that not merely must a ward, if it is to be kept sweet, be ventilated in the ordinary sense of that term, but it must be so ventilated as to secure for it *the constant renewal of the contained air*—the displacement of the fœtid effluvia ever being emitted from the bodies of the sick

* See a letter in the *Builder*, No. 759, page 485. The editor of that valuable periodical, however, I am happy to observe, understands the *true* science of ventilation, and is rendering, from time to time, important service to humanity by his articles on the subject.

and wounded, and the substitution instead, of air, not drawn from cellars, corridors, and passages, but admitted direct from the store of the unpolluted heavens.

Moreover, it should not be forgotten, when the purification of an Hospital is under consideration, how liable "scientific" modes of ventilation are to disappoint, owing to derangements occurring in some of the valves, pipes, or other parts of the apparatus; insomuch that the most renowned inventions of this sort are ever being pronounced failures, and so given up. Nature's ventilation—the unceasing flow, parallel to the earth's surface, of the atmospheric tide—may be depended upon. Only let there be openings, facing one another, in the side walls of an apartment, and a through current of air never ceases: it flows on with the same certainty that may be predicated of the law of gravity itself. That man's ventilation is less worthy of dependence, the following instances may help to show:—

In 1853, I had occasion to visit, with a friend, one of our county jails. We entered a vast covered court, round which, in a succession of storeys, were galleries leading to the cells. After gazing about for a little I asked the governor to take me into a cell. He replied, "I may as well warn you that you will find the cells close and unpleasant." On entering one, I said, "This is indeed bad! have you no means of ventilation?" He answered, "Yes; we have a furnace at the top of the jail, and, in connection with it, tubes, the mouth of one of which is in every cell,—you see one here; but, somehow, it don't act well. When a cell becomes very close, I take a pane from the window and make a counter opening over the door, and then it is better." The Governor, it is plain, had small faith in the furnace at the top of the jail. One Christmas Eve, a few years ago, I had to see, professionally, a member of the House of Commons just come off his journey from London, who told me that he had been at a lengthy sitting the preceding night, and that the closeness of the House had very much exhausted him. I said, "Is the air, when you have a full House, and have sat long, disagreeable and close?" "The air close!" he replied;

"one may *taste* it." "Have you not the finest, most costly 'scientific' ventilation?" I asked. "Yes," he replied, sarcastically, "when the weather permits the windows to be opened, *then* we have *good* air."

It may here be proper to say a word on the cause and the prevention of draughts in a ward, for the subject is very little understood. Suppose, on a calm day, the tops of the windows facing each other in the side walls to be open, there will be no draughts, because the air, as it enters at one side, displaces at the same instant an equal volume of air on the other side, and that without sensible agitation of the atmosphere in the apartment; but, let the windows on one side be shut, and those opposite remain open, and immediately there are draughts. The through circulation having been interrupted, the external air, as it flows into the apartment, mingles with air of a higher temperature than itself, condenses it, and thus produces eddies and currents which are anything but agreeable to the feelings of persons exposed to them. A lady, a zealous Sunday School teacher, once complained to me of the oppressive state of the air in the school. On inquiry, I found that the ceiling was low, and that the room was crowded with scholars, but that there were windows on the opposite side walls. I recommended that a pane of glass should be taken from the top of each window, and replaced by a finely perforated zinc plate, which was done, and the change that followed was all that could be desired—teachers and scholars alike were delighted with the freshness of the air, and I was assured that there was no draught whatever. Soon afterwards I met a friend who had been at an evening meeting in the school room, and who informed me that the place was very draughty. I inquired if there were window blinds, and if these had been drawn on one or on both sides. He replied that there were window blinds only on the side towards the street, and that *they* were drawn. I explained to him that the draughts arose from their having lessened the communication with the external air on one side, and left it free on the other, and that if they would have blinds on both sides alike, or no

blinds at all, there would no longer be draughts. It is important, also, to know that the openings in the external walls should directly face each other; that these openings should be the same in dimensions; and, if filled with zinc plates, that the apertures in the plates should be alike in size. Without attention to these simple rules, through ventilation will be less agreeable to the sick than it might be.*

My estimation of the value of these views concerning natural ventilation was strengthened and confirmed in the course of a tour that I made last summer in Belgium and parts of Germany. In the Hospitals of Ghent, Antwerp, and Liege, which are all two centuries old or upwards, I found the wards in every instance ventilated by windows facing each other in the side walls; when the wards were more lofty than common I observed, sometimes, two rows of windows one over the other in the opposed side walls; and in no case did I see a ward traversed by a corridor or divided longitudinally by a partition, so that *through* ventilation might always be obtained by windows and apertures. Considering the antiquity of these Hospitals—that of Liege dates from 1602—I could not but feel pleased with their construction; as I was, too, for the most part, with the other arrangements for the benefit of the sick. Not that the wards were, in every instance, separated in such a manner as to prevent injurious inter-communication by passages and stairs;

* The first notable instance of through ventilation that I remember to have seen was a number of years ago, in the Kilkenny Workhouse. The house was pretty full, yet not so crowded as it had at one time been. I asked to look at the dormitories. On entering one—a men's—I saw a long, lofty apartment, of no great width, with a row of beds on either side, windows facing one another in the side walls, and not far from the ceiling between each opposed pair of windows a transverse opening in the wall, perhaps six inches in breadth, filled with a plate of finely perforated zinc. I was startled at this free, continual admission of the air immediately over rows of beds, and asked the Governor if the people who slept there did not take cold. "No;" he replied, "I never heard of their taking cold: but two or three years ago, when we had many more in than at present, they used to lie packed as thick as herrings, almost, and could not have lived without plenty of air." The new Irish workhouses are planned with much good sense and skill, and they well deserve a visit from the curious tourist. Our barrack architects, too, might find them worthy of a visit.

nor that the *latrines* were always well placed in relation to the wards, or well ventilated; nor that the cubic air space was always what it ought to be; but my meaning is, that, comparing these ancient Institutions with the Infirmaries in our own large towns, most of which have been erected within a century, I could not but be struck with the inferiority, in nearly every respect, of the latter.* On proceeding northwards through Germany I was soon made aware that, in leaving Belgium, I had made a descent from a high to a somewhat lower social condition; so far, at least, as we might judge by the intelligence displayed in the construction of Hospitals. In the new one at Cologne, built to accommodate 600 sick, I first saw that plan of construction, found in every Hospital I subsequently visited—in Hanover, Hamburgh, Berlin, Dresden, Leipsic, Frankfort, and Bonn, and which seems peculiar to Germany. The building is of two or three storeys, and, when large, it forms three sides of a square. The wards in each storey range within the outer wall, and behind the wards there is a corridor: it follows that a ward, bounded thus behind by the corridor wall, and, laterally, by partitions which separate it from the wards on either side, will derive its light and air mainly from the windows in the front or outer wall. True, in the wall of the corridor is a door, and sometimes over this door a window, but these contribute little to the ventilation; and, as a ward is always deeper, from front to back, than it is transversely, and as a through current cannot be obtained, good—that is, sufficient—ventilation is next to an impossibility. There is another evil in a number of the Hospitals, which I saw with surprise: in the side walls are doors that open into the ward on either hand, thus establishing a direct inter-communication among all the wards in a wing—

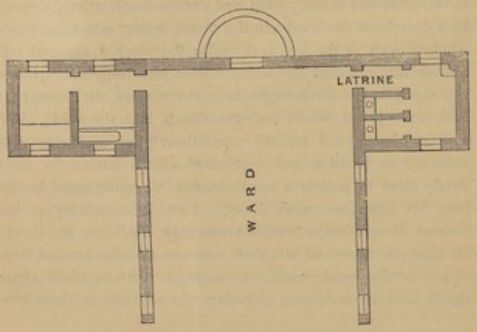
* Some of the wards in the Belgian Hospitals are too wide. One in the Hospital at Ghent was of great width, and contained, longitudinally arranged, six rows of beds; but then the windows in the opposite side walls were very lofty, and there was a vast arched roof, in form not unlike one of our railway sheds. The wards in the Bordeaux Hospital, with reference to width and height, and to the number, position, and size of the windows, supply, perhaps, our best model—certainly the best I have yet seen.

let only one ward be foul, and the other wards are sure to partake of the impurity. When a ward happened to contain little more than half the number of patients it was intended to lodge, one's sense of smell, possibly, received no shock; but, with the full number of patients, it was generally otherwise. Indeed, judged by this test, a visitor would be sure to complain of the state of the atmosphere;—a state of impurity, however, arising not alone from the obstruction, by the corridor, of through ventilation, but in part from other bad arrangements which I proceed to notice.

Nothing, perhaps, exhibits more strikingly the errors of Hospital architects than the bad position of the latrines, and the faulty methods devised for their ventilation. I was particularly struck with this some years ago, when looking through an Infirmary which had been only a short time opened. The wards in each storey were four—two on either side of a corridor—and at the gable end of every ward was a water-closet, entered directly by a door from the ward: in the closet, facing this door, was a window open at the top, and, under the window, the seat. It follows that when any offensive matter was dropped or poured into the pan, the air draught from the window, the instant the door was opened, would waft the effluvia into the ward! Had a prize been offered for the worst description of latrine with reference to position and ventilation—for a latrine the most surely fitted to pollute a ward—human ingenuity could hardly have hit upon one more faulty. Now, in a number of the German Hospitals the latrines are as objectionable as the above; for example, in several Hospitals one sees a latrine erected in a corner of the ward; while, in others, a common night chair stands between each pair of beds.* In addition to these two

* My friend Mr. R. Johnson, who lately paid a visit to the Hotel Dieu, Lyons, writes me that he found "night chairs, curtained off, one in each ward, and emptied once a day"—a most disgusting arrangement. Provided, however, that night chairs were fitted up as portable water-closets, and carefully seen to by the nurses, such night chairs might be a great convenience and benefit to the sick. Still, without attentive nursing, night chairs in wards must be an evil.

kinds of ward conveniences there is in general a large common latrine in each wing adjoining to and entered from the corridor, having a window facing the entrance, so that the cold air from the open window necessarily carries the effluvia from the latrine first into the corridor, and thence again by the doors into the wards. In none of the German Hospitals which I inspected were the latrines properly placed or well ventilated; in most they were decidedly bad: whereas in Belgium—to say nothing of the St. John's Hospital, Brussels, which is a model in certain respects for its latrines—I do not recollect one of the old Hospitals in which the latrines were placed within the wards;—in two instances they were in an adjoining garden, near to, yet sufficiently separated from the building to prevent any impurity finding its way into the wards.



SKETCH OF THE OUTER HALF OF A WARD IN THE ST. JOHN'S HOSPITAL, SHOWING HOW THE LATRINE IS VENTILATED.

In regard to *position*, the latrines ought to be joined with the ward so that the sick can pass into them without risk of taking cold, and so placed as to have no ventilating communication with the ward. Now the reader will see in the ward plan of the St. John's Hospital, that the latrine is entered from the ward by two doors, an inner and an outer, and that the latrine forms a separate building. With reference to purification, he will observe that the seats are against the outer wall of the ward, and that the position of the two latrine windows, supposing them open at the top, secures a through ventilation of the apartment, and that, too, (which is all important) in a direction at right angles with the passage from the ward, into the latrine. I do not see how it would be possible to improve upon this plan as respects position and ventilation. The apartment, I ought to say, is large and lofty, having windows the same in form and height as those in the ward.

I use the word "latrines" in the sense of *lieux privés*, without reference to the mode employed to carry off the soil. A considerable proportion of the latrines on the continent are not water closets. In the St. John's, I noticed a pump in the room, from which a certain number of buckets of water is drawn daily to pour into the pans. I omitted to ascertain if the pipes conducting from the pans are trapped, but, judging from the freshness of the apartment, such was probably the case. We are apt to forget, in this humid, temperate island, that our neighbours across the Channel have their rivers frozen when nothing of the kind occurs in England—that in winter the Scheldt, the Maese, and the Elbe are usually for many weeks bound in ice; and that it is this freezing cold which, to some extent, interferes with the general adoption of water-closets. Once, a friend from Toronto casually remarked to me, "I never saw a water-closet till I came on board the English steamer." "What!" was the reply, "have you no water-closets in Canada?" "No; our climate forbids." However, let the latrine be a water closet, or only a pan and pipe cleansed by the water bucket (and for an Hospital the self-acting water-closet is ever to be preferred)

the pipe, in either case alike, ought to be trapped, and strict attention given, from time to time, to ascertain that the drain is clear.

Capped tubes, penetrating the walls a few inches from the floor, are used in continental Hospitals for the occasional ventilation, or, more correctly, for the occasional flooding with air of a particular part of a ward. This contrivance I noticed for the first time in the Hôpital de Bavier, Liege. Every surgeon knows, when the dressing is removed from a burn, a wound, an ulcer, or an abscess, that, sometimes, the fœtor is intolerable; and the same will happen in certain states of disease, when the patient is on the bed pan. Now, it is in such circumstances, by uncovering the mouth of a tube four inches in diameter, communicating, near the floor, with the external atmosphere, that the locality is instantly flooded with fresh air, and that, too, at so low a level as not to incommode the patient; when a tube in the opposite wall is at the same moment uncovered, the flood of air is such as allows of both tubes being speedily closed.

I am opposed to the use of gas on account of the glare it causes, as well as of the risk of escape into the ward through defects in pipes or burners; but there can be no objection to a single gas jet in the nurses' room, for convenience sake. In Belgium and Germany I found no uniformity as regards the means of lighting; in a number of Hospitals oil lamps are alone used, in others gas; and in some, again, gas sparingly, along with oil lamps: I decidedly prefer lamps.

The material of which ward floors should be composed would be easily decided had we marble in such abundance as one sees in the Low Countries. In Holland, all the better class of shops are flagged with marble; and the lobbies, and even the steps of stairs in the houses of the opulent, are of beautiful polished marble. The first ward I entered in the St. Elizabeth Hospital, Antwerp, had a polished marble floor; but this did not extend to all the wards. At Cologne, too, some of the Hospital corridors were paved with marble. In the Hospital at Liege, the

floors were of oak, cleansed twice a day; and unquestionably, saving marble, the best material for the flooring of wards is oak, painted, waxed, or varnished, as in the great Hamburgh Hospital, and, I think, in several more of the Hospitals I visited; for it is easy to clean, and when moist can be speedily rubbed dry. The principle—which cannot be too strongly urged in reference to the floors, walls, and ceilings of Hospitals—is, that every kind of porous material ought to be avoided. If all the interior surfaces of an Hospital were of some material like glass, hard, smooth, and polished, so much the better for its sanitary condition.*

There is one important matter more cared for on the Continent than in this country—I refer to the means of recreation for the recovering sick and the convalescent; a pleasant out-look when the sick are not able to go abroad, as on the balcony at the outer end of the ward in the St. John's Hospital; and convalescent's rooms for meals; reading-rooms and libraries; terraces where they can walk, and take the air, and gardens in which, at certain seasons of the year, they may have the liberty to wander: nay, gardens into which the sick may be wheeled in their beds or couches,† and where, under the shade of trees, or under sheds erected for their special use, they can enjoy a sight of the heavens and breathe the external atmosphere. Who can think of this kind of enjoyment in a person so recently pining

* See, in the *Builder* of December 5th, 1857, page 799, a curious and interesting notice of "Water Glass," and its applications. This is a kind of cement having a powerful chemical attraction to mortar, brickwork, &c. drying quickly, being very durable, smooth, and hard, like glass. How far it may be found suitable for coating the walls of Hospitals, I do not venture to determine.

† My friend, Mr. P. H. Holland, late of the Board of Health, in a letter to me, remarks: "It is a great mistake to allow patients who can get up to spend the day in the sleeping wards. Nay, I much incline to have beds on wheels, so as, if possible, to empty the sleeping wards some part of every day, that all the windows might be thrown open."

on his mattress, it may be for weeks or months, without recalling the stanzas of Gray:—

> "See the wretch that long has toss'd
> On the thorny bed of pain,
> At length repair his vigour lost,
> And breathe, and walk again:
> The meanest floweret of the vale,
> The simplest note that swells the gale,
> The common sun, the air, the skies,
> To him are opening Paradise."

I shall not soon forget my feelings when, on leaving the great Charité Hospital, Berlin, I wandered on a warm, fine morning (September 4th, 1857) into its gardens behind, and came upon one of the patients, a sick man, on his bed, set under an apple tree, which spread over him its branches laden with fruit; nor, the pleasure I enjoyed a week previously, in walking through the gardens belonging to the Liege Hospital, whose Governors are amusingly provident for the recreation, but especially for the corporal wants, of the inmates. There you see courts adorned with trees in painted tubs, as at Versailles; fruit gardens, and an ample kitchen garden; six cows kept to furnish unadulterated milk; and poultry, I know not how many, for the supply of *fresh* eggs. But here in England we are too apt to forget these secondary yet most important means of restoring bodily health through the mind—of seconding medicine by what exhilarates and cheers the wasted and suffering. I formerly mentioned the flower gardens for the use of the sick, which separate each pair of pavilions in the Hospital at Bordeaux; and I here give a passage from the letter of a friend, written at Paris in 1855, describing the recreations provided for convalescents in the Hospital Lariboisiere:—"These several sweet Hospitals—[he refers to the separate pavilions of which the Lariboisiere consists] are built fifteen or twenty yards apart, and the space between them is a grass plot and garden, for the use of the patients when permitted to go out. The windows all looking into these

dens, they are a source of continual pleasure to the patients. e advantages of this construction are so obvious that I will weary you with naming them. The first floor in each block he same as the ground floor, except that, as I have already ed, those who may take out-door exercise have to walk upon corridor which looks upon the beautiful square with its den beneath. The upper storey is the same, the patients ing down for out-door exercise. I was delighted to find a ary and lecture-room for young convalescent patients. This s it should be. There is a similar room for adult patients; I remarked that in it rush-bottomed chairs took the place of forms and benches."*

The drains from an Hospital demand the utmost care and good management—in particular that they be constructed so as easily to *scour* when flushed; that the main drain do not pass under the building; that every pipe from water-closet, lavatory, bath, nurses' room, and kitchen, be trapped; and that these outfalls be inspected by some competent person at least twice a year. The mischiefs that may arise from a bad main drain I will illustrate by an example. Having occasion once to visit a jail in course of erection, on business with the master of the works, I observed, before entering, workmen busy constructing a main drain after the old fashion, that is to say, a culvert of common brick laid without cement, the bottom, of course, rough and uneven; and there being very little fall, no flushing, it was obvious, could scour it. I said to the master of the works, "If you are to have here six or seven hundred cells, and every cell its water-closet, will not this rude kind of drain lodge filth, and be continually sending back upon you its volumes of putrid effluvia?" He replied, "I have been saying the same thing, but the borough surveyor does not heed me. It was otherwise in the last jail I built, which had its main constructed thus: bricks cast to the proper curve, and set in cement, constituted

* From Mr. R. Johnson's letter, giving an account of the Lariboisiere, referred to in my former Paper.

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I shall not soon forget my feelings when, on leaving the great Charité Hospital, Berlin, I wandered on a warm, fine morning (September 4th, 1857) into its gardens behind, and came upon one of the patients, a sick man, on his bed, set under an apple tree, which spread over him its branches laden with fruit; nor, the pleasure I enjoyed a week previously, in walking through the gardens belonging to the Liege Hospital, whose Governors are amusingly provident for the recreation, but especially for the corporal wants, of the inmates. There you see courts adorned with trees in painted tubs, as at Versailles; fruit gardens, and an ample kitchen garden; six cows kept to furnish unadulterated milk; and poultry, I know not how many, for the supply of *fresh* eggs. But here in England we are too apt to forget these secondary yet most important means of restoring bodily health through the mind—of seconding medicine by what exhilarates and cheers the wasted and suffering. I formerly mentioned the flower gardens for the use of the sick, which separate each pair of pavilions in the Hospital at Bordeaux; and I here give a passage from the letter of a friend, written at Paris in 1855, describing the recreations provided for convalescents in the Hospital Lariboisiere:—"These several sweet Hospitals—[he refers to the separate pavilions of which the Lariboisiere consists] are built fifteen or twenty yards apart, and the space between them is a grass plot and garden, for the use of the patients when permitted to go out. The windows all looking into these

gardens, they are a source of continual pleasure to the patients. The advantages of this construction are so obvious that I will not weary you with naming them. The first floor in each block is the same as the ground floor, except that, as I have already stated, those who may take out-door exercise have to walk upon the corridor which looks upon the beautiful square with its garden beneath. The upper storey is the same, the patients coming down for out-door exercise. I was delighted to find a library and lecture-room for young convalescent patients. This is as it should be. There is a similar room for adult patients; and I remarked that in it rush-bottomed chairs took the place of forms and benches."*

The drains from an Hospital demand the utmost care and good management—in particular that they be constructed so as easily to *scour* when flushed; that the main drain do not pass under the building; that every pipe from water-closet, lavatory, bath, nurses' room, and kitchen, be trapped; and that these outfalls be inspected by some competent person at least twice a year. The mischiefs that may arise from a bad main drain I will illustrate by an example. Having occasion once to visit a jail in course of erection, on business with the master of the works, I observed, before entering, workmen busy constructing a main drain after the old fashion, that is to say, a culvert of common brick laid without cement, the bottom, of course, rough and uneven; and there being very little fall, no flushing, it was obvious, could scour it. I said to the master of the works, "If you are to have here six or seven hundred cells, and every cell its water-closet, will not this rude kind of drain lodge filth, and be continually sending back upon you its volumes of putrid effluvia?" He replied, "I have been saying the same thing, but the borough surveyor does not heed me. It was otherwise in the last jail I built, which had its main constructed thus: bricks cast to the proper curve, and set in cement, constituted

* From Mr. R. Johnson's letter, giving an account of the Lariboisiere, referred to in my former Paper.

the bottom of the drain; and so smooth was it that a moderate flow of water sufficed to keep it clear." Subsequently, I learned from an officer belonging to the jail that they had been inundated with fœtid gas; that, after trapping the outfalls from every cell and closet, the gas still found a way into the building; and that it was only on discovering that they had overlooked the outfalls from the baths, and trapping these, that the bad smell ceased. It ought never to be forgotten that a badly-constructed drain is always a reservoir of poisonous gases, and also that it is liable to become gradually obstructed, until at length it is no drain at all.

The water used in an Hospital ought, of course, to be pure and good;* but what I would here advert to is the custom, so general in England, of using lead cisterns for storing water, especially where, as in many of our towns, the supply is intermittent. Such cistern water is always tainted with lead; not in quantity, it may be, to produce the distinguishing symptoms of lead poisoning, but enough to affect very injuriously the stomach and nervous system of persons habitually using it. From experience I can affirm that, if boilers in an Hospital are fed from a leaden cistern, and if taps, connected with these boilers, are placed so as to be convenient for nurses and other servants to draw from, the patients, instead of the wholesome prescribed water, will be certain to get the tainted; the tap that is the readiest will be ever the tap used.

An unhealthy Hospital will unquestionably exhibit a high rate of mortality; nevertheless it is an error to suppose that the death-rate is in every instance a correct test in reference to the sanitary state of an Hospital, since a high ratio of deaths will sometimes proceed from causes independent of this circumstance. Thus, for example, in a town where people are much employed in machine shops and foundries, the Hospital *there* will be sure

* On this subject the reader is referred to Dr. Snow on "Cholera, and the Water Supply in the South Districts of London." *British Medical Journal*, October 17th, 1857, page 84.

to receive a larger proportion of severe casualties—of cases likely to swell the death-rate—than will happen in another town where few are occupied in connection with machinery.

The first thing to be regarded in an inquiry into the good or bad sanitary condition of an Hospital is, perhaps, the health of the resident officers and nurses. If the atmosphere in the wards and passages is foul, it may be expected that persons attending on the patients will not enjoy vigorous health; and the truth of this test is confirmed by general experience. I remember, one night, when wandering through the wards of an excessively foul Hospital, in which were scenes of suffering that words would fail to pourtray, being particularly struck with the sickly look of the nurses and medical pupils: nor did this surprise me, for I felt that had I been obliged to remain in the building for only a single night, I should myself have been on the list of sick, solely as a consequence of the state of the atmosphere.

A second, and far more decisive test, however, is the tendency in wounds, received by accident or made by the knife of the surgeon, to heal speedily or otherwise—to heal, or not to heal, as quickly as would happen were the same cases treated singly in a commodious private house. And if an Hospital do not afford advantages equal to the best private dwelling, it is assuredly, to use the mildest term, a failure—I might, perhaps, without impropriety, say—a snare and a curse. Yet in how few of our Hospitals is it that compound fractures, amputations, the excision of large tumors, and the like, do not linger far longer than they would were they treated at home. The test referred to has never yet, I imagine, been applied to the results of Hospital practice, else it would have brought into open day a mass of harrowing evidence as to the weeks and months of suffering needlessly inflicted on multitudes of the most valuable members of almost every industrial community in England, who have had cause to bewail the evil fortune that sent them into an Hospital; to say nothing of the waste of Hospital funds, owing to the enormous enhancement of expense in the treatment of every such lingering case; for it would be wrong to overlook

the fact that perhaps every social evil, not excepting the present, admits of being estimated at its money value.*

In the recent Report on the sanitary condition of the army, and the organization of Military Hospitals, to which I shall have occasion before concluding particularly to advert,† we have, in the evidence of one of the witnesses, the following facts, with regard to the present sanitary condition of Guy's Hospital:—Sir James Clark asks, "Do cases of erysipelas occur in the wards?" The witness replies: "Very frequently in the surgical wards; not in the medical wards."—Have you any cases of pyæmia?" "Yes; cases of pyæmia occur very frequently in the treatment of severe surgical operations, and render them very fatal." Now, had the surgeons of a large proportion of the Hospitals in Great Britain and Ireland the same questions to answer, and were equally free and candid as this witness, what disclosures should we not have! Let us hope that, as the deadly barrack dormitories have at length found a Howard in Mr. Sidney Herbert, our civil Hospitals will ere long engage the attention of some person of sufficient influence to obtain a commission of inquiry with reference to their condition—an inquiry which, if honestly and thoroughly pursued, would disclose a mass of cruel yet remediable evils such as must speedily result in the pulling down and re-construction, on a better model, of a number of buildings long used, in the twilight of sanitary knowledge, as Hospitals, but which are now found to frustrate alike the most skilful efforts of medical science, and the purposes of humanity.

I had intended to touch on the condition of Lying-in

* When remarks are made as to the unhealthiness of an Hospital, at some particular season, the reply usually is that erysipelas is epidemic—that it is found to attack wounds and sores under treatment in private dwellings; but, on inquiry, the dwellings referred to are generally found to be cellars, or the sleeping rooms in back-to-back cottages, where a good sanitary condition of the apartments, supposing surgical cases treated there, is impossible.

† Report of the Commissioners appointed to inquire into the Regulations affecting the Sanitary Condition of the Army, the Organization of Military Hospitals, and the Treatment of the Sick and Wounded, with Evidence and Appendix: printed 1858; folio.

Hospitals—a subject to which recent disclosures concerning their insalubrity have drawn public attention;* but I content myself with a single observation. That a maternity ward, for the reception of certain rare cases in which imminent danger to the woman is apprehended, is desirable, may be conceded; but under ordinary circumstances poor women, I am persuaded, ought to have their confinements at home, since it is well known that the rate of mortality in child-bed, amongst the poor, even in large towns, is extremely small—much less than it is amongst the wealthy classes. An eminent London accoucheur, writing to me in the summer of 1856 with reference to Lying-in Hospitals, declares them to be "a scourge rather than a blessing"—a sentence the justice of which I fear cannot be disputed. I would, therefore, I repeat, supersede Lying-in Hospitals by properly organized and well governed Charities for the delivery of poor women at their own homes.

I am gratified to notice in the Report of the commission before-mentioned—a volume in which is to be found the most valuable body of facts, as to the construction, ventilation, and economy of Hospitals, ever given to the public—that a number of the suggestions in my former Paper re-appear, more or less, in the evidence of several of the most eminent of the witnesses examined, especially in regard to the following points:—

1. *An Hospital atmosphere most effectually prevented by a building constructed in separate pavilions, and every ward occupying an entire storey:* concerning which Miss Nightingale expresses herself thus:—"The best principle of Hospital construction is that of separate pavilions placed side by side, or in line: the former is preferable. It diminishes the distance to traverse from block to block. The distance between the blocks should not be less than double the height. There should not be more than two flats to the block, nor more than one ward to each flat. For the purposes of administration, the building ought to be in a

* I refer to letters concerning the mortality in the General Lying-in Hospital, London, which lately appeared in the *Times*, and in some of the medical periodicals.

square, the ground storey connected all round by an arched corridor, with an open terrace above."*

2. *Natural ventilation the best.*—These are Miss Nightingale's views:—"The doors, windows, and fire-places should be the means of ventilation for such wards as these; nothing else is wanted. If an Hospital must be ventilated artificially it betrays a defect of original construction which no artificial ventilation can compensate; it is an expensive and inefficient means of doing that which can be done cheaply and efficiently by constructing your building so as to admit the open air around. There should be one or more open fire-places in the ward, but lofty, so that the throat of the chimney shall be above the patient's head and bed. Our grandfathers' lofty fire-places are the greatest loss in modern house architecture. The little low fire-places of this date bring the best current of air below the stratum in which we are breathing. With our system, to breathe the best air we must not be more than six years old, or we must lie down."†

3. *The number, position, and height of windows in a ward for the purposes of ventilation and light.*—On these points Miss Nightingale expresses herself as follows:—"One window should be allotted for every two beds; the window to be not less than

* Report, page 380. Much to the same effect is the reply of one of the Commissioners, T. Alexander, Esq. C.B. p. 158. Miss Nightingale's evidence, given in writing, in answer to written questions addressed to her by the Commissioners, and which occupies twenty-eight folio pages of the Report, will be read with profound attention. It well deserves to be printed by itself, and put into general circulation for the benefit of professional men, whether attached to the army or in civil life, but especially for the use of governors of Hospitals, and even for the instruction of architects. I confess I cannot help suspecting that the memorials presented to Lord Panmure in February and May, 1857, by the medical staff of the Middlesex Hospital, respecting the Royal Victoria Hospital at Netley; the debate subsequently on the same subject in the House of Commons; and the printing of the returns with reference to Netley Hospital, have greatly stimulated the Commissioners in the execution of their work, and rendered the report more interesting and instructive.

† Report, page 334. To the same purport essentially is Dr. Sutherland's evidence.—(See page 224.)

four feet eight inches wide, within two or three feet of the floor, so that the patient can see out, and up to the ceiling. Windows are to be placed opposite each other. * * * No part of the ward ought to be dark. This is of the utmost importance in many cases. The light can always be modified for individual patients; but even for such patients to have light in the ward is not the less important."*

4. *Artificial heating of wards injurious.*—In answer to a question as to what is the best system of warming for an Hospital, she replies:—"Radiation; open fire-places." So, too, says Sir J. Liddell:—"I do not think that the hot air ever does—patients cannot endure it, it is so heavy, close, and exhausting."†

A properly constructed, well ventilated Hospital having been provided, we are, in a sense, only at the beginning of our work. Without enlightened administration—in other words, without skilful, vigilant nursing, the sanitary condition of the Hospital will speedily deteriorate, and success in the medical treatment of the sick and wounded be, in a great measure, frustrated. We are yet behind our Continental neighbours in the department of sick nursing. In our Hospitals we devolve the duties properly belonging to the skilled nurse on women, with few exceptions, of the lowest class, and who, it need hardly be said, are uneducated and untrained; whilst, on the Continent, the sick in Hospitals are, and long have been, in the care of educated women who have been trained, and who devote themselves to the duty of nursing from a sense of religion. When in the Hospital at Bordeaux, I remember being struck with the beautiful order that everywhere met the eye. The kitchen, the larder, the vast linen-room, the drug store, the laboratory, the dispensing-room, all in the hands of the sisters, presented a spectacle of neatness and order such as we should in vain look for in any of our Hospitals that I have chanced to visit. I have spoken somewhat disparagingly, perhaps, of the Hospitals in Germany; but I am constrained to

* Pages 381, 382.

† Page 384. See also Dr. Mapleton's objections to warmed air in an Hospital, page 145.

say that I had glimpses—(my visits being so short I dare not call them more)—in several instances of an organization for sick nursing that might deserve our study and imitation. In the Bethanien Hospital at Berlin, I saw some of the Protestant deaconesses, who had more, perhaps, the look and bearing of ladies of station than of nurses. I said to the friend who conducted me, "Do these fine women work? will they put their hand to everything, like an ordinary nurse?" "Yes," he replied, "they wash, they clean, and perform every description of nurses' work." This information naturally made me curious to know more about the Bethanien Sisters, and I accordingly obtained from an eminent physician of that city, Dr. Otto Veit, the following brief account of them. "You must know," writes Dr. Veit, "that the system of nursing in the Bethanien is founded on a religious basis, and that the Sisters are more subject, perhaps, to the Superior, who is a lady of rank, and to the Pastor, than they are to the physician. They do not receive wages, but have their living; and when they become old or incapable of nursing, the House takes care of them. These deaconesses enter at first as probationers for one year, during which they are taught how to nurse the sick and wounded,—the practical part by the elder sisters, the theoretical by the physicians; and, at the same time, they have to perform house work in connection with the kitchen, the laundry, and the like. When, at the end of a year, they are found to be serviceable, they are entered as novices, which means that they have all the rights and duties of the deaconesses, saving that they have not yet a title to the support of the House in case of invalidity. The length of the novitiate is not strictly defined, as it depends upon the will of the Superior, or chief sister, but it is seldom longer than two years; and then the novice takes the rank of sister, or deaconess. The Sisters, I may observe, have the whole administration and service of the Hospital in their hands, and do without the assistance of servants; for they keep clean the sick, make the beds, clean the windows, the rooms, and the water-closets, administer the prescriptions, and,

in a word, do everything for the benefit of the sick, according to the directions of the physician. Every Sister is over one room, with from eight to twelve patients, and near it is her little bed chamber. The night guard is kept by three Sisters, who, for a specified time—usually one month—are excused from service in the day, during which they have their time for sleep. The sisters, I need hardly remark, are under no obligation to remain longer than they choose, and are at liberty to marry. Their number, including probationers and novices, is fifty; and the sick under their care usually number about two hundred and forty."*

On sick nursing, as practised abroad, I will give a brief extract from a letter of my friend Dr. Pincoffs,† Dresden, whose great experience in Hospital service, when civil physician in the East during the war, well qualifies him to speak on this subject. After an interesting sketch of the Protestant deaconesses' institutions in Germany, especially those of the celebrated Pastor Fliedner, of Kaiserswerth, which I regret my limited space will not permit me to present, he thus proceeds:—"In Fliedner's Institutions, the Sisters engage themselves from three to five years; they wear a peculiar costume. In the Institution in Dresden, as in others, they may leave at any time with a short

* In the Bordeaux Hospital, I was told, there were forty-seven Sisters, under a Superior, or head sister, and that the sick in the wards numbered about 550. The admissions annually are about 12,000.

† Dr. Pincoffs, in his work entitled "Experiences of a Civilian in the Eastern Military Hospitals," gives some interesting details concerning the Russian Nursing Sisters, numbering about 88, who, he tells us, were indefatigable in their attentions to the wounded, not alone in the Hospitals, in the ambulances, and in the transports, but also in places close to the batteries where the wounded lay, and where several of these Sisters were hit by the shot. "Their duties" he says, "were strictly defined, and divided into three classes: one class dressed the wounded, another prepared and administered the medicines, and the third attended to the domestic work." No publication on the medical history of the late war surpasses this of Dr. Pincoffs, in the variety and value of the information supplied. With reference to the French medical service, and the organisation of foreign medical schools and Hospitals, the matter given is, I believe, new to the English reader.

notice; they are at the head of the kitchen, laundry, and pharmaceutical departments; and for the latter they have a peculiar apprenticeship to serve. When a patient arrives they see him placed in bed, linen changed, &c.; they attend the *visite* with the doctor; are expected to give him information about the patients, the result of their own observation; to take his orders about food, and to see them executed. Before entering, they must give proof of possessing the necessary qualifications, as reading, writing, knowledge of biblical history, needlework, washing, &c.; and after admission they are taught the actual nursing. The establishment at Bethanien, Berlin, has nothing to do with Fliedner; the lady at the head is a Countess Stolberg, and the establishment is *chiefly* supported by the Royal Family."

It is an ascertained fact that, in all fully peopled countries professing the Christian faith, there are considerably more women than men above twenty years of age; and we may fairly assume that, as this is a law of nature, it is designed to answer beneficent ends in human society.* One of these ends, I doubt not, is sick nursing in Hospitals;—an occupation for which the female sex, when educated and trained, is found to be so well adapted. I fear that in England female philanthropy has not hitherto stepped forth and displayed itself so actively in this particular walk, as it has in some neighbouring countries; but a commencement, I am happy to know, has been made in the work, for several Institutions for the training of nurses exist in London, and are yielding, at the present time, good fruit. As events connected with the late war have given a powerful impulse in the direction referred to, let us hope that educated Englishwomen will, ere long—under a noble guide, whose name it is not even necessary for me to repeat—take a rank not inferior to that of the best of their sisters abroad, in the work of co-operating with medical science to render all our Hospitals—

* See "Thoughts on the Excess of Adult Females in Great Britain, with reference to its causes and consequences,"—a Paper read before this Society in 1840, and subsequently published in the Edinburgh Medical and Surgical Journal, vol. 54.

what I am afraid I dare not at present pronounce them to be—asylums for the *cure* of the sick and wounded.

By the courtesy of a Committee of gentlemen at Blackburn, formed for the purpose of erecting an Infirmary there, I am favoured with a sketch of the first floor of the projected building, and also with permission to have it lithographed for our Transactions. The site selected for the Infirmary is, I learn, more than eight acres in extent, well elevated, so as to have good natural drainage, situated on the windward or south-west side of the town, and distant from it about half a mile. The structure is to consist of separate blocks, two floors in height, placed alternately at intervals of twenty feet, on opposite sides of a lofty corridor ten feet wide, running the entire length of the range, and opening at either extremity to gardens. By this arrangement a series of quadrangles is obtained, each sixty-five feet wide, and having twenty feet of well lighted and well ventilated corridor space on either side of a block. The blocks, extending forty-seven feet at right angles to the corridor, contain on each floor a ward of eight beds, and a room to be described presently. The ward, entered from the corridor, is thirty-nine feet in length, twenty-three in breadth, and sixteen feet high, giving a cubic-air space for each bed of 1,794 feet. The windows are five on either side, and reach to near the ceiling; whilst between the top of the window and the ceiling is a finely-perforated zinc plate communicating with the external air. At each end of the ward there is a fire-place having an opening five feet in height. On either side the fire-place farthest from the corridor are the scullery and bath-room, and beyond these, at the extremity of the floor, is the latrine. This, entered by two doors, an outer and inner, is of the same height as the ward, has through ventilation flowing at right angles with the door, and water-closets that are self-acting. In the scullery is a discharging shaft, by means of which fouled linen, fouled bandages, and the like, are passed at once to the basement.

The beds, the architect informs me, are to be of iron, on wheels six inches in diameter, by which contrivance the beds can be moved, when necessary, into the corridor. The flooring of the ward will be of Norwegian pine, waxed and polished; and the walls and ceilings are to be finished with Parian cement. Across the corridor, opposite each ward, is a room twenty-three feet by fourteen feet. One of these rooms on the male, and one on the female side—with two beds in each, and having a cubic air space of 2,576 feet per bed—are appropriated for special cases, such as severe sickness or accidents happening to domestic servants, and casualties in which separation from the sick ward is judged advisable. The remaining two rooms on either side supply a dining-room for convalescents, and a reading-room. Besides the well-aired corridor—divided at the centre by a barrier to separate males from females—in which convalescents may walk, there are the balconies; and also, opening from the corridor on either side the chapel, terraces, each twenty feet by fourteen feet, furnished with seats.

In the centre is the principal block, 32 feet wide, in which, besides the chapel and terraces, may be discerned the nurses' kitchen and other nurses' rooms; the operating-room, and the wards after operations; the latter containing eight beds, with a cubic-air space per bed of 2,044 feet. The architect informs me that he provides no artificial warming for the wards besides fire-places with ample openings, and that for summer, when fires are disused, there is to be a gas jet opening above the chimney-piece within the flue, by means of which he will ensure, even in the hottest season, an up-draught, and so maintain the purity of the air in the ward. I might, with the assistance of the architect, give a description of what is to be found on the ground storey, and in the basement, as well as in the attics; but as this would lead me into a minuteness of detail foreign to my present object, I forbear to do so. The sketch, incomplete though it be as affording only a view of the arrangements on one of the floors, will, I have little doubt, be studied with interest, especially at the present time, when the state of

Military Hospitals is exciting so much discussion, and, of course, is arousing many to inquire as to what may be the sanitary condition of our civil Hospitals. It is, perhaps, necessary for me to say that the Committee do not contemplate carrying out the whole of the design at once; and that the sketch shews what the first floor of the Infirmary is to be when completed—an event which will, probably, happen in the course of a few years hence.

EXPLANATION OF THE ACCOMPANYING PLAN OF THE INTENDED HOSPITAL AT BLACKBURN.

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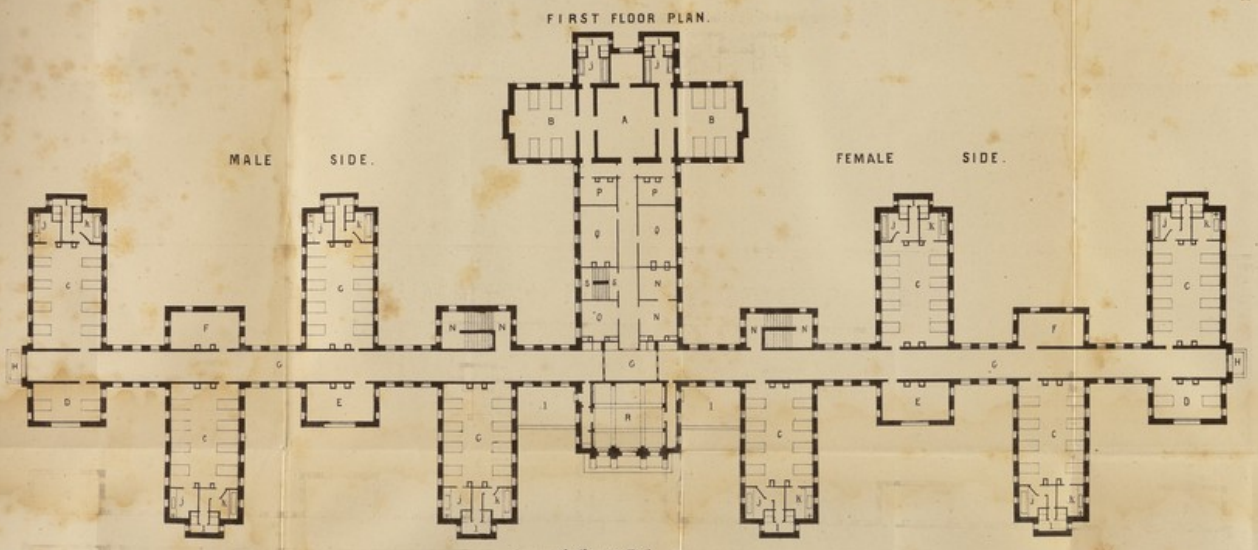
k. Bath Room.
l. Latrine.
+ Discharging Shaft in Scullery.
N. Nurses' Sitting and Bed Rooms.
O. Nurses' Kitchen.
P. Nurses' Rooms in connexion with Operation Wards.
Q. Nurses' Dormitories.
R. Chapel.
S. Staircase from basement to domestic Dormitories.

From:- Assistant Professor of Army Health

To:- MacLean
Calcutta.

Date:- Lt. Colonel

one of the floors, wi
interest, especially at



PROSPECTIVE PLAN OF INTENDED INFIRMARY BLACKBURN

Geo. Harrison Lith.

Jas. Turnbull Arch.t Manchester.

NUMERICAL ANALYSIS

OF THE

PATIENTS TREATED IN GUY'S HOSPITAL

FOR THE LAST SEVEN YEARS,

FROM

1854 TO 1861.

From the Journal of the Statistical Society of London, September, 1861.

Numerical Analysis *of the* Patients *treated in* Guy's Hospital *for the last Seven Years, from* 1854 *to* 1861. *By* John Charles Steele, M.D., *Superintendent of Guy's Hospital.*

[Read before the Statistical Society of London, 18th June, 1861.]

The accompanying series of Tables have been drawn up with the view of illustrating the annual amount of relief afforded to the community through the agency of a large Public Hospital, and are submitted to the Society in the hope that they may prove serviceable for purposes of reference and comparison with similar sources of information. Their scope embraces all the persons that have passed through Guy's Hospital for the last Seven Years, and the analysis of each year has been separately made from the records, of which they present a faithful abstract. In originating the registration, my desire was to combine a convenient register of the patients admitted and discharged, for the ordinary business purposes of the hospital, with some facts of more vital interest relating to the nature of Disease and results of Treatment, and so arranged, as to obtain with facility at the end of each annual period a general *resumè* of results. In order to accomplish this, it was found necessary to furnish each patient on admission with a card, containing his name, age, and date of admission, similar information having been already entered in the Hospital Register; and on the occasion of the patient's discharge, this bed card has been completed by the filling up of three remaining entries — representing the date of discharge, the result of residence, and the nature of the disease or diseases and injuries, as far as it is possible to obtain accurate knowledge. These details are subsequently re-entered on the dismission side of the register, on a line corresponding with the entries on the admission side; which, in addition to the facts furnished by the card, takes note also of the previous residence, employment, social condition, and other matters tending to identify the patient. In cases of Accident, the cause of accident is entered on a separate column; and where operative interference has been judged requisite, the nature of operation, and other details bearing on the history of the patient are registered in a separate record. After much experience of the vital statistics of hospitals, I cannot help regarding a system of registration organized in this way as perhaps the only one that will admit of uniformity, and although its meagre character may be objected to on medical grounds, it is sufficiently comprehensive for reference and comparison, while it sedulously avoids all matters that admit of colouring or fallacy. To attempt more would require much additional machinery, and is far better left to the many diligent cultivators of clinical details, who abound in every London hospital, and whose labours are weekly analyzed and reflected from the pages of our medical journals. The plan proposed by Miss Nightingale at the last meeting of the International Statistical Congress, was in most respects similar to the arrangement adopted in the accompanying tables, differing only in the manner of registration by substituting sheets for cards, and by a more rigid adherence to the nomenclature founded on the death register of the Registrar-General. The mode of registration is merely a matter of choice, and may be dealt with accordingly; but while fully admitting the desirability of adhering to one uniform system of nosology, I apprehend that in practice much difficulty will be experienced in attempting to systematize individual diseases; while every hospital establishment, especially if allied with a medical school, will be disposed to employ those terms of nomenclature which use and wont have made familiar to its rule.

Guy's Hospital, founded in 1722 for the reception of 400 patients, contained at the commencement of the septennium under consideration accommodation for 520 individuals. Since that time its benefits have been still further increased by the addition of nearly fifty beds, while its internal organization has undergone much alteration and change, mainly with the view of meeting modern requirements with respect to the successful treatment of the sick. To facilitate this, as well as to utilise the practice of the hospital for scholastic purposes, wards have been exclusively allotted for accidents, clinical, ophthalmic, uterine, and venereal affections, while the great bulk of the accommodation, amounting to 376 beds, is subdivided among what are ordinarily termed medical and surgical patients, in proportion to the relative claims for admission and the influence of disease on the sexes. One noticeable result of this classification, is the great similarity which obtains on a comparison of the returns of the practice of one year with another, an analogy rendered more obvious, by the fact that no limits are assigned to admission, save those necessary to meet the ordinary requirements of the hospital. The presence or absence of epidemic disease in the metropolis does not materially influence the induction, as contagious diseases are inadmissible, and the epidemics of childhood are, for the most part, treated at home. The first year of the septennium, however, presents features which renders it an exception to the rule laid down. On referring to the table, it will be seen that the deaths in 1854 exceeded by 25 per cent. the same results in the six subsequent years; a fact that is to be explained by the prevalence of cholera during the period, and the unusual facilities which the patients had, for a time at least, of obtaining admission. In other

respects the diseases and mortality of one year are but a reflex of another, and the combined results indicated in the tables may be accepted as having occurred in pretty equal proportions annually during the entire period under consideration.

The first Table of the series gives a collective return of the Total number of patients who have passed through the hospital from 1854 to 1860 inclusive, indicating also the results attending their residence, while the second takes note of the same numbers subdivided among the respective years, and includes also an enumeration of the class registered as out-patients. In estimating the amount of relief afforded, the division adopted into cured, relieved, unrelieved, and died, will be found, on experience, best adapted for questions of this nature, as it distinguishes a tangible result in every case. It is the plan now usually employed by hospital statists, and for the sake of uniformity it is desirable that it should be universally adhered to. It is no less desirable, however, that the exact meaning of the terms employed and the latitude which each embraces, should be fully understood, as fallacious inferences are not inapt to be drawn from a misinterpretation of the terms. The two first divisions, "well" and "relieved," represent two great measures of relief—the maximum and minimum, the relative proportions being 66 per cent. of the former to 25 per cent. of the latter. With reference to the class designated "cured" or "well," it is well known to those accustomed to hospital practice, that the meaning intended to be conveyed is not an absolute and permanent recovery from disease in all cases, but that it includes a very large number of cases where a restoration to temporary health is the utmost that can be expected. In fevers and in the greater number of surgical diseases, especially external injuries and patients subjected to operative interference, no doubt can exist as to the credibility of the return; while in a large mass of cases represented by the return "well," the amount of relief afforded must be accepted within circumscribed limits. The same remark is equally applicable to the division "relieved," which embraces 25 per cent. of the entire cases. Under this latter heading are included a large, perhaps the greater portion of the patients whose classification might, with equal propriety, have been inserted in the category of incurable cases, were it not the fact that they had received benefit from their temporary residence, and were discharged much better in health than they were at the date of their admission. The heading indicated by "unrelieved," is shown to average 8 per cent. of the total numbers discharged, and is interesting in consequence of its affording illustration of a fact that is often called in question, namely, that a considerable portion of cases deemed incurable are annually admitted to the benefits of the hospital. This average would of course be much increased in amount by the addition of the many cases of hopeless

disease that have died in the hospital; and it will be obvious, on reflection that in proportion to the facilities for admission given to patients at large, more than to any sanitary defects in hospital organization, are we to attribute the large mortality which obtains in the more liberally conducted hospitals, when compared with others where it is customary to reject persons suffering from chronic disease. Another circumstance not to be lost sight of in estimating comparative mortality, is the length of residence of the patients. It will be noticed, on referring to the table, that the average stay of each person has varied in respective years from thirty-two to thirty-five days; and on examination of details, it will be discovered that, in proportion to the length of residence, the chances of recovery become smaller. This fact is more marked in cases of chest disease than in any other class of affections, and as the class in question far outstrips in fatal results any of the others mentioned, the influence of the prolonged residence will become still more apparent.

The third and fourth Tables represent the annual changes that have occurred in the two great departments of the hospital, medical and surgical, distinguishing the sexes and noting the relative mortality. It will be observed that the results of treatment are in each department more favourable in the case of females than males, in consequence of the less liability of the former to attacks of acute disease. The great disproportion in the mortality between the two subdivisions is not less significant, for while in the surgical wards it averages less than 6 per cent., in the medical department it is rarely less than 14 per cent. of the numbers treated.

In Table V an attempt has been made to solve the question whether death occurs more frequently at one period of the day than another. An idea prevails extensively that some law of periodicity influences the period of dissolution, and favours the supposition that the death-struggle terminates an hour or two after midnight; but the data recorded do not support this assumption. They rather lead to the inference that the death term is pretty equally distributed over the whole diurnal period, although it is interesting to note the fact that the hours of midnight and noon are less marked with fatal results than the others, the proportion of deaths during these two hours not amounting to more than 115, or the 21·3 part of the entire cases.

Table VI comprises, under fifteen distinct headings, the various forms of disease treated in the hospital during the period named, along with the estimated results in each class. The plan adopted will be considered defective by many, in consequence of its collective character precluding the possibility of comparison with such tables as those of the Registrar-General; but, on the other hand, it is to a great extent free from errors of diagnosis and the fallacies which are

so apt to arise in an individual disease list, from the association and complication of diseases in the same person. On reviewing the different classes in the table, it may be noticed that diseases of the *organs of respiration* occupy, as might be anticipated, the most unfavourable position as respects mortality, the deaths amounting to more than one-fourth part of the total number affected with diseases of this class, and to no less than 27 per cent. of the total deaths from all cases. Consumption, in its numerous varieties and complications, numbers 537 of the 813 deaths, or 18 per cent. of the total mortality. This item in our accounts, after all that has been said about unhealthy site and overcrowding, is in reality the cause of the chief discrepancy in results when we compare the mortality of one hospital with another, for in proportion to the cases of consumption received, to the exclusion of diseases of a less grave character, so must the mortality of all hospitals be influenced. It would be as unfair, for instance, to compare the total results of treatment of such hospitals as Guy's or Bartholomew's with similar annual results of the practice of the London Hospital, where the accommodation is almost exclusively of a surgical character, as it would be to draw a similar comparison with the periodic reports of such establishments as that for consumptive cases at Brompton or the hospital for incurables. In the report of the Statistical Society on Hospital Statistics, it was ascertained that the deaths from consumption alone in the practice of the London hospitals amounted to rather more than 16 per cent. of the total mortality. It has already been noticed that the number of deaths from this cause at Guy's, has averaged 18 per cent.; and it would not be difficult to show that a similar large estimate of mortality has attended the course of other affections usually regarded as incurable. But independent of the mortality register, there is abundant evidence in these tables to show that so-called incurables partake largely of the benefits afforded by a general hospital, and that no form of physical suffering is excluded from the wards. The large class of sufferers, classified *as unrelieved* or worse on their dismission, bears witness to this assertion, and testifies to the occurrence of a period when hospital treatment exhausts itself, indicating, at the same time, the want of an asylum suitable for their reception. It is frivolous to believe that the small modicum of accommodation supplied by one or two establishments, instituted with the avowed object of meeting this want, can relieve more than an inappreciable number. The natural consequence is, that a majority of these cases find a final refuge in the workhouse, while the remainder continue a burden on their friends or relations, who, in many instances that have come under our notice, have exerted themselves in their behalf at the expense of other, and sometimes more urgent, claims on their resources. The most feasible

attempts that have yet been made towards diminishing the evil, consist in the efforts of a benevolent society, recently instituted, for the object of introducing into the incurable wards of workhouses, many of those home comforts and conveniences that are found in general hospitals, and in other ways of promoting the comforts of the inmates. If in addition to those laudable efforts this society could prevail on the Poor Law Board to double the amount of its present minimum cubic space for each hopeless case of disease, it would confer an incalculable boon on the sufferers, and render the success of its own mission more hopeful and assuring.

Next in mortality to diseases of the respiratory organs, and still more significant of future fatal results, as shown by the larger percentage of cases unrelieved, are diseases of the *heart and blood-vessels, and dropsies*. From the former have been excluded numerous instances of cardiac disease, associated with affections of the respiratory organs, as well as rheumatism; while the latter heading, perhaps more open to objection in a strictly pathological sense than any other in the series, has been arranged solely to meet a want arising from the complicated nature of those affections, and can only be accepted as exhibiting an approximation to the number in which the dropsy formed the most distressing symptom.

Diseases of the *organs of digestion* number 2,222 of the cases analysed, and were followed with 431 deaths. In this number are included the cases of cholera already referred to, and which were attended with 65 deaths, as well as all the cases of hernia, which contributed 71 deaths to the total mortality. If these two diseases are excluded from the list, the fatal consequences will not appear so formidable, the percentage mortality being thus reduced to 16.

The numbers entered in the class of *venereal diseases* show a maximum of numbers and a minimum of mortality when compared with the others. Two wards, male and female, in the upper floor of the hospital have been set apart for their reception, the former accommodating twenty-four and the latter thirty beds, and generally speaking there is little difficulty experienced in keeping both fully occupied. On the female side, cases are continually applying for readmission, so that the table, of necessity, includes a considerable number who have passed through the hospital more than once, but who are there represented as separate individuals. On the male side the reverse is the rule, for readmissions in this department are less frequent than in any other portion of the hospital.

The four sections of the disease table, from the eighth to the eleventh inclusive, represent nearly 10,000 *surgical cases* properly so-called, and include in the category all injuries and diseases arising from external violence, the result of accident or intention. The two classes embracing diseases and injuries of bones and joints are

remarkable for the small fatality attendant on their sojourn in hospital; but it is proper to notice, that in addition to ordinary diseased joints, the ninth section comprises all the cases of rheumatism that have occurred in the hospital during the period mentioned. These usually average from 190 to 200 cases annually, and as the mortality pertaining to them is almost *nil*, certainly not more than 1 per cent., it would be nearer the mark to fix the rate of death among the purely surgical affections at 6 instead of 3·3 per cent. The greatly increased mean residence of persons suffering from diseased joints, is a feature in connection with the class worthy of note; and as is the case with other groups of disease characterized by long stay in hospitals, the amount of benefit conferred becomes reversed in proportion as the columns headed "relieved" and "unrelieved" abundantly testify. In this respect, scrofula, which is the primary source of these affections, bears a similar relation in surgical ward practice to that held by consumption in the medical wards, and is even more chronic in its career, although at the same time it is not usually attended with fatal results.

Under the class, *fevers*, are enumerated besides the ordinary continued fevers, the various exanthems, as well as cases of ague and also the milder forms of febrile disease, the whole combining to reduce the total mortality from these affections to 8 per cent. Excluding the latter from the calculation, the mortality in the severer forms of fever usually known as typhus and typhoid, is increased to 12½ per cent., or about 1 in 8 of those attacked, a death-rate that will be found to mark a fair average of results in all establishments where proper hygienic precautions are used to promote a successful issue. With this view it has been customary to place patients suffering from fever in those positions most likely to be favoured with a constant renewal of the atmosphere, and in as isolated places as possible, consistent with the general requirements of a medical ward. Notwithstanding the proximity of these cases to the general patients, little harm has been found to ensue from the practice, although at the same time precautions are taken to restrict as much as possible the admissions of persons suffering from febrile diseases to the same apartment. In the event of the disease proving epidemic in the locality, such an arrangement could not be carried out with impunity, as it is a fact fully established by observation, that the concentration of the poison appears to develop its inherent contagious influence.

The last or fifteenth section of the disease table, comprises a motley group of affections, the most prominent of which are intemperance, destitution, gangrene, uncertain or unascertained diseases, malingering, and patients admitted without any disease. It is obvious that these will form a considerable proportion of the patients

admitted annually to all hospitals, and that no system of classification can be arranged to place them in a scientific nomenclature. The utmost that can be done is to reduce the section to the smallest possible limits consistent with truth by distributing diseases of uncertain seat—such as rheumatism and scrofula, under some other subdivision allied to them through a prominent system. With this object, the former complaint has been placed under diseased joints, while the latter, with more justice perhaps has been chiefly distributed over the eighth, ninth, and eleventh sections according to the prominent manner in which it manifested itself. Notwithstanding the curtailment, the total cases amount to 876 of the entire number classified in the table.

Table VII, representing the *ages of the patients*, possesses some features worthy of notice. It will be observed that a considerable proportion of cases entered are children, of which 1,135 are under 5 years, and 2,703 are under 10 years. These patients are usually distributed among female adults, and have cots assigned them in the relative proportion of about one cot to every five beds. It is understood that this arrangement answers better than one adopted in former years of having separate wards allotted for the purpose, as by the present plan the little sufferers are, as a rule, better looked after and from their diminished number they can be more readily quieted. They are admitted with all forms of disease, with the exception of those contagious maladies which debar them even from the benefit of institutions set apart for the exclusive reception of children, and which a wise experience has demonstrated are much better treated at home. The mortality at different ages is well illustrated by the table. Under 5 years we have the uniformly large proportion of deaths associated with the most critical period of life; the major portion of the deaths, however, are not those that we find swelling the death-roll of the Registrar-General at this early age, but are chiefly attributable to external injuries from burns, while a smaller proportion are assigned to croup and tracheotomy. The class in the table, including these injuries, presents by far the largest proportion of deaths under 5 years, the numbers quadrupling at the same age those entered under the section of respiratory diseases, usually the most prolific cause of the casualties of childhood. From 5 to 10 years the deaths diminish from 16 to 6½ per cent., and are still mainly attributable to burns and scalds. After this, the mortality diminishes, the quinquennium between 10 and 15, presenting a death-rate of only 4½ per cent.—the smallest in the series. It now increases gradually, and in pretty equal proportion through each quinquennial period till it reaches 80 years, the decennium preceding this term being marked with a death-rate of 18½ per cent. After 80 the debt due to nature is repaid with compound interest,

the mortality being 33 per cent., or twelve out of the total number of thirty-six patients who were admitted to the hospital over 80 years of age. The intervening years, betwixt 15 and 30, will be observed to furnish by far the largest proportion of patients to this, as they do to all hospitals for the sick, not less than 14,000 of the total number being entered under the above ages.

One of the columns of the hospital register distinguishes the *countries* in which patients have been born, and an analysis of this column has been made in Table VIII appended to the series. Foreigners are usually afforded every facility of admission to the endowed hospitals, and the data in the table prove that they are in the habit of fully availing themselves of the privilege.

Another column, exemplified by Table IX, refers to the localities in town or country, from which patients are brought. A partial analysis only of this table has been made, comprising 5,000 of the patients, chiefly under treatment during the year 1859, 3,000 of which were admitted into the surgical division, and 2,000 into the medical wards. Though limited to one year, the numbers are sufficiently comprehensive to indicate, under a general estimate, the proportion of inmates furnished by town and country. The subdivision under three headings represents the patients admitted from the districts situated within and without the parliamentary boundaries of the metropolis, the terms Middlesex and Surrey being used to indicate those districts on each bank of the river within the boundary. It is not unusual to hear stated as a matter of regret that two of the largest metropolitan hospitals should have been placed in such close proximity to each other as Guy's and St. Thomas's; and there can be no doubt, locally speaking, that it would be a great convenience to the sick poor of the densely populated localities south of the river, if they were placed further apart; at the same time it must be borne in mind that no difficulty is experienced in filling the wards of each hospital, nor are they limited to the districts of the boroughs of Southwark and Lambeth, for their supply of inmates. It will be noticed that more than one-fourth part of the number who have received benefit from the Charity, is furnished by the districts lying north of the river, chiefly St. George's in the East and Whitechapel, localities that are generally supposed to be succoured by the London hospital. There is another fact brought to light by the table that ought not to be lost sight of. In calculating the respective numbers, a marked disproportion is observed to exist between the medical and surgical patients received from the Middlesex side, when compared with the analogous admissions from our own localities, a circumstance that can only be explained by the want of accommodation for medical patients in the north-eastern districts of the metropolis. These facts are fully borne

out by the experience of St. Thomas's Hospital, which in other matters closely resembles the data afforded by these tables. Of patients received from the country, by far the larger number arrive from the three neighbouring counties, south of the River Thames, and as a rule preference for a particular hospital is to be judged of, from its convenient position more than to any supposed superiority in its interior administration. Notwithstanding this, a certain proportion of cases are annually received from the provinces, from localities already furnished with asylums for the sick poor, and not a few show a partiality for this, as they do for other hospitals, in consequence of recommendations made by medical gentlemen formerly associated as pupils with the hospital.

Table X presents us with a summary of the more important *surgical operations* performed during the period in question, and gives a fair estimate of the palpable benefit arising from this interesting and important field of observation. There is perhaps no department of hospital statistics that has been more diligently cultivated by individual inquirers than that of operative inteference in surgical disease, and there are none so liable to be trammelled with the influence of personal bias in favour of, or in condemnation of, particular operations. This evil, chiefly attributable to the miscellaneous nature of the information from which a deduction is made, is perhaps less felt in the field of hospital experience than in any other, for here it is not difficult to discover and to make due allowance for those unities of time and place which possess such a vital influence on the results of practice. On this account also, the experience of one hospital, when the returns are sufficiently comprehensive, is more to be relied on than that obtained in mass from several similar sources, where in all probability the data have been collected under widely different circumstances. It is absolutely essential in judging of results that antecedent distinctions should be carefully made, and at the outset of all inquiries similar to those we are at present engaged in, there arises no greater fallacy than that which springs from a desire to incorporate large numbers, with the view of arriving at foregone conclusions. In the table of operations are arrayed in the category of simple operations as well as under more complex headings, a large proportion of individuals, whose physical condition is by no means adequately expressed by the classification adopted nor indeed is it possible under any classification to take note of the numerous casualties which complicate operative success in particular hospitals. It is well known to all conversant with our public institutions, that prior to a patient's seeking an asylum there, especially if he is labouring under any unusual form of surgical disease, he has generally had the advice of the regular, and not unfrequently has submitted to the treatment of the spurious practitioner. The conse-

quence of this state of things, by no means improves the ultimate results, and if we deduct, as we are in fact necessitated to do, no inconsiderable proportion of cases whose favourable character for operation has already induced the medical practitioner to interfere on their behalf, our means of judging of average success and fatality become still more doubtful and unsatisfactory. The important question with reference to amputation is one that has frequently been attempted to be solved by the statistical method, but however, useful and instructive a collection of data from authentic sources bearing on the subject may be, it is far from probable that it would influence the surgeon in his attempts to save life or limb. An inherent persuasion acquiring strength from personal experience and observation, and untrammelled with dogmas, unless of an individual kind, is doubtless the incitement to action in the majority of instances in question. The natural tendency of the mind to become conservative is also nowhere better shown than in the field of operative surgery, and without venturing on an assumption that would appear arrogant we cannot withold an impression that in proportion to the experience obtained, the repugnance to amputation renders itself more manifest, and thus the results of operation are in consequence more fatal, and to appearance unsatisfactory. It is from the class of patients registered as secondary amputations from injury, that we have to ascribe an unusually high rate of mortality in hospital practice, and at the same time we are bound to draw an inference from this source, that the laudable attempts to save limbs have not been unattended with success, notwithstanding the fact that their existence is ignored in the operation list and consequently they cannot appear to the credit of the surgeon. These remarks are not made in any apologetic tone, but are simply intended as facts to guide us in forming an estimate of the results contained in the tables, and without which it is impossible to arrive at any correct conclusions. In the list of operations submitted, there are no fewer than 383 cases wherein amputation has been performed. These numbers include, however, many minor operations, and to facilitate reference the following reduced classification of what are usually called capital operations, will be found better suited than that employed in the larger table.

The proportion of males to females who underwent amputation is in the ratio of 4 to 1, and the deaths will be noticed in the extended list to be somewhat greater in the former than in the latter; the numbers, however, are not sufficiently comprehensive to draw conclusions from. The next section in the table refers to the excision of tumours, of which operation there are no fewer than 446 instances registered, by much the largest subdivision in the operation list. The pathological characters of the tumours, as far as they could be determined, as well as the sexes of the patients, are entered on the

table. It is noticeable that the female sex suffers in a much greater degree than the male from this class of disease, the proportion being rather more than two of the former to one of the latter, and that

Amputation of	Total.	Primary.			Secondary.			For Diseases.		
		Cured.	Died.	Mortality pr. Cnt	Cured.	Died.	Mortality pr. Cnt	Cured.	Died.	Mortality pr. Cnt.
Thigh	106	6	11	64·7	2	8	80	66	13	16·4
Leg and foot	58	8	9	52·9	3	6	66·6	25	7	21·8
Shoulder and arm	28	10	9	47·3	4	2	33·3	3	—	—
Forearm and hand	32	14	1	6·6	3	—	—	13	1	7·1
	224	38	30	44·1	12	16	57·1	107	21	16·4

tumours of the female breast average nearly 33 per cent. of the total cases. Of mammary tumours by far the largest number are classified as cases of cancerous disease, the proportion being about 2½ to 1 of a miscellaneous character; but it is proper to notice that many of the cases entered on the list have been the repeated subjects of operation, although only registered afresh after being discharged and readmitted to the wards. The next section in the table comprises excisions of diseased bones, a most fertile source of surgical interference in all hospitals. Under this head have been analysed 265 cases, of which 57 are referable to the bones of the the upper, and 161 to those of the lower extremity. The numbers indicate a class of operations in which perhaps the minimum amount of amelioration is obtained in proportion to the length of residence of the patients, those marked unrelieved, being for the most part subjected to subsequent amputation of the diseased limb, and they consequently reappear in the previous part of the table. Males outnumbered females in the proportions of 201 to 64, and the mortality as usual was also greater in the former than in the latter.

The section indicated by the heading of *reparatory operations* represents a most interesting class of cases where attempts have been made to remedy natural and accidental deformities, through the plastic influence of the tissues in the immediate neighbourhood of the parts involved. The results obtained are highly suggestive of the benefits to be hoped for, in what are often assumed as a most hopeless class of cases, and although the numbers unrelieved, are higher in this than in any other department of operative aid, the inference is not less favourable to judicious attempts at reparation.

The important operation of *lithotomy* is entered as having been performed 93 times during the period and as having been accompanied with 16 fatal results. A glance at the ages of the patients

operated on, for stone is appended to the table, and shows how the operation may be classed as one of the most hopeful as well as one of the most formidable and fatal in the whole category. Under the age of 18 years the mortality rises no higher than 8 per cent., while from 18 to 50 years it averages as much as 24 per cent., and after the term of life last noted five out of six cases proved fatal. The returns of lithotrity are even less favourable in the aggregate than the other, but it is of importance to notice that the ages of the subjects of this operation were mostly of an advanced character, and that the greater number were operated on several times, a circumstance that is sometimes lost sight of in the preparation of similar returns, where each separate crushing is instanced as an individual operation.

It was noticed at the outset of these observations to be the misfortune of sick hospitals to receive into their wards a very numerous class of patients after the ordinary surgical appliances have failed to ameliorate their condition. In no section of the long list of operations does this fact obtain with more force than those comprised under the term herniotomy. The records of hospitals in relation to this particular operation are certainly very unfavourable, and there are few Hospital Surgeons who have not had reason to condemn and to deplore the practice of receiving patients suffering from the disease in question, days, and sometimes weeks, after all manual attempts at reduction have proved hopeless, necessitating the alternative of an operation, which under the circumstances is little better than death itself. Of the entire number registered, it will be noticed that 51 persons underwent the operation for inguinal hernia; the form of disease usually affecting the male sex, of whom 26 recovered and 25 died. The results of operations in femoral hernia, to which females are more peculiarly liable, has been considerably more successful, 68 having been cured while 39 died.

Of operations on the eye, the last subdivision of the list, little need be said. These refer specially to the more important class for improving and giving sight, and have been performed under the most favourable circumstances, as the success attending them abundantly testifies. The two casualties which are entered as having occurred after the operation of extraction, are due one to cholera, and the other to chest disease occurring in an old man who died in another department of the hospital. Similar extraneous results have determined the fatality of a certain proportion of the cases entered in the operation list, and which appear of a trivial character to be attended with fatal consequences. The operations having proved successful it would have been perfectly justifiable to have entered them on the first column of the table, but as supervening complications will always, even under the most favourable circumstances, be associated in some degree with general results, it has been deemed

advisable to transcribe the issue of each case from the termination of the patient's residence in hospital.

Table XI of the series presents under twenty-two separate sections the several cases of accident that have been admitted to the hospital during the period in question. The division adopted gives an excellent illustration of the causes leading to injury of the person to which a great city population is continually liable, as well as the danger to life involved by each separate class. The relative numbers from individual causes of accident are very similar in a comparison of one year with another, and it is presumed that a similar, if not a larger, proportion of cases presenting like features of cause and effect are annually taken into St. Thomas's Hospital which is even more conveniently situated than Guy's for the reception of the casualties which will always complicate the traffic at London Bridge. The first section, relating to accidents occuring on the river gives perhaps a less favourable estimate of comparative frequency of cause than any other in the series, inasmuch as the bulk of these accidents occur in the neighbourhood of the Docks, and as a rule are received into the London hospital. Cases of accidental poisoning and attempts at suicide number 124 of the total accidents, not a few of the latter were attempted by poisons but it is a noteworthy fact that during the last two years this means of suicide has matierially diminished in frequency, not more than five cases having been received during the period named. It will be observed that attempts at suicide are not as a rule very successful; in females less so than in males the proportion of deaths being in the former about 1 in 8 cases, and in the latter in about 1 in 4. In truth, it is very questionable whether all these cases can be classified under the heading adopted in the table, as it is generally understood by those accustomed to hospital experience in these matters that a large proportion of so-called suicides do not really meditate self-destruction, and that the vicious impulse involved in the simulated attempt is nothing more than a morbid desire to procure sympathy, or to produce remorse, and, in fact, is only in a less degree the offspring of that moral cowardice which is the mainspring of action in the perpetrators of the more heinous crime.

Burns and scalds occupy a large place in the category of accidents. The total number of injuries from these causes amount to 425, of which not less than 213 are observed to have arisen from the clothes of the patients taking fire. This cause is also noticeable as being by far the most deadly of the several ways in which a person may be burned, the deaths outnumbering by 25 the numbers of patients who recovered. As might have been expected, the number of females injured in this manner is very much larger than males, the numbers being respectively 142 and 71, or exactly double. In only one other

instance, in which the causes are of sufficient frequency to draw deductions, do females appear more susceptible of injury than males, namely, in the section designated as "falls down stairs," but in this division the numbers partake much more of an equality than the other. A glance at the totals of the accidents shows the comparative liabilities of the sexes to causes of injury, as being in the proportion of 5 males to 1 female admitted. Collisions between opposing forces, with street vehicles and simple falls on the ground, accidents incidental to a crowded throughfare, comprise 1,077, or more than one-fourth part of the total number in the table. The relative mortality is observed to be small, not averaging more than 7 per cent.

A larger source of supply arises from falls from heights, such as from scaffoldings erected for building and other purposes, and falls of heavy weights on patients, such as loads of bricks, stones, earth and rubbish. The two causes combining to produce injuries of a similar character, comprise 35 per cent. of the total accidents, and the mortality attendant thereon may be estimated at 8½ per cent. It may be noticed as a distinctive feature of the accidents generally, that they do not contribute as a rule to augment the average mortality. The reverse effect has frequently been ascribed to them, but the data furnished by these returns do not justify the inference, for with exception of two or three of the causes enumerated, the great bulk of the sections exhibit a comparatively low range of deaths when compared with other departments of hospital practice. Of the remaining causes of injury the only two claiming special reference are those arising from machinery and accidents occurring on the railway. These do not present very alarming totals for the period, when compared with other causes in continual operation. Accidents from machinery have been almost entirely confined to males, there being only two females entered under this head, while the mortality from the same cause has been comparatively small, being little over 6 per cent. Next to burns produced from clothes catching fire the railway *injuries* furnish us with the most fatal class, one out of every three persons injured *from this cause* dying, and females will be observed to have suffered in a much less degree than males, the proportionate numbers being 1 female to 16 males injured from the cause in question. No enumeration of the causes of accidents can be considered complete without allusion being made to the most prolific and at the same time the most preventible source of all accidents, namely drunkenness. We have no satisfactory statistics to guide us in estimating the proportion who have suffered from this vice, but from personal observation and experience alone we can safely confirm what has been frequently stated by others, that of all the causes in operation leading to temporary or fatal injury to the person, there

are none to be dreaded so much as those arising from the vice in question.

In fact, the public-house is no less the greater tributary to the sick hospital than to the union workhouse, and there are few moral lessons which possess greater opportunities of practical application than those illustrated by the everyday experience of an hospital ward.

Out-Patient Department.

An important feature in connection with every London hospital is its out-patient department. It is here that its benefits if not usefully bestowed are at all events numerically lavished, and although the operation of the department may be attended with many serious objections, of a character best known to those to whose care it is entrusted, it does not admit of a doubt that a large amount of relief is annually furnished to the population by the efforts made to treat disease after this somewhat summary fashion. As the Dispensary system of house-to-house visitation is denied in all London hospitals the out-patient department is based on the assumption, that applicants for relief are capable of attending at the hospital at given intervals of time, irrespective of their maladies or of the symptomatic changes accompanying them. The necessary result of this state of things is, that a numerous class of persons suffering from all species of disease especially incidental to life in a crowded city, and not of sufficient severity to detain them at home, daily flock to those establishments especially where free charity is administered, and where no limit is assigned to their number, unless perhaps it may be regulated by the exhausted energies of the Medical Officer. From the miscellaneous crowd are selected no inconsiderable portion of persons whose complaints being of a graver character than the others are drafted into the hospital as fit objects for in-door relief, while a fair proportion of the remainder are largely benefited by their occasional attendance. Notwithstanding this admission, we believe that the privileges obtained in this way are greatly abused, not only by the poor themselves but also by many whose position in life scarcely warrants their accepting charitable aid.

The *hospital-going people* of the metropolis, as a class, are remarkable for many features in common which distinguish them from the industrious and deserving poor. They are not as a rule composed of "those whose lot it is to labour," but are rather recruited from the grades who follow sedentary occupations, or of those who have no avocation at all, and while females form the great bulk of the applicants, their numbers comprise no inconsiderable proportion of the weak members of the other sex as well. Their appeals are not restricted to any particular hospital or to medical

authorities attached to it, as they migrate at intervals from one hospital to another, to test their comparative benefits, and it may be frequently noticed that their confidence in an establishment increases in proportion to the difficulties to be overcome in obtaining access to its charity. It is scarcely to be wondered at, that under such a system, a morbid confidence is engendered in the miraculous agency of physic, and that the unfortunate votary should become developed into the regular medicine voluptuary whose critical and acquisitive tastes would have found no soil for cultivation if attention in the first instance had been paid to the few natural laws which govern the functions of the organism. It has been suggested as a means of remedying the abuse complained of, that a small fee should be exacted from each recipient, and if it were possible to separate the industrious and deserving from the habitual medicine taker, there can be no doubt of the efficacy and benefit to the community at large which such a practice would induce.

But to return to the Tables. In the enumeration of patients relieved at the out-patient department it has been found impossible to furnish any detailed data of importance, for, with the exception of the midwifery division, we have no records to supply us with more than a simple numerical registration. The first table is comparatively of more importance than the others, as it refers to the patients examined and prescribed for at weekly intervals by the regular medical staff, and as they happen to be selected from the general crowd of applicants as eligible for special relief, it is assumed that their diseases are of a graver character than those alluded to in the sequel. The division adopted into surgical, medical, eye, and female diseases corresponds with that followed in the administration of the business of the out-patient department, which is under the superintendence of eight medical officers, who attend at stated intervals. Each special applicant is furnished with a card which entitles its holder to eight separate attendances, and if at the end of eight weeks it is desirable to continue the attendance, the card is renewed with this object.

The next class on the roll represents a total of 160,524 persons, whose diseases, generally speaking, are not sufficiently severe to require their continuous attendance, their visits to the hospitals being restricted to one or two occasions. The number is by far the largest on the list as well as the least satisfactory, inasmuch as the majority have not come under the cognizance of the regular staff, but have been examined and prescribed for by advanced pupils, selected for the purpose by the officers in charge. The enumeration has also been chiefly made from prescriptions retained in the dispensary, a source of doubtful accuracy, as it is possible that in some instances the patients have been prescribed for at separate intervals; nevertheless if

allowance be made for a proportion who receive advice without medicines, the discrepancies in the general total will not appear so great.

The list of minor accidents and operation cases treated in the surgery of the hospital numbers 13,387, nearly 2,000 persons annually, or two-thirds more than those treated inside the hospital. The list comprises such injuries as fractures of arm, dislocations, and in fact all such injuries which do not require the persons affected to remain in bed. As casualties of this kind are occurring at every hour of the day and night, the main work of the department falls to the care of the resident dressers, who are thus afforded a fruitful field of experience, independent of the general practice of the wards. The only remaining table, exclusively connected with the out-patients, refers to the lying-in charity associated with the hospital, and the statistics of which are more ample and detailed than the others. It appears from the analysis made, that nearly 12,000 mothers have been attended during confinement with results of a very satisfactory and encouraging kind. These persons are attended at their own homes by the pupils of the hospital, under the immediate superintendence of the physicians accoucheur, and two of the senior students are in constant residence at the hospital to keep the records and to attend to cases of urgency as well as to assist the junior pupils in cases of doubt or difficulty. The charity is of course entirely confined to the Surrey side of the river, and for many years it embraced within a radius of two miles from the hospital a considerable portion of the most densely populated districts of Southwark and Lambeth; but from the annually increasing applications for relief, and the demand made on the time of the students, it has been found necessary to curtail the area of its operations to the extent of one-half, or a mile's radius from the hospital. This circumstance will account for the diminution in the numbers attended during the last few years, or since 1856, at which period it appears to have reached its maximum.

Appended to the series of tables there is a record of the total numbers who have annually passed through the hospital from the *date of its foundation to the present time*, compiled from the admission, discharge, and death registers. An examination of this return proves that *the rate of mortality* has materially diminished since the commencement of the period, or at all events since the decennium 1740 to 1750, at which time it reached its maximum, namely 14·7 per cent., and although it may have fluctuated slightly during decennial intervals since the period mentioned, as a general rule it has continued gradually to decrease, the last decennium exhibiting the lowest average, namely 9·1, which would have been still further reduced if the exceptional year, 1854, had been excluded from the

analysis. An examination of the last century records explains in some measure the causes contributing to the excessive mortality during that epoch. The deaths registered are not dissimilar in character to those which of late years have constituted the highest class, but in addition to the ordinary large proportion of consumptions and dropsies we meet with an unusual number of cases of fever, small-pox, and syphilis, diseases now either of rarer prevalence or of less severity, or, as in the case of small-pox, inadmissible by reason of its virulently contagious character, which circumstance has necessitated the segragation of the patients in a suburban hospital set apart for the special purpose. We are also justified in inferring, from the great preponderance of hopeless cases of disease freely admitted during the greater part of last century, that the governing body was anxious to comply with a desire somewhat ambiguously expressed in the testamentary dispositions of the Founder, to the effect, that they should provide accommodation for a large number of persons whose diseases were deemed incurable; a practice which a more enlightened policy has long since thought fit to abandon.

But while mainly attributing the favourable indications to the causes above specified, it would be manifestly unjust to under-estimate the value of the greatly improved methods of medical treatment which modern science has originated for the cure of the sick, as well as the greater attention now being paid to hospital hygiene. For many years past this branch of science has been developed in a variety of ways in nearly all establishments of a similar kind. Its advance is best promoted by the improvement of the dietary of the inmates, by enlarging the individual allowance of space allotted for beds, by obtaining, at all hazards, open grounds for airing purposes, and of altering and modifying internal structural arrangements when they are found to be opposed to sanitary requirements. These measures are not effected without great difficulty and expense; in all hospitals they have vastly increased the average cost of the patients, and in many they have been attended with a considerable diminution of numbers, while they have brought others to the verge of bankruptcy. Still it cannot be doubted that in a matter of such vital importance the gain is well worthy of the sacrifice, and it is fortunate for a community that the successful management of its sick poor should have been left in a great measure to its own unaided benevolence, influenced and directed by the liberal and progressive tendencies which have characterized the present age.

TABLE I.—*Statistical Record of Guy's Hospital for Seven Years, from 1854 to 1860 inclusive.*

Patients in hospital, 1st January, 1854	....	453
Admitted during the period	....	32,360
Total	....	32,813
Discharged as cured, well, or convalescent	18,591	
Relieved or improved	8,038	
Unrelieved or worse	2,713	
Died	2,978	
Remaining in hospital, 1st January, 1861	493	
		32,813

TABLE II.—*Showing the Comparative Numbers during the Period.*

	1854.	1855.	1856.	1857.	1858.	1859.	1860.
IN-PATIENTS.							
Remaining at end of each preceding year	453	454	458	452	497	481	479
Subsequently admitted	4,636	4,306	4,615	4,774	4,712	4,668	4,649
Total annually under treatment	5,089	4,760	5,073	5,226	5,209	5,149	5,128
Cured, or discharged as well, or convalescent	2,619	2,499	2,626	2,686	2,711	2,823	2,627
Relieved or improved	1,190	1,067	1,201	1,232	1,174	1,000	1,174
Unrelieved	300	332	390	433	413	431	414
Died	526	404	404	378	430	416	420
Remaining at end of each year	454	458	452	497	481	479	493
Average number daily resident	458	452	466	456	477	462	489
Mean residence of each person in days	33·2	34	33·3	31·8	33·8	32·7	34·8
Number of accidents registered	548	529	610	458	568	624	583
Number of surgical operations registered	330	340	349	349	352	299	394
OUT-PATIENTS.							
Number of surgical patients	2,750	2,753	4,303	3,837	3,700	3,265	2,875
,, medical cases	2,845	3,025	3,057	3,141	3,549	3,855	3,943
,, uterine cases	1,298	1,376	1,454	1,438	2,126	1,836	1,822
Patients with eye diseases	1,457	1,450	1,511	1,473	1,762	1,570	1,480
Casual cases	17,638	21,285	21,036	25,886	22,057	24,764	27,858
Minor accidents	2,334	2,268	2,262	1,549	1,570	1,735	1,669
Lying-in charity patients	1,738	1,753	2,011	1,731	1,651	1,640	1,404

TABLE III.—*Annual Table of Admissions, Dismissions, and Deaths, distinguishing the Sexes.*

	Surgical Patients.						Medical Patients.					
	Admitted.		Discharged.		Died.		Admitted.		Discharged.		Died.	
	Male.	Female.	Male.	Female	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1854.....	1,619	853	1,491	809	118	39	1,221	943	1,007	802	221	148
'55.....	1,542	913	1,430	860	99	57	1,004	847	841	767	164	84
'56.....	1,591	998	1,525	952	93	40	1,149	877	953	787	184	87
'57	1,552	1,048	1,458	1,003	65	35	1,222	952	1,050	840	166	112
'58.....	1,583	1,023	1,482	997	110	32	1,204	902	1,041	778	168	120
'59.....	1,637	1,062	1,560	1,014	80	48	1,114	855	923	757	187	101
'60.....	1,585	1,053	1,475	1,012	106	42	1,101	910	914	814	178	94
Total	11,109	6,950	10,421	6,647	671	293	8,015	6,286	6,729	5,545	1,268	746

TABLE IV.—*Annual Rate of Mortality, distinguishing the Sexes and the Two Main Classes of Disease.*

Years.	Total, over all the Cases.	Medical Cases, Mortality per Cent.			Surgical Cases, Mortality per Cent.		
		Male.	Female.	Both.	Male.	Female.	Both.
1854	11·3	17·9	15·5	16·9	7·3	4·6	7·8
'55	9·3	16·3	9·8	13·3	6·5	6·2	6·3
'56	8·7	16·1	9·9	13·4	5·7	4·	5·
'57	8·	13·6	11·7	12·8	4·3	3·3	3·9
'58	9·9	13·8	13·3	13·6	6·9	3·1	5·4
'59	8·9	16·8	11·7	14·6	4·9	4·5	4·7
'60	9·	16·2	10·4	13·6	6·7	4·	5·6
Total	9·2	15·8	11·8	14·	6·	4·2	5·6

TABLE V.—*Table of the Hours at which Death occurred.*

Years.	Deaths.	Hours, A.M.											
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1855	202	27	17	16	17	18	16	16	18	13	22	12	10
'56	188	14	19	10	17	19	18	12	14	24	20	15	6
'57	185	17	18	12	21	23	11	12	10	20	17	15	9
'58	217	17	22	22	20	20	22	16	12	22	18	22	4
'59	207	14	23	21	27	14	19	13	19	17	11	17	12
'60	206	18	15	15	15	23	21	14	18	25	13	12	17
Total	1,205	107	114	96	117	117	107	83	91	121	101	93	58

Years.	Deaths.	Hours, P.M.											
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1855	202	13	20	19	17	22	19	20	14	13	9	20	16
'56	216	19	30	27	15	21	16	15	20	11	16	20	6
'57	193	20	22	17	17	12	19	17	16	16	12	19	6
'58	223	16	19	32	21	17	27	11	14	20	12	16	8
'59	209	27	16	18	17	13	22	20	15	12	20	18	11
'60	204	16	19	14	22	12	26	21	15	23	21	15	10
Total	1,247	111	126	127	109	97	129	104	94	95	90	108	57

Note.—Table must be read from half hours to half hours, thus, 1 o'clock = 12·30 to 1·30 and so on.

TABLE VI.—*Summary of the Cases arranged according to Classes of Disease and the Results of Treatment.*

Diseases of	Total Cases.	Cured.	Relieved.	Un-relieved.	Died.	Mor-tality, pr. Cent.
1. Nervous system	2,520	869	1,028	441	182	7·2
2. Respiratory organs	3,202	875	1,239	275	813	25·3
3. Organs of circulation	1,343	416	459	157	311	23·1
4. Digestive organs	2,222	1,058	518	215	431	19·3
5. Genito-urinary organs	3,025	1,532	903	363	227	7·5
6. Venereal diseases	3,608	2,862	610	121	15	·4
7. Dropsies	949	279	371	108	191	20·1
8. Diseases and injuries of bones	2,904	2,092	440	157	215	7·4
9. ,, ,, joints	3,055	1,853	868	231	103	3·3
10. External injuries of soft parts	1,736	1,321	167	40	208	11·9
11. Abscesses, tumours, ulcers	3,037	2,067	578	261	131	4·3
12. Diseases of the eye	1,853	1,283	375	194	1	—
13. ,, skin	872	598	198	50	26	2·9
14. Fevers	1,118	959	50	18	91	8·1
15. Miscellaneous affections	876	527	234	82	33	3·7
Total	32,320	18,591	8,038	2,713	2,978	9·2

TABLE VII.—*Table of the Ages of the Patients, arranged according to the Classification of Disease.*

Diseases of	I. Discharged. Total.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 upds.
1. Nervous system	2,338	46	145	257	286	294	280	448	325	191	55	8	3
2. Respiratory organs	2,389	97	65	100	278	368	366	525	394	179	75	9	3
3. Organs of circulation	1,032	51	23	79	183	141	116	158	148	90	38	5	—
4. Digestive organs	1,791	63	66	68	137	205	240	409	306	204	83	9	1
5. Genito-urinary organs	2,798	56	104	78	282	375	425	652	424	237	107	24	4
6. Venereal diseases	3,593	10	13	42	1,470	1,111	450	311	124	42	17	2	1
7. Dropsies	758	15	28	40	51	63	115	175	152	91	25	3	—
8. Diseases and injuries of bones	2,689	140	226	237	273	216	286	527	392	236	119	31	6
9. Diseases and injuries of joints	2,952	99	222	238	485	474	364	479	317	197	66	10	1
10. External injuries of soft parts	1,528	151	139	167	171	157	177	226	184	86	56	14	—
11. Abscesses, ulcers, and tumours	2,906	70	108	149	356	457	374	539	433	260	100	36	4
12. Eye diseases	1,852	70	142	236	318	256	177	230	164	149	88	22	—
13. Skin „	846	55	44	58	117	111	93	156	119	72	34	6	1
14. Fevers	1,027	22	75	145	235	193	153	118	68	28	9	1	—
15. Miscellaneous diseases	843	45	66	82	104	122	110	132	105	52	18	7	—
Total	29,342	950	1,466	1,976	4,746	4,543	3,706	5,085	3,655	2,114	890	187	34

Diseases of	II. Died. Total.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 upds.
1. Nervous system	182	12	11	9	15	13	31	36	33	15	5	2	—
2. Respiratory organs	813	24	10	14	73	106	102	202	166	91	23	2	—
3. Organs of circulation	311	2	5	17	23	29	28	64	64	57	18	3	1
4. Digestive organs	431	12	6	9	24	38	46	88	80	71	44	9	4
5. Genito-urinary organs	227	8	6	4	9	21	27	49	46	34	16	6	1
6. Venereal diseases	15	—	—	—	3	2	5	3	1	1	—	—	—
7. Dropsies	191	4	7	6	13	15	15	41	49	25	14	2	—
8. Diseases and injuries of bones	215	8	10	12	21	16	19	47	38	25	11	7	1
9. Diseases and injuries of joints	103	1	4	6	16	13	17	17	9	11	6	2	1
10. External injuries of soft parts	208	96	30	14	9	5	5	15	13	3	10	4	4
11. Abscesses, ulcers, and tumours	131	7	3	5	12	7	15	24	22	13	12	1	—
12. Eye diseases	1	—	—	—	—	—	—	—	—	—	—	1	—
13. Skin „	26	3	1	—	1	2	—	9	4	3	3	—	—
14. Fevers	91	7	5	1	25	15	22	8	5	2	—	1	—
15. Miscellaneous diseases	33	1	4	—	3	2	3	7	2	5	3	3	—
Total	2,978	185	102	97	247	284	335	610	532	366	165	43	11

TABLE VIII.—*Countries in which Patients were Born.*

	No.		No.
England	29,212	Italy	29
Ireland	2,436	Spain	3
Scotland	234	Portugal	2
Wales	144	Turkey	1
Channel Islands	17	Greece	1
Malta	2	India	7
Sweden and Norway	10	Ceylon	3
Denmark	3	China	1
Russia	2	Africa	1
France	37	America	39
Belgium	5	West Indies	21
Holland	14	Australia	2
Germany	74	New Zealand	1
Poland	4	Born at sea	7
Hungary	2		
Switzerland	6		32,320

TABLE IX.—*Localities from which Patients have been brought.*

	Total.	Country.	Middlesex.	Surrey.
Medical cases	2,000	274	548	1,178
Surgical cases	3,000	510	576	1,914
	5,000	784	1,124	3,092

Table X.—*Summary of Surgical Operations Performed during the Period.*

Nature of Operation.	Total Cases.	Disease or Injury requiring Operation.	Cured or Relieved. M.	Cured or Relieved. F.	Unrelieved. M.	Unrelieved. F.	Died. M.	Died. F.
Amputations, Primary, of—								
Shoulder Joint	3	Compound Fracture, Laceration, Smash	—	—	—	—	3	—
Arm	16	" " "	10	—	—	—	6	—
Forearm	11	" " "	10	—	—	—	1	—
Hand	4	" " "	4	—	—	—	—	—
Fingers (one or more)	64	" " "	54	8	—	—	2	—
Thigh	17	" " "	4	2	—	—	11	—
Leg	15	" " "	8	—	—	—	7	—
Foot	2	" " "	—	—	—	—	2	—
Toes	5	" " "	3	1	—	—	1	—
Amputations, Secondary, for injury—								
Arm	6	3 Com. Fract., 1 Com. Disloca. Elbow, 2 Gangrene	4	—	—	—	2	—
Forearm	2	Compound Fracture	2	—	—	—	—	—
Hand	1	"	1	—	—	—	—	—
Fingers (one or more)	25	Compound Fracture, Laceration, Gangrene	18	6	—	—	1	—
Thigh	10	" " "	2	—	—	—	8	—
Leg	9	" " "	2	1	—	—	6	—
Toes	3	" " "	2	—	—	—	1	—
Amputations for Disease—								
Arm	3		2	1	—	—	—	—
Forearm	12		6	5	—	—	1	—
Hand	2		2	—	—	—	—	—
Fingers (one or more)	44		32	11	—	—	1	—
Thigh	80		45	21	—	1	11	2
Leg	30		16	7	—	—	4	3
Ankle Joint	2		2	—	—	—	—	—
Chopart's Operation	2		—	1	—	—	—	1
Partial, of Foot	3		2	1	—	—	—	—
Toes	12		6	6	—	—	—	—
Carried forward	383		237	71	—	1	68	6

Table X.—*Summary of Surgical Operations, &c.—Contd.*

Nature of Operation.	Total Cases.	Disease or Injury requiring Operation.	Cured or Relieved. M.	Cured or Relieved. F.	Unrelieved. M.	Unrelieved. F.	Died. M.	Died. F.
Brought forward	383		237	71	—	1	68	6
Excision of Tumours—								
Mammary, Cancerous	101		—	92	—	—	—	9
" various	45		—	44	—	—	—	1
Cancerous Tumours of other parts	62	Chiefly of Lip	48	9	3	—	1	1
Tumours of various characters	102	64 Encysted, 15 Fibroplastic, 9 Enchondroma, 14 Bursal	42	60	—	—	—	—
" "	48	12 Gland., 26 Steatom., 2 Vascular, 8 Fibrous	17	28	2	1	—	—
" "	35	22 Fatty, 6 Follicular, 7 Cartilaginous	14	20	—	—	—	1
" "	31	13 Keloid, 7 Melanotic, 2 Fungus, 8 Epithelium, 1 Horny	9	20	—	—	1	1
" "	15	Hypertrophied Labia and Vaginal Cysts	—	14	—	—	—	1
" "	7	Characters undetermined	1	4	1	—	1	—
Excision of Diseased Bones—								
Of Upper Extremity	49	1 Clavicle, 1 Head of Humerus, 20 Humerus, 1 Scapula, 6 Ulna, 7 Rad., 3 Carpus, 3 Metacarp., 6 Fingers	35	13	1	—	—	—
Lower "	159	4 Ilium, 27 Femur, 59 Tibia, 3 Fibula, 32 Tarsus, 24 Meta-tarsus, 10 Toes	119	28	4	4	4	—
Elbow Joint	8		5	2	—	—	—	1
Knee "	2	Both afterwards amputated	—	—	—	—	—	—
Portions of Bones of Cranium	14	Depressed and Diseased, from Compound Fracture	7	2	—	—	5	—
" Jaw	18	Necrosis and Caries	10	8	—	—	—	—
" Rib	1	Necrosis	1	—	—	—	—	—
Part of a Vertebra	1		—	1	—	—	—	—
Exostosis	13	2 Humerus, 1 Scapula, 5 Femur, 2 Tibia, 3 Great Toe	8	5	—	—	—	—
Excision of Epulis	7		2	4	1	—	—	—
" partial, of Tongue	3	2 Cancer, 1 Fibroplastic Growth	2	1	—	—	—	—
" of Tonsils	7	Hypertrophy	4	3	—	—	—	—
" Prepuce	6	Phymosis	6	—	—	—	—	—
" Penis	11	Cancer and Phagædena	10	—	—	—	1	—
" Testicle	23		22	—	—	—	1	—
Carried forward	1,151		599	429	14	6	82	21

TABLE X.—*Summary of Surgical Operations, &c.—Contd.*

Nature of Operation.	Total Cases.	Disease or Injury requiring Operation.	Cured or Relieved.		Unrelieved.		Died.	
			M.	F.	M.	F.	M.	F.
Brought forward	1,151	. . . . .	599	429	14	6	82	21
Excision of Loose Cartilages	4	In Knee Joint	4	—	—	—	—	—
„ Hæmorrhoids	12	. . . . .	8	4	—	—	—	—
„ Rudimentary Ears	1	. . . . .	—	1	—	—	—	—
„ Foreign Bodies	5	1 piece of Metal in Jaw, 3 Needles under Skin, 1 piece of Bone in Deltoid Muscle	3	1	—	—	1	—
Reparatory Operations—								
Deformities from Burns of Neck and Face	13	Cicatrices and Contractions	5	5	1	2	—	—
Deformities from Burns, other parts	18	8 Arm, 10 Fingers	7	9	1	1	—	—
„ other Injuries	18	2 Hip, 1 Testicle, 9 Rup. Perineum, 1 Nasal, 3 Vesico Vaginal, 2 Urethral Fistulæ	4	9	2	3	—	—
„ Disease	11	3 Lupus, 8 Disease of Stump	4	5	1	1	—	—
Congenital Deformities	44	32 Harelip, 4 Web Fingers, 2 Lower Lip, 4 Fis. Palate, 2 Penis	27	13	2	2	—	—
Operations for Nævus	25	. . . . .	11	12	1	—	1	—
Exploratory Operations	35	Evacuation of Cysts and Tumours	17	12	3	1	2	—
Operations for Aneurism—								
Compression of Artery	11	2 Femoral and 9 Popliteal Aneurism	4	1	6	—	—	—
Ligature of Artery	10	8 „ 2 Ext. Iliac Artery	8	—	1	—	1	—
„ for Hæmorrhage	14	5 „ 3 Radial, 1 Com. Carotid, 5 Vascular Tumours	8	2	1	—	3	—
Sections of Anal Fistulæ	47	Death from Cholera	26	20	—	—	—	1
Perinæal Section	60	Fistula, Stricture, Rupt. Urethra	45	—	1	—	13	1
Urethrotomy	7	Calculus in Urethra	5	1	—	—	1	—
Puncture of Bladder per Rectum	16	Stricture and Rupt. Urethra	14	—	—	—	2	—
Extraction from Bladder	3	2 pieces of Bougie, 1 Hair Pin	2	1	—	—	—	—
Lithotomy	93	Under 18 years, 57 cured, 5 died From 18 to 50, 19 „ 6 „ Above 50 1 „ 5 „	76	1	—	—	16	—
Lithotrity	15	. . . . .	7	1	2	—	5	—
Ovariotomy	3	Ovarian Cysts	—	—	—	—	—	3
Gastrotomy	2	1 Malig. Dis. of Pharynx, 1 Stricture	—	—	—	—	2	—
Carried forward	1,618	. . . . .	884	527	36	16	129	26

TABLE X.—*Summary of Surgical Operations, &c.—Contd.*

Nature of Operation.	Total Cases.	Disease or Injury requiring Operation.	Cured or Relieved.		Unrelieved.		Died.	
			M.	F.	M.	F.	M.	F.
Brought forward	1,618	. . . . .	884	527	36	16	129	26
Œsophagotomy	1	Foreign Body Impacted	1	—	—	—	—	—
Laryngotomy	1	Scald	1	—	—	—	—	—
Tracheotomy	46	Tumours, Scalds, Croup, &c.	10	6	1	—	17	12
Transfusion	1	Uterine hæmorrhage	—	—	—	—	—	1
Trephining	7	2 Tibia, 1 Femur, 4 Skull	4	—	—	—	3	—
Dislocations, Reduced, of—								
Upper Extremity	51	1 Clavicle, 32 Humerus, 14 Elbow Joint, 4 Thumb	38	5	5	2	1	—
Lower „	26	23 Femur, 1 Knee Joint, 2 Ankle	22	2	1	—	1	—
Lower Jaw	5	. . . . .	4	1	—	—	—	—
Tenotomy	55	31 Talipes, 9 Contracted Knee, 8 Contracted and Malformed Feet, 7 Compound Fracture	32	19	2	1	—	1
Operations for Varicocele	5	. . . . .	5	—	—	—	—	—
„ Imperforate Anus	1	Rectum, terminating in Urethra	—	—	—	—	—	1
Operations for Hernia—								
„ Radical Cure	2	. . . . .	2	—	—	—	—	—
„ Umbilical Hernia	17	. . . . .	5	7	—	2	1	2
„ Inguinal „	121	Reduced by Taxis, 68 cured, 2 died Herniotomy, opening Sac, 18 cured, 20 died „ without opening Sac, 8 cured, 5 died	90	6	—	—	24	1
„ Femoral „	147	Reduced by Taxis, 36 cured, 4 died Herniotomy, opening Sac, 41 cured, 28 died „ without opening Sac, 27 cured, 11 died	13	88	1	2	6	37
Operations on the Eye—								
Extraction of Lens	99	Hard Cataract	41	42	11	3	1	1
Dislocation „	2	Into Anterior Chamber	—	2	—	—	—	—
Karatomyxis	103	Soft and Capsular Cataract	67	35	1	—	—	—
Artificial Pupil	47	Closure of Pupil from Iritis	26	20	—	1	—	—
Strabismus	50	. . . . .	24	26	—	—	—	—
Excision of Globe	8	Bonnet's Operation	4	4	—	—	—	—
	2,413	. . . . .	1,273	790	58	27	183	82

TABLE XI.—*The following Table gives the Causes of the Accidents, with the Sexes and Mortality.*

Causes of Accidents.	Total Cases.	Cured or Relieved.		Died.	
		Male.	Female.	Male.	Female.
1. Accidents on the river, in barges, and shipboard	90	78	3	9	—
2. Assaults	173	102	56	14	1
3. Accidental poisoning	37	15	14	5	3
4. Attempts at suicide	87	36	35	11	5
5. Burns from clothes taking fire	213	34	60	37	82
6. ,, heated fluids	177	90	46	26	15
7. ,, explosion of gas	12	11	1	—	—
8. ,, gunpowder	23	16	2	3	2
9. Collisions between opposing forces	108	90	14	4	—
10. ,, with street vehicles	416	299	55	54	8
11. Cuts and blows from sharp instruments	175	138	28	8	1
12. Falls down stairs	155	69	78	4	4
13. ,, from a height, scaffolding, &c.	832	679	83	62	8
14. ,, from curb stones and on the ground	553	417	116	18	2
15. Fall of heavy weights on patients	427	364	17	45	1
16. Gunshot wounds	16	14	—	2	—
17. Machinery accidents	233	216	2	15	—
18. Railway ,,	84	51	4	28	1
19. Sudden torsions of the body	64	60	4	—	—
20. Foreign bodies lodged in natural passages	22	15	3	1	3
21. Bites of animals, 7 dogs, 2 adders, monkey, horse, rat, elephant, and a woman	14	13	1	—	—
22. Causes of accident not ascertained	9	3	5	—	1
Total	3,920	2,810	627	346	137

Out-Patient Department.

	Total Cases.	Men.	Women.	Children.
Surgical patients	23,483	8,768	10,636	4,079
Medical cases	23,415	8,696	10,554	4,165
Eye ,,	10,703	3,942	4,576	2,185
Diseases of women	11,350	—	11,350	—
Total	68,951	21,406	37,116	10,429

The numbers of persons prescribed for without being supplied with the ordinary letters for attendance as out-patients, 160,524.

The number of minor accident and operation cases treated in the hospital surgery, 13,387.

The following table gives a summary of the cases attended in connection with the Maternity Department during the last seven years.

Number of women confined, 11,928.

Number of single births, 11,800; twin births, 128; total children, 12,056; of the 12,056 children, 6,069 were living males, and 5,446 were living females; and 326 males and 215 females were still-born.

Of the total number 11,668 presented naturally, while 388 were abnormal presentations. Of the latter, 162 were breech, 101 were footling, 51 were arm, 34 were face, 6 were transverse, and 12 were placental presentations.

Of the 11,928 mothers confined, there were in their—

	No.		No.		No.
1st confinement	1,762	9th confinement	443	17th confinement	4
2nd ,,	1,910	10th ,,	280	18th ,,	4
3rd ,,	1,806	11th ,,	186	19th ,,	2
4th ,,	1,508	12th ,,	107	20th ,,	1
5th ,,	1,308	13th ,,	48	21st ,,	–
6th ,,	1,055	14th ,,	30	22nd ,,	1
7th ,,	850	15th ,,	14		
8th ,,	597	16th ,,	12		11,928

Among the mothers there were 36 deaths from the following causes:—14 from peritonitis, 7 from uterine hœmorrhage, 3 from rupture of womb, 1 metritis, 1 phthisis, 1 cholera, 2 pneumonia, 1 fever, 2 Bright's disease, 2 pyæmia, and 2 puerperal convulsions.

Retrospective Summary of the Patients Treated for the last Seven Years, with the Totals of each Year.

	Total.	1854.	1855.	1856.	1857.	1858.	1859.	1860.
Residents in hospital	35,634	5,089	4,760	5,073	5,226	5,209	5,149	5,128
Dispensary patients	68,951	8,350	8,604	10,325	9,889	11,137	10,526	10,120
Casual cases	160,524	17,638	21,285	21,036	25,886	22,057	24,764	27,858
Minor accidents	13,387	2,334	2,268	2,262	1,549	1,570	1,735	1,669
Women confined	11,928	1,738	1,753	2,011	1,731	1,651	1,640	1,404
Total	290,424	35,149	38,670	40,707	44,281	41,624	43,814	46,179

Number of Patients Annually Discharged and Dead in Guy's Hospital since the commencement of the Institution in 1725.

Year.	Total.	Discharged.	Died.	Mortality per Cent.	Year.	Total.	Discharged.	Died.	Mortality pr. Cent.
1725*	—	—	83	—	1772	2,230	1,997	233	—
'26	—	—	139	—	'73	2,156	1,923	233	—
'27	1,080	923	157	—	'74	2,194	2,010	184	—
'28	1,480	1,276	204	—	'75	2,247	2,013	234	—
'29	1,846	1,572	274	—	'76	2,239	2,030	209	—
					'77	2,350	2,128	222	—
1730	1,728	1,514	214	13·8	'78	2,412	2,187	225	—
'31	1,716	1,506	210	—	'79	2,064	1,814	250	—
'32	1,737	1,468	269	—					
'33	1,939	1,683	256	—	1780	2,405	2,129	276	10·3
'34	1,781	1,524	257	—	'81	2,320	2,077	243	—
'35	1,889	1,631	258	—	'82	2,226	1,994	232	—
'36	2,007	1,743	264	—	'83	2,141	1,901	240	—
'37	1,760	1,502	258	—	'84	2,158	1,938	220	—
'38	1,798	1,548	250	—	'85	2,539	2,335	204	—
'39	1,745	1,468	277	—	'86	2,152	1,919	233	—
					'87	1,965	1,717	248	—
1740	1,895	1,587	308	14·2	'88	2,090	1,854	236	—
'41	2,203	1,881	322	—	'89	2,469	2,256	213	—
'42	2,194	1,839	355	—					
'43	2,114	1,808	306	—	1790	2,243	2,021	222	10·2
'44	2,002	1,714	288	—	'91	2,037	1,815	222	—
'45	1,892	1,603	289	—	'92	2,166	1,891	275	—
'46	1,923	1,633	290	—	'93	2,345	2,047	298	—
'47	2,135	1,820	315	—	'94	2,184	1,915	269	—
'48	2,081	1,802	279	—	'95	2,376	2,114	262	—
'49	2,057	1,766	291	—	'96	2,466	2,209	257	—
					'97	2,574	2,321	253	—
1750	1,980	1,685	295	14·7	'98	2,702	2,398	304	—
'51	1,890	1,639	251	—	'99	2,642	2,328	314	—
'52	1,847	1,607	240	—					
'53	1,948	1,693	255	—	1800	2,770	2,410	360	11·6
'54	1,951	1,693	258	—	'01	2,653	2,369	284	—
'55	1,873	1,607	266	—	'02	2,774	2,433	341	—
'56	1,936	1,706	230	—	'03	2,680	2,371	309	—
'57	1,823	1,603	220	—	'04	2,482	2,157	325	—
'58	1,749	1,588	161	—	'05	2,666	2,372	294	—
'59	1,841	1,637	204	—	'06	2,505	2,235	270	—
					'07	2,856	2,553	303	—
1760	1,845	1,672	173	12·	'08	2,646	2,356	290	—
'61	1,875	1,669	206	—	'09	2,635	2,313	322	—
'62	1,907	1,673	234	—					
'63	1,911	1,698	213	—	1810	2,669	2,384	285	11·3
'64	1,667	1,469	198	—	'11	2,802	2,508	294	—
'65	1,881	1,657	224	—	'12	2,636	2,361	275	—
'66	1,900	1,692	208	—	'13	2,658	2,368	290	—
'67	1,847	1,641	206	—	'14	2,637	2,407	230	—
'68	1,858	1,648	210	—	'15	2,630	2,358	272	—
'69	1,985	1,771	214	—	'16	2,654	2,409	245	—
					'17	2,733	2,489	244	—
1770	2,076	1,853	223	11·3	'18	2,555	2,303	252	—
'71	2,155	1,908	247	—	'19	2,685	2,430	255	—

* From the decayed condition of the first registration book, it has been found impossible to calculate the numbers during the first two years of the series.

Number of Patients Annually Discharged, &c.—Contd.

Year.	Total.	Discharged.	Died.	Mortality per Cent.	Year.	Total.	Discharged.	Died.	Mortality pr. Cent.
1820	2,639	2,384	255	9·7	1840	3,646	3,329	317	9·6
'21	2,772	2,523	249	—	'41	3,402	3,067	335	—
'22	2,843	2,585	258	—	'42	3,694	3,353	341	—
'23	2,734	2,474	260	—	'43	3,757	3,427	330	—
'24	2,508	2,261	247	—	'44	3,911	3,519	392	—
'25	2,544	2,280	264	—	'45	3,807	3,413	394	—
'26	2,668	2,371	297	—	'46	3,789	3,380	409	—
'27	2,774	2,492	282	—	'47	4,049	3,660	389	—
'28	2,516	2,270	246	—	'48	3,772	3,397	375	—
'29	2,585	2,288	297	—	'49	3,824	3,449	375	—
1830	2,603	2,297	306	10·1	1850	4,221	3,872	349	9·9
'31	3,279	2,934	345	—	'51	4,526	4,109	417	—
'32	3,043	2,756	287	—	'52	3,876	3,580	342	—
'33	3,095	2,825	270	—	'53	3,265	2,961	304	—
'34	3,395	3,095	300	—	'54	4,635	4,109	526	—
'35	3,306	2,985	321	—	'55	4,302	3,898	404	—
'36	3,470	3,161	309	—	'56	4,621	4,217	404	—
'37	3,443	3,057	386	—	'57	4,729	4,351	378	—
'38	3,375	3,066	309	—	'58	4,728	4,298	430	—
'39	3,019	2,688	331	—	'59	4,670	4,254	416	—
					1860	4,635	4,215	420	9·1

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Director General of the Army
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The Three Warnings:

OR,

FACTS AND FIGURES

OF THE

CHOLERA EPIDEMICS

OF

GATESHEAD.

By JAMES CLEPHAN.

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ADVERTISEMENT.

THE Facts and Figures of the Three Epidemics of Cholera in Gateshead, presented in the following pages, have been ascertained by personal inquiry and observation; assisted by public and private records, to which the courtesy of official and other gentlemen has given the Compiler obliging access. In placing them before the medical and general public in a collected form and narrow compass, he may be permitted, although a layman, to accompany them with the expression of his opinion that the Cholera would never be Epidemic amongst us, were our habitations not impure. The Planet on which we are placed is made to whirl through space at an immeasurable distance from other Worlds, while we perversely overcrowd ourselves together on its surface, and hide ourselves from the air of Heaven in our narrow cribs, in immediate neighbourhood with decomposing matter and foul emanations, which ought rather to be at once banished from our midst, and not suffered to accumulate until the outbreak of Pestilence; when, too late, it is, by hundreds of cart-loads, hurried out of our borders. We practically confess, by our instant resort to such means in the agony of fear and alarm, that we are not unacquainted with the secondary causes, at least, of Cholera, its primary origin alone being yet a mystery. We know not how it comes into existence, but we do know the conditions necessary to its malignant spread, and to its becoming Epidemic, if not also Contagious. These conditions we may produce in hamlet or city—in our Bourn Moors or our Pipewellgates, on our Windmill Hills or in our Sandgates, in our Wrekentons or our Cloggers' Entries; while, happily, in the crowded town, and for the humblest of our population, we may, by the avoidance of such conditions, secure immunity from the Asiatic scourge. The clean, well-ventilated, not overcrowded portion of New Gateshead, was a land of Goshen in 1853, where there was neither Death nor Disease, while, all around, there was Infection and Mortality; and so, likewise, were a whole town pure and wholesome, it would, under the blessing of Heaven, be free from Epidemics.

6, Catherine-terrace, Gateshead,
May, 1854.

The Cholera in Gateshead.

1831-32.

The first appearance of Asiatic cholera on the Tyne is commonly assigned to the month of December, 1831. There is, however, the following entry in the register of St. Mary's parish, Gateshead: — "Buried, October 29, 1831, aged about 45, Oswald Reay, of All Saints', Newcastle;" with also this note, in the handwriting of the Rev. G. C. Abbs, then curate:—"The first supposed case of cholera in England." A still earlier case, and the first of which the writer can find any record, is that of "a steel runner," of "the village of Team, one mile and a half above Gateshead," who, in the beginning of the month of August, after drunkenness and long exposure to rain, was seized with malignant cholera and died.*

The first two recognized cholera burials in Gateshead occur under date December 16. One of these was Mary Hymers, or Hindmarsh, a rag-gatherer of depraved habits, living in the Hawk-entry, Bottle-bank, on the Pipewellgate slope, to whom Mr. Henry Brady was called on the 15th. In the other case, the patient, James Morgan, a blacksmith, lived at Springwell, and was brought into Gateshead parish after death. There was then a pause until Christmas-eve, when (on the 24th) a second Gateshead case occurred in Pipewellgate, in the person of Elizabeth Thompson, *alias* Hales. The date of her burial is Christmas day; and this case is rapidly succeeded by others,† until the abatement of the epidemic in the Spring of 1832. In July, the "red cross" reappears on the register, and it does not vanish until the month of November.

The total number of cholera burials in St. Mary's parish was 225. Deducting 3 (two from Newcastle and one from Hebburn), 222

* Letter of Dr. Alexander to Mr. T. M. Greenhow, inserted by the latter gentleman in his work on Cholera, (1832).

† "On the 25th, about one o'clock, we were assailed by a third and fourth example of the disease; and before the next morning, at ten o'clock very considerable numbers had fallen sacrifices to its pestilential ravages. Within a space of twelve hours, it spread itself over a diameter of two miles."—(Letter from Mr. Brady to Mr. Greenhow.) On the Low Fell, Gateshead, on the 25th and 26th, there were ten cases, four of them occurring in two families, living near Morgan's father, to whose cottage Morgan's corpse had been brought after death. There were eight deaths on the Fell up to January 2, and then the cholera ceased until August. Of the eight, seven occurred in the cottages near Morgan's, and in the two families of Worley and Soulsby. "Worley's family," Mr. Greenhow was informed, "were very poor, and destitute of both food and proper clothing. Soulsby was poor, and kept a disorderly public house." Three of the Worleys and four of the Soulsbys died.

remain—the number inscribed on the pillar in St. Edmund's cemetery. There were also 12 cholera burials in St. John's, making the total number of the Gateshead burials 237. The burials per day (exclusive of those from Newcastle and Hebburn) were as under :—

16 December, 1831	2	27	1
25	1	28	1
26	4	29	2
27	19	30	1
28	20	1 August	1
29	8	4	1
30	6	5	1
31	8	6	3
1 January, 1832	5	9	1
2	5	10	1
3	5	11	1
4	4	12	1
5	6	13	1
6	8	14	2
7	6	15	4
8	6	16	3
9	2	17	2
10	3	18	2
11	1	19	3
12	2	20	3
13	2	21	2
15	1	22	2
16	1	23	4
17	1	24	3
18	3	25	2
20	1	26	3
22	1	27	1
24	2	28	1
25	1	31	1
29	1	2 September	2
2 February	1	3	1
11	1	4	2
27	2	5	2
28	1	7	4
1 March	1	8	5
3	1	9	1
25	1	10	1
6 July	1	11	1
15	1	12	2
16	1	13	1
17	3	21	1
22	1	3 October	1
24	1	22	1
25	1	5 November	1
26	2		— 234

Males 114
Females 120

The localities from which the bodies were brought for burial are stated in the register with more or less precision. In a subsequent table (see appendix), they are entered in the chronological order observed by the mortality in the progress of the epidemic; and the date of each burial from each locality is given.

1849.

On Thursday, the 4th of January, 1849, a tramp, said to be from Edinburgh, arrived at Gateshead, and tarried at Williams's lodging-house, Pipewellgate, then containing 24 beds, with two persons to each bed. The stranger manifested symptoms of diarrhœa, and Williams himself was subsequently attacked. Both died on the 8th. On the morning of the 9th, when Dr. Barkus, then medical-officer, called at the lodging-house at 5 o'clock, he found the two men dead. A third person was ill in the house; but the fact was not named to the Doctor; and by 8 o'clock the same morning there was a third death.

Such are the facts, as stated in the *Gateshead Observer*, January 13, 1849.

The civil register of deaths, instituted in 1837, seems to tell a somewhat different tale, as the following extracts show :—

January 8. Catherine Carr, aged 45, wife of a seaman, Pipewellgate, diarrhœa.

9. William Williams, aged 57, shoemaker, Pipewellgate, cholera.

10. A man, name and calling unknown, Pipewellgate, supposed of Asiatic cholera.

10. Bridget M'Graw, aged 60, widow, Pipewellgate, cholera.

Dr. Barkus's recollection of the matter is, that the stranger was his first patient, though Williams was the first who died.

The disease spread rapidly in Pipewellgate. The number of deaths was 18 by the 23d of the month, up to which day there had been no cholera mortality in any other part of Gateshead. Deaths then began to occur elsewhere; and, with longer or shorter intervals, the mortality continued until nearly the end of the year.

It was not until August that the rural district of Gateshead was visited by the epidemic. Its first victim in Wrekenton was Edward Aims, aged 15, the son of a piper, who died on the 11th of that month.

The total number of deaths in the year, in all Gateshead, from cholera and diarrhœa, was 186, the mortality closing, as it had begun, in Pipewellgate.

The village of Wrekenton, lying on both sides of the boundary line between Gateshead and Lamesley, and its neighbour, Eighton Banks, were wellnigh decimated.*

* In a report made to Mr. Rawlinson in 1849, and subsequently laid by that gentleman before the General Board of Health, it is stated that "the total number of deaths was 120, being about a sixth of the whole of the population." This is an error. 61 died on the Gateshead side of the boundary, and 47 on the Lamesley side, in the two villages of Wrekenton and Eighton Banks, making a total mortality of 108. In 1851, there were 890 inhabitants in that part of Gateshead called Wrekenton, and 1,914 in Lamesley, comprising Eighton Banks and part of Wrekenton. In a subsequent page, there is a table showing the cholera mortality of the mining and agricultural poor-law union of Chester-le-Street, of which Lamesley is a member.

The epidemic of 1849 was mainly fed by Pipewellgate, the Union Workhouse, and Wrekenton—these three contributing two-thirds of the mortality.

The southern or rural district of Gateshead, occupied by the Fell and Wrekenton, was principally unenclosed until the present century, sprinkled over with thatched cottages, studded with pit and quarry heaps, and "a common receptacle for all kinds of vagrants." (*The Pitman's Pay*, by Thomas Wilson, Esq., of Fell House.) It is still haunted by muggers, tinkers, beggars, reapers, &c.

"The houses visited by the epidemic occupy high and airy ground, and are mostly comfortable cottages; but the locality is undrained, and some few of the houses are (or have been) resorted to by wayfarers, and are in a filthy condition. It was here that Fever broke out in our parish; and here, again, we have Cholera. Unobservant minds are struck with wonder when they hear of epidemics in villages standing upon lofty eminences; but we see nothing perplexing in such outbreaks. They do not controvert the doctrine that overcrowding and filth, if not the *causes*, are *conditions* without which such causes, whatever they may be, are inoperative. The focus of disease, in this case, is the Irish colony in the midst of the native population. Strangers dropped off, and little was thought of it; but when the villagers were attacked, there was then a panic."—(*Gateshead Observer*, September 16, 1849.)

The range of houses where the cholera was most fatal is not more than a quarter of a mile in length. In the 158 houses occurred 110 deaths. The Lunatic Asylum, wherein 20 men and women died, was closely beset on either side by crowded and infected lodging-houses; and the keeper and his son-in-law were of the number that perished. The settled inhabitants rose up at last, in a body, and drove the tinkers and other vagrants out of the village.

Wilkinson, a pitman, who lived in a clean cottage surrounded by Irish tinkers, was overpowered every morning by the stench which issued from his neighbours' hovels on the opening of the doors. James and Robert Wilkinson, father and son, both died.

Mr. Francis Bennett, of Gateshead, surgeon, in a report which he made to Mr. Rawlinson, Superintending Inspector of the General Board of Health, at the close of 1849, stated that there were rooms in the worst part of the village "with direct openings into ashpits," and that "the only houses drained were in the Lamesley district." He described the migratory population as "living huddled together, four or five families in a house, with horses, asses, dogs, and in one case pigs, the ashes and other accumulations being allowed to collect in a corner of a room; and not only did the inmates behave much in the same way as Mr. Schorey mentions in his report on the lodging-houses of Gateshead,* but females, besides males and children, often came

* "Gateshead contains 26 common lodging-houses. They are situated, for the most part, in low and crowded neighbourhoods. Of the keepers, 17 are Irish, 7 English, and one German; and they comprise, in the whole, 74 rooms. Many of the dormitories are little better than hovels, whether as regards size, cleanliness, ventilation, or drainage, and are calculated to engender disease in its most malignant form. This opinion I have seen fully borne out during the prevalence of the late epidemic. I have had opportunities of witnessing, in rooms not measuring more than fourteen feet square, from 15 to 20 men, women, and children lodged—and the women with nothing more than a shift, which, from length of time and

out into the lane, to obey the calls of nature, in a state of complete nudity."

Mr. Bennett adds:—"For two or three days previous to the outbreak of cholera, muggers had been arriving from Ludworth and Easington Lane, infected localities. The disease soon spread to the well-ordered and clean people. The mortality was very great, nearly the whole of those attacked with Asiatic cholera dying — probably six-sevenths. About half of the whole population were affected, more or less, with diarrhœa, &c. The cholera at Wrekenton need not be matter of surprise. Here we had overcrowded, ill-ventilated, damp, dirty houses, containing human beings as dirty as the animals with which they were living, and as nearly reduced to their state by their immodest habits; these localities being as bad, or nearly so, as in a densely-populated town, and as favourable for the development of cholera and spread of contagious disease. There was also frequent arrival of individuals from infected places." Moreover, "although the village of Wrekenton stands very high, the part to which the pestilence was most confined, and where it was the most virulent, is comparatively low. On the east and south, the ground is considerably above some of the houses; and immediately opposite, on the west, is a field of a very boggy nature."

Annexed is a chronological table, similar to that of 1831–32, showing the progress of the mortality, from cholera and diarrhœa, in the whole of Gateshead, in 1849:—

	C.	D.		C.	D.
8 January, 1849	0	1	1 February	5	0
9	1	0	2	3	0
10	2	1	5	1	0
11	1	0	6	2	1
15	2	0	8	1	0
16	2	0	9	2	0
17	1	0	10	2	0
22	4	0	11	1	0
23	8	0	13	1	0
25	1	0	15	2	0
27	4	0	23	2	0
28	1	1	27	1	0
29	2	0	26 March	1	0
30	5	0	1 May	1	0
31	5	0	3	1	0

the filthy habits of the wearer, had the appearance more of oilcloth than the under-garment of a female. They were all breathing an atmosphere pestilential in the extreme. Added to this, unrestrained sexual intercourse took place in the presence of the youth of both sexes, not a screen of any kind intervening. Indeed, in my experience, I have witnessed, along with other officers, sights of this kind such as would disgrace a savage life, but which, to the inmates of these dens, from familiarity and their low standard of morality, went unnoticed, except in the shape of vulgar jest or ribald remark. * * * To place the common lodging-house under proper regulations, with regard to space, ventilation, drainage, and cleanliness, would tend to lessen disease in those densely-peopled neighbourhoods."—(Report by Mr. Schorey to Mr. Rawlinson.)

Since this report was made, the Common Lodging Houses Act has come into operation, and has verified the prediction of our intelligent Superintendent of the Borough Police.

	C.	D.
9 May	1	0
13	0	1
17 June	0	1
11 August	1	0
12	2	0
14	1	0
15	0	1
20	1	0
21	1	0
25 August	1	0
28	2	0
5 September	1	0
6	1	0
9	5	0
10	2	0
11	5	1
12	4	0
13	6	0
14	6	0
15	8	0
16	4	0
17	6	0
18	8	1
19	3	0
20 September	3	0
21	3	0
22	2	1
23	2	0
24	2	0
25	3	0
26	3	0
27	2	0
28	0	1
29	1	0
30	3	0
1 October	2	0
4	1	0
5	4	0
6	1	1
7	1	0
8	1	0
15	0	1
6 November	0	1
16	0	1
17	0	1
26 December	0	1
17	0	1

Cholera	168
Diarrhœa	18
Total	186
Males	100
Females	86
Total	— 186

1853.

The third visitation on the banks of the Tyne commenced in the month of August, 1853, near its close—the first three deaths occurring in the following order :—

August 30.—Newcastle, George Ellison, No. 3, Lisle-street.
August 31.—Gateshead, Mary Tait, No. 27, Victoria-street.
Septem. 1.—Bill Quay (Heworth), Elizabeth Handy.

In 1831, and again in 1849, it was in the Pipewellgate district that the Gateshead epidemic broke out. In 1853, the earliest death took place in a part of the town called the "Barn Close," which was an open field when the cholera first appeared, in 1831. In 1849, two deaths occurred in the locality. The register simply states, as to one of them (a child dying of diarrhœa), that its residence was in "Barn Close," without naming the street. The other resided in Grosvenor-street—a street then unfinished, and which first appears on the poor rate in the year of the second epidemic. It was at a still later period that Victoria-street came upon the rate.

The houses in the Barn Close, originally built each for the occupation of a single family, have since, to a considerable extent, been converted into "tenement property"—that is, have been let to more families than one—although not adapted to divided occupation; and Mary Tait was one of 30 persons inhabiting the same house—six rooms (two of them cellars) being occupied by five families.

The census of the street in which this woman died was taken by the writer on the 25th of October, accompanied by Mr. R. H. Wilson, medical officer, and Mr. William Hall, borough surveyor; when they found that 114 families, comprising 488 members, were occupying 160 rooms in 33 houses; that 17 of the inhabitants had died in the first month of the epidemic;* and that of these 17, 10 were inmates of cellars.†

Another locality of recent origin, unknown before 1849, is New Gateshead. Here, in the time of the epidemic, it was remarked with popular wonder, that while in one part of the district there was much

* Including one who died from inflammation of the lungs; and a child of Mary Tait, removed on the death of its mother.

† One word about Victoria-street, so named in honour of our Queen, in whose reign it has been built. Where Victoria-street now stands there was formerly a stone-quarry. Into this quarry, when worked out, town-refuse was allowed to be "shot" at so much per load. When the cavity was filled up, the street was built, and it has never been paved. "The law allowed it"—so houses were clapped down upon the site, and let off, without regard to the health of the inmates or of the community. When poor Mary Tait was a living woman, she was one of *thirty* individuals, divided into five families, who occupied the same house. The correspondent of the *Times*, who, being at an inn with his wife, astonished Boniface by asking for a "dressing room," complains to our contemporary that "hotelkeepers usually seem to think that gentlemen and their wives herd together at home like two pigs in one sty!" We cannot bring ourselves to weep over the miseries of this unhappy husband, doomed by coarse and vulgar innkeepers to dress in the same room with his wife; but if *that* be a discomfort

disease and mortality, in the other there was none. The inhabitants were all of the industrial class; the Whittle Dean water, which had been accused as a cause of the cholera, was used in every house alike; the healthy portion, built before a sewer was constructed, had open privies, while the other had waterclosets, (but also ashpits). There was, however, this difference:—Where there was no sickness, every family had a separate house. Where the epidemic raged, every house, on an average, was occupied by from three to four families.

Of this district, too, the census has been taken since the epidemic (on the 28th of November). In the uninfected moiety (built by Messrs. Hawks, Crawshay, & Sons, for their workpeople), there were two cottages empty and nineteen occupied, the total number of the inhabitants being 130, or about 7 per cottage. In the other moiety, 26 houses (comprising 157 occupied rooms) were inhabited by 91 families and 417 individuals, giving 16 inmates to a house. In the former portion of the district, there was but one death—that of an infant from diarrhœa, removed thither on the death of its mother and sister elsewhere. In the latter, there were 17 deaths:—13 from choleraic disease, one from jaundice, one from liver disease, one from scarlatina. The seventeenth was the stillborn child of a woman who died from cholera in the moment of parturition. The whole of New Gateshead had its origin in an honourable desire in the founders to provide improved dwellings for the working classes; but the self-contained portion is less crowded and better-ventilated than the other—is occupied by a superior class of tenants—and is kept in better condition.

The writer being more than ever led, by the circumstances of the last epidemic, to suspect that overcrowding was a powerful predisposing cause‡—(such overcrowding, closeness, and foulness being commonly accompanied by inferior habits)—he has been at considerable pains to trace out the exact locality of every death, that this suspicion might be brought to the test of actual fact. In this respect, official records, as

and an offence, what shall we say of the life of Hugh and Mary Tait, and their 28 fellow-inhabitants of one small house! Two underground rooms, partially lighted by sunken windows, were inhabited by two families. A single family occupied the floor on a level with the street. The remaining inmates, the deceased being one, possessed the upper rooms. There is a common ashpit in the yard; and the "monster nuisance," so justly denounced at the last meeting of the Gateshead Board of Health, and which was reported by the town-surveyor some twelve or eighteen months ago, is as near to Mary Tait's as to the memorialist's residence in Mulgrave-terrace. Bearing in mind the nature of the site on which the street is built—a mass of loose and porous rubbish—the imagination may readily conceive its present condition—may imagine the state of the *sponge* on which these houses stand. One of the tenants—a respectable and intelligent young woman—calling our attention to a nuisance in her own house, where the liquid contents of a neighbour's privy and ashpit oozed copiously through a wall, and invaded her dwelling, bitterly and truly remarked that "it was enough to breed a pestilence!" Such is Victoria-street, which has risen into existence since the epidemic of 1832, and taken precedence of Pipewellgate in giving birth to the epidemic of 1853.—*Gateshead Observer* (October 1, 1853).

‡ The Earl of Shaftesbury has since said, in a letter to the *Times* (April 15, 1854), "Overcrowding is more fatal to health and life than defective drainage or water supply."

shown by the tables of 1832 and 1849, are very imperfect, mainly owing to the want of correct information in the individuals on whose authority the entries are made by the proper officers. With the assistance of the medical men and the registrar, and by inquiries on the spot, the whole mortality of 1853 has been traced home, and the result is elsewhere given in a tabular form. Mr. Hall has also prepared a map of Gateshead, on which he has thus (and with the assistance of Mr. R. H. Wilson) been enabled to mark, for the information of the Commissioners of Inquiry sent down by the Crown, every fatal footprint of the pestilence, and to point out its favourite haunts.

We must not look, however, to locality alone, for the explanation of cholera sickness and mortality. When a subtle, secret influence is present, to which a whole community is exposed, and by which all are more or less affected, personal predispositions—ill-health, disease, intemperance, or other causes—may give it victims among the comfortable, well-housed portion of the population. None are secure. Still, as a rule, the cholera has been the close companion in Gateshead of sanitary neglect, and has found its prey almost wholly among the humbler classes.

Of the 433 persons who died, chiefly in September and October, 1853, the great bulk were so obscure in station as not to be members of families contributing directly to the relief of the poor.

The number of direct ratepayers in Gateshead is 1,930. The number that died of the epidemic was but 10.

If we assume the number of each family to be 5, this (multiplying thereby the 1,930) will give a total of 9,650. The number of persons that died, direct ratepayers and members of families of direct ratepayers, was but 29.

The rateable value of the property of all Gateshead is £54,182. The rateable value of the property occupied by the families of the 29 does not amount to £400.

Several, too, of the 29 dwelt in the worst-conditioned localities of the town.

It should be observed, that in some cases where epidemic death occurred, the disease was imported, and is not chargeable upon the locality. In Easton-court, for example, a young man fell ill, who had come over from Newcastle to bring intelligence of the death of a relative in that town from cholera. His sister followed, to nurse him where he lay; and they both died—the only deaths in the court. So in Innis's-court:—the only death in that locality was in the person of a woman who had quitted Newcastle on losing her husband by the pestilence.

Cases were frequent in which more members than one of a family died. It has come under the writer's observation that in 39 instances two members, and in 12 instances three, were carried off during (and nearly the whole of them by) the epidemic, making altogether 114 individuals, or more than a fourth of the total mortality.

The number of deaths per day, from all causes, from the commencement to the close of the cholera mortality of 1853, are given in the

following table. It will be observed that the virulence of the epidemic covered little more space than a single month.

	C.	D.	ETC.		C.	D.	ETC.
31 August	1	0	2	1 October	9	1	2
1 September ...	0	0	1	2	4	2	1
2	1	2	1	3	1	0	1
3	1	0	1	4	1	0	1
4	0	0	3	5	2	0	4
5	2	2	2	6	0	1	1
6	1	0	1	7	2	0	1
7	3	0	2	8	1	0	1
8	2	1	4	9	1	1	3
9	5	1	1	10	0	0	3
10	8	0	3	11	1	0	1
11	9	2	2	12	1	0	2
12	17	1	1	13	2	0	0
13	17	1	3	14	1	0	0
14	31	1	6	15	0	1	4
15	37	2	0	16	1	0	3
16	30	0	9	17	0	0	0
17	25	2	4	18	0	0	0
18	25	4	4	19	0	0	3
19	16	3	3	20	2	0	2
20	14	4	4	21	0	1	2
21	21	1	2	22	0	0	0
22	11	3	8	23	0	0	1
23	14	1	2	24	1	0	0
24	12	0	7	25	0	0	2
25	22	2	3	26	0	0	3
26	8	1	4	27	0	0	1
27	10	1	4	28	0	1	1
28	2	1	5	29	0	1	2
29	4	0	1	30	0	1	4
30	3	0	0	31	0	0	3
Total	352	36	93	Total	30	10	52

There were five other deaths from cholera, subsequent to the month of October, as follows :—

November 1.	Pipewellgate Banks	1
" 5.	Pipewellgate (Blue Bell-entry)	1
	St. Edmund's-place	1
" 7.	Blackwall.....	1
" 11.	Pipewellgate (Tyne-entry)	1

Thus, then, Pipewellgate, which gave precedence to Victoria-street in August, closed in November the epidemic of 1853—the total epidemic mortality being, in 73 days, 387 from cholera and 46 from diarrhœa :—together, 433, (198 being males, and 235 females).

Some portion, also, of the mortality from other causes (occupying the third column in the table) must be chargeable on the epidemic. 63 per month was the ordinary mortality of Gateshead in the year prior to the last outbreak. The total number of deaths in November of 1853 was 64 ; and in December, 61. A third, therefore, of the mortality of September, or thereabouts, ascribed to other than choleraic causes, may fairly be transferred to the epidemic—making the total sacrifice, from preventible disease, 463.

On one single day in September—the most fatal day of the pestilence—39 men, women, and children perished. Cholera bore undisputed sway. Death held its hand in every other form, leaving the epidemic sole master of the field.

POPULATION (1851) AND MORTALITY (1853).

The parish of Gateshead, comprising the ecclesiastical districts of St. Mary and St. John, was divided in 1851, in taking the census, into 23 portions, as under :—

1. Bounded on the N. by the Tyne ; W., the Team rivulet ; S., Hexham road and Pipewellgate street ; S.E., a path from the Hexham road to the Rabbit banks, and thence to the railway station (now the railway workshops) ; E., stairs W. of Wardman's Houses, and Bridge street.
2. Bounded on the N. by Bailey chare (or Half Moon lane); W., Victoria street ; S., Hexham road ; E., West street.
3. Bounded on the E. by Victoria street ; S., Hexham road ; W., footpath from Bensham to the Rabbit banks ; N., the railway.
4. Lying W. of Union row and S. of Hexham road to the Team, comprising Bensham.
5. Bounded on the W. by the stairs W. of Wardman's Houses ; S., Bailey chare ; E., lane from Bailey chare to Pipewellgate ; N., Pipewellgate street.
6. Bounded on the N. by Pipewellgate ; W., lane from Pipewellgate to Bailey chare ; E., High street, Church street, and Bridge street ; S., Bailey chare.
7. Bounded on the N. by Bailey chare ; W., West street ; S., Ellison street ; E., High street.
8. Bounded on the N. by Ellison street ; W., West street ; S., Jackson street ; E., High street. (The foregoing districts make up the West Ward of Gateshead.)
9. Bounded on the N. by the Tyne ; W., Bridge street, and a lane from Hillgate, W. of Abbot's Ironworks, to Oakwellgate and East street ; S., Hillgate street and Park lane ; E., Hawks's railway.
10. Bounded on the N. by the Tyne and Park lane ; E., Heworth ; S., Sunderland road ; W., Hawks's railway.
11. Bounded on the N. by Park street ; W., High street ; S., Park lane ; E., East street.
12. Bounded on the N. by Oakwellgate chare and Easton street ; W., High street ; S., Park street ; E., East street.
13. Bounded on the N. by Cannon street and Church street ; W., High street ; S., Oakwellgate chare ; E., Oakwellgate.
14. Bounded on the N. by Hillgate street ; W. Church street ; S., Cannon street ; E., lane from Oakwellgate to the coal staith in Hillgate.
15. Bounded on the N. by the lane from Oakwellgate to the coal staith in Hillgate ; W., Oakwellgate ; S., Easton street ; E., East street, and lane from Oakwellgate to Hillgate, W. of Abbot's works. (This district completes the East Ward.)
16. Bounded on the N. by Hexham road ; E., by Union row ; W., by High West street ; S., by open country lying between the town and the Low Fell.
17. W. side of Brunswick street, Cramer Dykes, King James's street, Tenements, Claxtons, E. side of High street S. of Sunderland road, Hind's

House at Deckham Hall, Shipcote Farms, Rodsley House, Kell's Field, Barras's row.

18. Bounded on the N. by Jackson street; W., High West street; S., Potticar lane; E., High street. (The foregoing districts constitute St. Mary's.)

19. Low Fell E. of New Durham road; with also the Houses at Sisson's Gate, and the E. side of Brunswick street.

20. Low Fell W. of New Durham road.

21. Wrekenton, lying S. of Team waggonway.

22. Sheriff Hill, E. of old Durham road.

23. Sheriff Hill, W. of old Durham road. (Completing the South Ward, and also St. John's.)

The enumerators' returns supply (with the exception of the mortality column) the following information as to these districts. The last column in the table gives the number of deaths in each district, from cholera and diarrhœa, in the epidemic of 1853.

District.	Inhabited Houses.	Families.	Individuals.	Scotch.	Irish.	Mortality.
1.	155	184	926	40	63	16
2.	163	346	1557	75	56	31
3.	152	233	1112	37	14	15
4.	233	276	1622	62	33	8
5.	195	271	1446	112	355	38
6.	110	260	1228	110	77	27
7.	187	264	1214	35	13	21
8.	159	256	1074	26	41	18
9.	96	159	757	37	35	14
10.	233	319	1587	51	71	33
11.	112	249	1147	49	151	42
12.	121	238	1076	47	61	32
13.	144	291	1312	59	63	26
14.	77	292	1290	75	194	39
15.	97	243	1167	59	123	33
16.	91	91	517	18	2	1
17.	87	90	401	3	19	6
18.	156	299	1384	49	33	14
19.	171	196	794	8	12	9
20.	114	129	553	9	15	3
21.	180	185	890	22	32	1
22.	182	200	885	18	50	2
23.	165	172	868	13	31	4
	3380	5263	24,807	1014	1544	433

The number of deaths in each locality of the several enumeration districts was as follows:—

No. 1.

Pipewellgate, North Side	5
——, South Side, in Prockter's Buildings	2
Smith's Cottages, &c., Rabbit Banks	4
Windmill Hills, in the Old Mill Field:—	
Old Mill	2
Near ditto	2
Nearly opposite ditto (S.E.)	1
	16

No. 2.

Barn Close:—	
Brunswick Terrace	4
Melbourne Street	6
Grosvenor Street (six in cellars)	10
Victoria Street (four in cellars),	
East Side	8
Mulgrave Terrace, East	3
	31

No. 3.

Barn Close:—	
Mulgrave Terrace, West	2
Victoria Street (six in cellars), West Side	7
William Street	5
Pollock Street	1
	15

No. 4

Hall Terrace, Union Row	1
Hovel near New Tollgate	1
Saltwell Terrace	1
Low Team	5
	8

☞ Four died in this district, in the union-workhouse, who had been removed thither from other parts of the town.

No. 5.

Pipewellgate and its Banks, South Side, going West:—	
Bankwell Stairs	2
Blue Bell Entry	3
Thompson's Stairs	1
Thompson's Entry	4
Blacksmith's Stairs	2
Clump of Buildings on the Banks, second West of High Level Bridge	2
Ditto, first ditto	1
Pitman's Entry	2
Scott's Row and Buildings	3
Bage's Entry	1
Veatch's Buildings	9
Providence Place	1
Bowl Alley	2
Prockter's Buildings	3
Police Cottages	2
	38

No. 6.

George and Dragon Yard	1
Bottle Bank, No. 39	1
Thompson's Yard	1
Hawk Entry	3
Dixon's Yard	2
Dobson's Yard	1
Bird in Bush Yard	2
Smith's Yard	4
Sun Yard	4
Stobbs's Yard	2
The Island	6
	27

No. 7.

Abbot's Buildings	2
Swinburne Place	1
Nelson Street (three in cellars)	6
Lambton Terrace	3
Inuks's Yard	1
Ellison Yard and Square	7
Ellison Street, North Side	1
	21

No. 8.

Ellison Street, South Side	1
King William Street	1
Paxton's Yard	4
Gordon's Yard	3
Easton Court	2
Boroughholders' Yard	2
Taylor's Yard	2
Marshall's Yard	2
Providence Place, West Street	1
	18

No. 9.

Hillgate, North Side, going East:—	
Chapman's Yard	3
Norris's Buildings	1
Near Vinegar Factory	1
Opposite Price's Buildings	1
Sugarhouse Lane	1
Elsewhere	1
East Street, East Side	4
Quarry Field	2
	14

No. 10.

Old Engine	2
New Gateshead	14
Saltmeadows	5
Saltmeadows Terrace	3
Houses near Gateshead Ironworks	4
Shearlegs	1
Blackwall	2
Tyne Main	1
Friars Goose	1
	33

No. 11.

Park Lane	3
New Streets near Trinity Chapel:—	
Trinity Street	4
Riddell Street	4
Clavering Street	3
Hopper Street	1
Nuns Lane	6
No. 100, High Street	1
No. 98-99, High Street	1
Leonard's Court	15
No. 92, High Street	1
Union Lane	1
St. John's Lane	2
	42

No. 12.

Park Street	7
Lee's Court	1
No. 73, High Street	1
Lister's Yard and Buildings, &c.	14
Charlton's Yard	1
Low Lister's Yard	1
Crutchy Tom's Stairs	1
Easton Street, South Side	1
S.W. corner of Oakwellgate Chare	1
Head of Oakwellgate, behind the last-named premises	2
East Street, West Side	2
	32

No. 13.

Oakwellgate, West Side :—	
Oakwellgate Chare, North Side	3
Woolston's Buildings	1
Orrick's Yard	2
Thompson's Yard	2
Bell's Yard	4
Gillender's Entry	1
Hymers's Court	1
Pipehouse Entry	1
Near ditto	1
Wake's Yard (East Bailey Chare)	2
Errington's Yard	2
Near Cannon Street	1
Cannon Street :—	
Hay or Guthrie's Yard	2
Elsewhere	1
Church Street :—	
Brandy Vaults	1
Near ditto	1
	26

No. 14.

Church Street, North of Church Stairs	3
Church Walk	13
Sugarhouse Bank	2
Hillgate and its Banks, North Side :—	
Price's Buildings	7
Dunn's Buildings	6
Cummins's Buildings	1
Bertram's Buildings	7
	39

No. 15.

Easton Street, North Side	5
Easton Place	2
Oakwellgate, East Side :—	
Old Palace	2
Pit Yard	5
Oakwellgate Lane	7
Redhead's Yard	3
Garden Street	4
Thynn's Yard	2
Hymers's Buildings (in a yard)	2
Near ditto	1
	33

No. 16.

Near the Old Tollgate, West of Walker Terrace	1

No. 17.

Mount Pleasant	2
Cramer Dykes	2
St. Edmund's Place	2
	6

No. 18.

Powell's Yard, Busy Burn	2
Grahamsley Street	3
Charles Street	2
Charles Square	1
Parkin's Yard	1
Mould's Yard	1
Jackson Street, South Side	3
Back Lane, nearly opposite Brewery Field	1
	14

No. 19.

Low Fell, East of New Durham Road	9

No. 20.

Low Fell, West	3

No. 21.

Wrekenton	1

No. 22.

Sheriff Hill, East of Old Durham Road	2

No. 23.

Sheriff Hill, West	4

In 1851, the cholera district of Pipewellgate, and the adjacent banks, courts, &c., comprehending that part of the town which lies on the slope north of Half Moon-lane, and West of High-street, Church-street, and Bridge-street, had a population as under. With the numbers is given the mortality by choleraic disease in 1853.

	Deaths.	Houses.	Families.	Individuals.
Pipewellgate, North Side	5	30	59	282
———, South Side to Wardman's Stairs West, and Half Moon-lane East	38	190	263	1406
Rabbit-banks :—				
Smith's cottages, &c.	4			
Prockter's-buildings (portion West of Wardman's-stairs)	2			
	6	99	99	501
Courts and yards of High-street, Bottle-bank, and Bridge-street	21	84	185	907
The Island	6	26	75	321
Total	76	429	681	3417

One of the Pipewellgate lodging-houses harboured, on the night of the census, 28 men and 26 women, the inmates presenting the following human varieties :—

Scotland	18
England	14
Ireland	13
Germany	1
Russia	1
East Indies	1
Total	48

There were large houses in Hillgate still more populous :—

	Families.	Inmates.
1.	16	71
2.	13	49
3.	12	47
4.	11	48

Thus, in four houses there were dwelling 215 persons—a larger population than that of the union workhouse. A fifth lodging house in Hillgate, kept by a West Indian, was occupied by 41 persons, 23 of whom were Irish.

Further East, at the Saltmeadows, where several deaths occurred from cholera in 1853, there were 61 families, comprising 311 persons, occupying 26 houses.

At the time of the outbreak, it is probable that, all our manufactures enjoying unexampled prosperity, the town was even more crowded than in 1851, and our working population in the receipt of large wages, too frequently not over well spent.

One of the most overcrowded localities in Gateshead is Leonard's-court, named in the parish register of 1832 "Leonard's Garden." In that year it contributed but a single death to the cholera mortality. In 1849, it produced 4 deaths. The mortality rose to 15 in 1853, or nearly one death for every house. The census of 1851 gives the following return :—

Houses	20
Families	64
Individuals :—	
English	170
Scotch	20
Irish	148
Welsh	1
Others	3
	—342

One of the two "oldest inhabitants" of Gateshead (each being 97 years of age) was discovered by the enumerators of 1851 in Leonard's-court—a Scotchwoman.

The census of Victoria-street, specially taken in 1853, is reported in a tabular form on the other side of the leaf, and is followed by chronological tables of the mortality in the three epidemics.

CENSUS of VICTORIA-STREET, taken October 25, 1853, the Houses mostly consisting of Six Rooms (two of them Cellars); with a Statement of the Mortality during the Epidemic.

Number of House.	Families.	Persons.	Empty Rooms.	Deaths.	Inhabitants of the Street at the Outbreak of the Epidemic who died within 26 days.
East Side of the Street.					
1.	5	15	0	0	
2.	4	19	1	0	
3.	4	17	0	0	
4.	3	14	1	0	
5.	4	11	0	0	
6.	2	10	3	2	John Arkle, Sept. 15. Edward Austin, Sept. 18.
7.	4	21	0	0	
8.	3	18	2	0	
8½.	1	4	0	0	
9.	6	21	0	0	
10.	4	14	1	2	Frank Mackenzie, Sept. 9, (in a cellar). Elizabeth Hunter, Sept. 18.
11.	4	29	0	1	Robert Dixon, Sept. 22.
12.	6	27	0	0	
13.	5	24	0	0	
14.	8	32	0	3	Ann, John, and Bridget M'Rae, Sept. 16, 17, 18, (in a cellar).
15.	2	13	0	0	
16.	2	7	0	0	
West Side.					
20.	2	10	0	1	Mary Ann Philipson, Sept. 21, (in a cellar).
21.	4	21	0	0	
22.	0	0	6	0	
23.	4	16	0	0	
24.	6	22	0	2	Thomas Hunter, Sept. 9, (in a cellar). William Firbank, Sept. 20, (in a cellar).
25.	5	15	1	1	Mary Cummins, Sept. 19, (in a cellar)
26.	6	25	0	1	Ann Thompson, Sept. 22, (inflammation of the lungs).
27.	4	25	0	3	Mary Tait, August 31, the first cholera death in Gateshead. Her child, removed on her decease, died shortly afterwards. Isabella Hunter, Sept. 13, (in a cellar). 30 inmates on August 31.
28.	5	23	0	1	Mary Doyle, Sept. 25, removed from a cellar to the workhouse hospital.
29.	3	14	1	0	
30.	3	9	1	0	
31.	2	4	No cellars.		
32.	1	3			
33.	2	5			
	114	488	17	17	

The West side of Victoria-street, Mulgrave-terrace West, and William-street, form a triangle enclosing a cow-byer, &c., which the Borough Surveyor, in a report of October 4, 1852, brought under the consideration of the Local Board of Health. "The stench arising from the midden connected therewith," he said, "is such as to call forth the most bitter complaints;" and he "recommended that a notice be served upon the occupier of the cow-house for its removal." The Board resolved that the occupier should "retain his cow-house for the present, but notice to be given to him to remove the refuse every day." When the cholera appeared, an inhabitant of the terrace again brought the nuisance before the Board, and the Surveyor pronounced it to be "a pest to the neighbourhood, which ought to be entirely removed." In the triangle of which it is the nucleus, 16 of the inhabitants died during the epidemic.

August.																		September.												Oct.		Nov.
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	31	2	3	4	5	7	8	9	10	11	12	13	21	3	22	5
	1				1																											
						1																										
					1				1	1	1	1	1																			
			1								1											1										
1		1	1	1			2						1																			
								1																								
				1		1																										
								1	1		1																					
				1								2											2									
										1																						
			1																			1	1									
																	1															
																						1							1			
																			1													
							1											1		2				1								
																																1
		1																														
			1											1		1							1									
								1																	1		1					
											1				1												1					
														1																		
														1				1				1										
																					1											
																					1											
																							1									
																										1						
																												1				
																														1		
																															1	
1	1	2	4	3	2	2	3	3	2	2	4	3	2	3	1	1	1	2	1	2	2	4	5	1	1	1	2	1	1	1	1	1

ce the persons buried had been brought to the hospital.
r."—*Ibid.*

MORTALITY OF THE FIRST EPIDEMIC, (1831–32).

Burials.	From.	December, 1831.								January, 1832.																					
		16	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17	18	20	22	24	25	29
7	Bottle Bank	1				2				1				1																	
9	Low Fell	1			3	1			1			2																			
36	Pipewellgate		1	2	3	2	1	2	2	1	1		1		1	2	1	1	1		1				1	1					
20	Oakwellgate			2	1	5	2						2	1	3		1														
29	Hillgate				4	2	1	1						1	2	1	1		1	1				1				1			
8	Church Street				1	3																1							1		
1	Sun Entry				1																										
4	Ship Entry				2		1			1																					
14	Gateshead				1																										
1	Stourbridge, Pipewellgate				1																										
4	Busy Burn				1																										
7	South Shore				1												1														
1	High Street, near Grey Horse					1																									
1	West Street					1																									
4	Jackson Street					2	1																								
1	Below Jackson Street					1																									
1	High Street, opposite Pleasant Row						1																								
2	Grey Horse Entry						1	1																							
3	Pipewellgate Banks							2																							
15	Hospital*								4	1	3	1				1		1			1	1	1				1				
3	Hospital (from Pipewellgate)								1					1												1					
5	Bell's Yard									1																1					
2	Bensham										1																				
1	Gateshead Park											1																			
1	High Street, near T. K. Fife's											1																			
3	Cannon Street												1																		
2	Church Walk													1																	
4	Nuns Lane													1	1		1		1												
13	High Street														1	1															
2	Hospital (from Oakwellgate)															1													1		
1	Banktop, Pipewellgate																1														
1	Leonard's Garden																													1	
1	Almshouse (Hillgate)																														1
2	New Greenwich																														
1	Friars Goose																														
2	Fredrickshall																														
1	Pipehouse Entry																														
4	Oakwellgate Lane																														
3	Easton Street																														
3	Wrekenton																														
1	Above Sunderland Road																														
3	Poor House																														
1	Quarry Field																														
1	Park Lane																														
1	Blackwall																														
1	Sunderland Road																														
1	Bolivar Place, East Street																														
1	Garden Street																														
1	Ellison Street																														
234		2	1	4	19	20	8	6	8	5	5	5	4	6	8	6	6	2	3	1	2	2	1	1	1	3	1	1	2	1	1

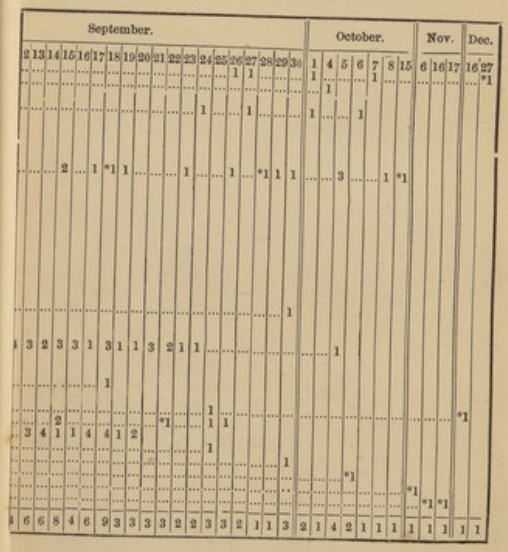
Burials.	From.	February.				March.			July.											
		2	11	27	28	1	3	25	6	15	16	17	22	24	25	26	27	28	29	30
7	Bottle Bank																			
9	Low Fell																			
36	Pipewellgate	1	1						1			1								
20	Oakwellgate																			
29	Hillgate											1			1			1		
8	Church Street							1												
1	Sun Entry																			
4	Ship Entry																			
14	Gateshead						1						1	1		1			2	
1	Stourbridge, Pipewellgate																			
4	Busy Burn																			
7	South Shore																			
1	High Street, near Grey Horse																			
1	West Street																			
4	Jackson Street			1																
1	Below Jackson Street																			
1	High Street, opposite Pleasant Row																			
2	Grey Horse Entry																			
3	Pipewellgate Banks																			
15	Hospital*																			
3	Hospital (from Pipewellgate)																			
5	Bell's Yard																			
2	Bensham																			
1	Gateshead Park																			
1	High Street, near T. K. Fife's																			
3	Cannon Street																			
2	Church Walk																			
4	Nuns Lane																			
13	High Street			1						1	1	1				1	1			
2	Hospital (from Oakwellgate)																			
1	Banktop, Pipewellgate																			
1	Leonard's Garden																			
1	Almshouse (Hillgate)																			
2	New Greenwich				1															
1	Friars Goose					1														
2	Fredrickshall																			1†
1	Pipehouse Entry																			
4	Oakwellgate Lane																			
3	Easton Street																			
3	Wrekenton																			
1	Above Sunderland Road																			
3	Poor House																			
1	Quarry Field																			
1	Park Lane																			
1	Blackwall																			
1	Sunderland Road																			
1	Bolivar Place, East Street																			
1	Garden Street																			
1	Ellison Street																			
234		1	1	2	1	1	1	1	1	1	1	3	1	1	1	2	1	1	2	1

Burials.	From.	August.																								
		1	4	5	6	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	31
7	Bottle Bank									1				1												
9	Low Fell														1											
36	Pipewellgate							1						1				1	1	1	1	1				
20	Oakwellgate											1								1						
29	Hillgate				2				1		1	1	1			2						1				
8	Church Street																1									
1	Sun Entry																									
4	Ship Entry																									
14	Gateshead		1	1	1	1	1						1		1											
1	Stourbridge, Pipewellgate																									
4	Busy Burn																1	1		1						
7	South Shore												1								2					
1	High Street, near Grey Horse																									
1	West Street																									
4	Jackson Street																									
1	Below Jackson Street																									
1	High Street, opposite Pleasant Row																									
2	Grey Horse Entry																									
3	Pipewellgate Banks																		1							
15	Hospital*																									
3	Hospital (from Pipewellgate)																									
5	Bell's Yard											1														
2	Bensham																									1
1	Gateshead Park																									
1	High Street, near T. K. Fife's																									
3	Cannon Street																									
2	Church Walk																									
4	Nuns Lane																									
13	High Street															1										
2	Hospital (from Oakwellgate)																									
1	Banktop, Pipewellgate																									
1	Leonard's Garden																									
1	Almshouse (Hillgate)																									
2	New Greenwich																									
1	Friars Goose																									
2	Fredrickshall	1‡																								
1	Pipehouse Entry										1															
4	Oakwellgate Lane											1											1		1	
3	Easton Street																1									
3	Wrekenton																			1				1		
1	Above Sunderland Road																						1			
3	Poor House																						1			
1	Quarry Field																									
1	Park Lane																									
1	Blackwall																									
1	Sunderland Road																									
1	Bolivar Place, East Street																									
1	Garden Street																									
1	Ellison Street																									
234		1	1	1	3	1	1	1	1	1	2	4	3	2	2	3	3	2	2	4	3	2	3	1	1	1

Burials.	From.	September.												Oct.		Nov.
		2	3	4	5	7	8	9	10	11	12	13	21	3	22	5
7	Bottle Bank															
9	Low Fell															
36	Pipewellgate															
20	Oakwellgate					1										
29	Hillgate															
8	Church Street															
1	Sun Entry															
4	Ship Entry															
14	Gateshead															
1	Stourbridge, Pipewellgate															
4	Busy Burn															
7	South Shore						2									
1	High Street, near Grey Horse															
1	West Street															
4	Jackson Street															
1	Below Jackson Street															
1	High Street, opposite Pleasant Row															
2	Grey Horse Entry															
3	Pipewellgate Banks															
15	Hospital*															
3	Hospital (from Pipewellgate)															
5	Bell's Yard					1	1									
2	Bensham															
1	Gateshead Park															
1	High Street, near T. K. Fife's															
3	Cannon Street					1							1			
2	Church Walk		1													
4	Nuns Lane															
13	High Street	1		2				1								
2	Hospital (from Oakwellgate)															
1	Banktop, Pipewellgate															
1	Leonard's Garden															
1	Almshouse (Hillgate)															
2	New Greenwich															1
1	Friars Goose															
2	Fredrickshall															
1	Pipehouse Entry															
4	Oakwellgate Lane						1									
3	Easton Street								1		1					
3	Wrekenton										1					
1	Above Sunderland Road															
3	Poor House	1				1										
1	Quarry Field				1											
1	Park Lane				1											
1	Blackwall						1									
1	Sunderland Road									1						
1	Bolivar Place, East Street											1				
1	Garden Street													1		
1	Ellison Street														1	
234		2	1	2	2	4	5	1	1	1	2	1	1	1	1	1

* The Cholera Hospital of 1832 was established at Powell's Almshouses, in High-street. It will be seen that, in some few instances, the parish-register states whence the persons buried had been brought to the hospital.

† "Christian Olsen, a Norwegian sailor."—*St. Mary's Register.* ‡ "Andreas Colson, a Norwegian sailor."—*Ibid.*


September.
October.
Nov.
Dec.

MORTALITY OF THE SECOND EPIDEMIC, (1849).

☞ Those marked thus (*) died from Diarrhœa.

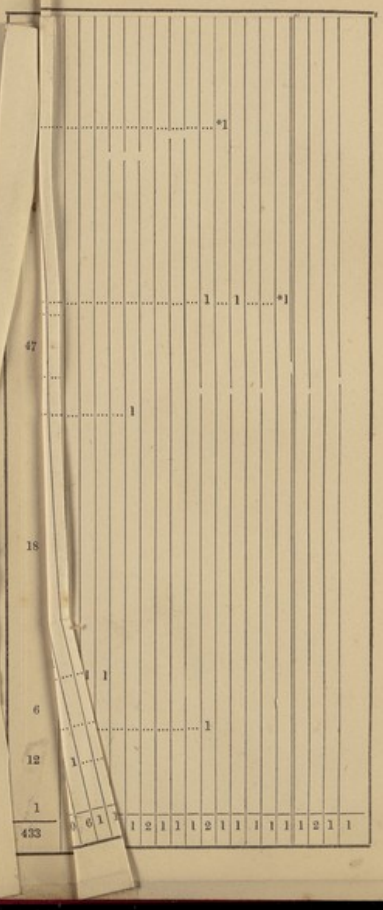
Deaths.	From	January.															February.											
		8	9	10	11	15	16	17	22	23	25	27	28	29	30	31	1	2	5	6	8	9	10	11	13	15	23	27
41	Pipewellgate	*1	1	2	1	2	2	1	4	5	1	3			2	3	2	1	1	*1						1	1	
4	Sheriff Hill			*1																								
1	Easton Street									1																		
7	South Shore									2													1					
5	Hillgate											1	1			1						1		1				
1	Bensham												*1															
1	Bottle Bank													1														
3	Church Walk													1	1					1								
21	Union Workhouse														1			1									1	
2	Oakwellgate														1		1											
1	West Street															1												
1	Grosvenor Street																1											
1	Windmill Hills																1											
1	Charles Street																	1										
2	Church Street																			1	1							
2	Pipewellgate Banks																					1				1		
1	Lambton Terrace																						1					
1	Grahamsley Street																								1			
1	Oakwellgate Lane																											1
4	Leonard's Court																											
2	Kell's Lane (Low Fell)																											
1	Park Street																											
41	Wrekenton																											
1	Bell's Yard																											
1	King William Street																											
2	Bridge Street																											
2	Gateshead																											
3	Low Fell																											
6	High Street																											
20	Wrekenton Lunatic Asylum																											
1	Redheugh																											
1	Nuns Lane																											
1	Barn Close																											
1	New Chatham																											
2	Ellison Square																											
186		1	1	3	1	2	2	1	4	8	1	4	2	2	5	5	5	3	1	3	1	2	2	1	1	2	2	1

From	March.	May.				June.	August.							
	26	1	3	9	13	17	11	12	14	15	20	21	25	28
Pipewellgate	1													
Sheriff Hill								1			1			
Easton Street														
South Shore														
Hillgate														
Bensham														
Bottle Bank														
Church Walk														
Union Workhouse														
Oakwellgate														
West Street														
Grosvenor Street														
Windmill Hills														
Charles Street														
Church Street														
Pipewellgate Banks														
Lambton Terrace														
Grahamsley Street														
Oakwellgate Lane														
Leonard's Court		1	1	1										
Kell's Lane (Low Fell)					*1			1						
Park Street						*1								
Wrekenton							1					1	1	1
Bell's Yard									1					
King William Street										*1				
Bridge Street														1
Gateshead														
Low Fell														
High Street														
Wrekenton Lunatic Asylum														
Redheugh														
Nuns Lane														
Barn Close														
New Chatham														
Ellison Square														
	1	1	1	1	1	1	1	2	1	1	1	1	1	2

From	September.																							
	5	6	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Pipewellgate																				1	1			
Sheriff Hill																								
Easton Street																								
South Shore																		1			1			
Hillgate																								
Bensham																								
Bottle Bank																								
Church Walk																								
Union Workhouse			1		2				2		1	*1	1				1			1		*1	1	1
Oakwellgate																								
West Street																								
Grosvenor Street																								
Windmill Hills																								
Charles Street																								
Church Street																								
Pipewellgate Banks																								
Lambton Terrace																								
Grahamsley Street																								
Oakwellgate Lane																								
Leonard's Court																								1
Kell's Lane (Low Fell)																								
Park Street																								
Wrekenton			3	2	3	4	3	2	3	3	1	3	1	1	3	2	1	1						
Bell's Yard																								
King William Street																								
Bridge Street												1												
Gateshead	1	1																						
Low Fell			1																1					
High Street					*1				2							*1			1	1				
Wrekenton Lunatic Asylum							3	4	1	1	4	4	1	2										
Redheugh																			1					
Nuns Lane																								1
Barn Close																								
New Chatham																								
Ellison Square																								
	1	1	5	2	6	4	6	6	8	4	6	9	3	3	3	3	2	2	3	3	2	1	1	3

From	October.							Nov.			Dec.	
	1	4	5	6	7	8	15	6	16	17	16	27
Pipewellgate	1				1							*1
Sheriff Hill		1										
Easton Street												
South Shore	1			1								
Hillgate												
Bensham												
Bottle Bank												
Church Walk												
Union Workhouse			3			1	*1					
Oakwellgate												
West Street												
Grosvenor Street												
Windmill Hills												
Charles Street												
Church Street												
Pipewellgate Banks												
Lambton Terrace												
Grahamsley Street												
Oakwellgate Lane												
Leonard's Court												
Kell's Lane (Low Fell)												
Park Street												
Wrekenton			1									
Bell's Yard												
King William Street												
Bridge Street												
Gateshead												
Low Fell											*1	
High Street												
Wrekenton Lunatic Asylum												
Redheugh												
Nuns Lane												
Barn Close				*1								
New Chatham								*1				
Ellison Square									*1	*1		
	2	1	4	2	1	1	1	1	1	1	1	1

853).



MORTALITY OF THE THIRD EPIDEMIC, (1853).

Of those marked (*), one died from Diarrhœa. Thus (*1), in the Workhouse Hospital.

Deaths.	Districts.	Aug. 31	September (2–30), October (1–31), November (1, 3, 7, 11)
46	*Barn Close:*—		
	15 Victoria Street	1	[illegible]
	4 Brunswick Terrace	—	[illegible]
	10 Grosvenor Street	—	[illegible]
	6 Melbourne Street	—	[illegible]
	5 Pollock Street	—	[illegible]
	3 Mulgrave Terrace	—	[illegible]
	3 William Street	—	[illegible]
14	*Bury Barn*, (between High Street and Back Lane, and Pottinar Lane and Jackson Street):—		
	1 Mould's Yard	—	[illegible]
	3 Jackson Street	—	[illegible]
	1 Parkin's Yard	—	[illegible]
	1 Back Lane (nearly opposite Brewery Field)	—	[illegible]
	2 Charles Street	—	[illegible]
	1 Charles Square	—	[illegible]
	3 Grahamsley Street	—	[illegible]
	2 Bury Barn (Powell's Yard)	—	[illegible]
35	*South Shore:*—		
	14 New Gateshead	—	[illegible]
	4 East Street (East Side)	—	[illegible]
	2 Saltmeadows	—	[illegible]
	2 Quarry Field	—	[illegible]
	2 Saltmeadows Terrace	—	[illegible]
	2 Old Engine	—	[illegible]
	4 Riverside Houses, near Hawks's Ironworks	—	[illegible]
	1 Shearlegs	—	[illegible]
	2 Blackwall	—	[illegible]
	1 Friars Goose	—	[illegible]
	1 Tyne Main	—	[illegible]
56	*Oakwellgate* (between High Street and East Street, and between Cannon Street and Oakwellgate Chare, with Easton Place):—		
	2 Errington's Yard	—	[illegible]
	2 Head of Oakwellgate	—	[illegible]
	5 Pit Yard	—	[illegible]
	2 Thyne's Yard	—	[illegible]
	4 Garden Street	—	[illegible]
	4 Bell's Yard	—	[illegible]
	2 Wake's Yard	—	[illegible]
	2 Thompson's Yard	—	[illegible]
	2 Oakwellgate Chare (North Side)	—	[illegible]
	2 Old Palace ("where popular tradition has fixed the Palace of King John."—*Surtees*)	—	[illegible]
	7 Oakwellgate Lane	—	[illegible]
	2 Hymers's Buildings (Yard)	—	[illegible]
	1 Near Cannon Street, in Oakwellgate	—	[illegible]
	2 Redhead's Yard	—	[illegible]
	2 Easton Place (North Side)	—	[illegible]
	2 Hay's Yard (Cannon Street)	—	[illegible]
	1 Pipehouse Entry	—	[illegible]
	1 Brandy Vaults (in Church Street)	—	[illegible]
	3 Orrick's Yard	—	[illegible]
	1 Near Brandy Vaults	—	[illegible]
	1 Woodston's Buildings	—	[illegible]
	1 Near Hymers's Buildings	—	[illegible]
	1 Hymers's Court	—	[illegible]
	1 Gillender's Yard	—	[illegible]
	1 Cannon Street	—	[illegible]
	1 Near Pipehouse Entry	—	[illegible]
33	*Lister's Buildings, &c.* (between High Street and East Street, and Park Street and Oakwellgate Chare, including Easton Street):		
	1 Corner of Oakwellgate Chare, South-West	—	[illegible]
	7 Park Street	—	[illegible]
	1 Low Lister's Yard	—	[illegible]
	1 Charlton's Yard	—	[illegible]
	14 Rhubarb Place, Lister's Yard and Buildings, &c.	—	[illegible]
	1 Lee's Court	—	[illegible]
	2 Easton Street	—	[illegible]
	1 No. 73, High Street	—	[illegible]
	2 East Street, West Side	—	[illegible]
	1 Crabby Tom's Stairs	—	[illegible]
76	*Pipewellgate* (with Bottle Bank, the Island, West Side of High Street to Half Moon Lane, and the Banks, North of the Lane):		
	3 Blue Bell Entry (Pipewellgate Blue Bell)	—	[illegible]
	4 Sun Yard	—	[illegible]
	6 The Island	—	[illegible]
	4 Smith's Yard	—	[illegible]
	3 Scott's Row and Buildings	—	[illegible]
	3 Pipewellgate, North Side, (two East of High Level Bridge, one near H.L.B. on West)	—	[illegible]
	2 Dixon's Yard	—	[illegible]
	1 Bowl Alley	—	[illegible]
	4 Smith's Cottages, &c., (on the Rabbit Banks)	—	[illegible]
	1 George and Dragon Yard	—	[illegible]
	1 Bottle Bank (Front), No. 29	—	[illegible]
	6 Veatch's Buildings	—	[illegible]
	2 Bird in Bush Yard	—	[illegible]
	5 Prockter's Buildings	—	[illegible]
	2 Hawk Entry	—	[illegible]
	2 Pipewellgate Banks:—		
	Second clump of buildings West of High Level Bridge	—	[illegible]
	First clump of buildings ditto	—	[illegible]
	4 Thompson's Entry (Pipewellgate)	—	[illegible]
	1 Providence Place	—	[illegible]
	2 Pitman's Entry	—	[illegible]
	6 Sandwell Stairs	—	[illegible]
	2 Pollock Cottages	—	[illegible]
	2 Blacksmith's Entry	—	[illegible]
	1 New Chatham (Pipewellgate)	—	[illegible]
	1 Thompson's Yard (Bottle Bank)	—	[illegible]
	2 Stobbs's Yard	—	[illegible]
	1 Dobson's Yard	—	[illegible]
	1 Thompson's Stairs	—	[illegible]
	1 Sage's Entry	—	[illegible]
	1 Tyne Entry	—	[illegible]
6	*High Street*, from Sunderland and Durham Roads to Sheriff's Gate:—		
	2 Mount Pleasant	—	[illegible]
	2 Cramer Dykes	—	[illegible]
	2 St. Edmund's Place	—	[illegible]
42	*Leonard's Court, &c.*, (between Park Lane and Park Street, and High Street and East Street):—		
	4 Trinity Street	—	[illegible]
	11 Leonard's Court	—	[illegible]
	5 Nuns Lane	—	[illegible]
	1 No. 99, High Street	—	[illegible]
	4 Kibblesworth Street	—	[illegible]
	2 St. John's Lane	—	[illegible]
	2 Park Lane	—	[illegible]
	1 No. 190, High Street	—	[illegible]
	1 Hopper Street	—	[illegible]
	1 No. 95, High Street	—	[illegible]
	3 Clavering Street	—	[illegible]
	1 Union Lane	—	[illegible]
21	*Nelson Street, &c.*, (between High Street and West Street, and Half Moon Lane and Ellison Street):—		
	3 Lambton Terrace	—	[illegible]
	6 Nelson Street	—	[illegible]
	7 Ellison Yard and Square	—	[illegible]
	2 Abbot's Buildings	—	[illegible]
	1 Swinburne Place	—	[illegible]
	1 Ellison Street, North Side	—	[illegible]
	1 Innis's Yard	—	[illegible]
14	*Windmill Hills, &c.*, West of Barn Close to the Parish Boundary:—		
	2 Old Mill	—	[illegible]
	2 Near ditto	—	[illegible]
	1 Nearly opposite ditto, towards Hexham Road	—	[illegible]
	1 Saltwell Terrace	—	[illegible]
	1 Hall Terrace, Union Row	—	[illegible]
	1 Near New Tollgate	—	[illegible]
	2 Low Team	—	[illegible]
	1 Near Old Tollgate	—	[illegible]
67	*Hillgate and Church Walk:*—		
	6 Dunn's Buildings	—	[illegible]
	3 Church Street, North of Church Stairs	—	[illegible]
	7 Price's Buildings	—	[illegible]
	13 Church Walk	—	[illegible]
	3 Chapman's Yard, North Side of Hillgate	—	[illegible]
	7 Berinsan's Buildings	—	[illegible]
	4 Hillgate, North Side:—		
	Near Vinegar Works	—	[illegible]
	Near Norris's Buildings	—	[illegible]
	Opposite Price's Buildings	—	[illegible]
	Elsewhere	—	[illegible]
	3 Sugarhouse Bank	—	[illegible]
	2 Cummins's Buildings	—	[illegible]
	1 Sugarhouse Lane	—	[illegible]
15	*Paxton's Yard, &c.*, (between High Street and West Street, and Ellison Street and Jackson Street):—		
	4 Paxton's Yard	—	[illegible]
	2 Boroughholders' Yard	—	[illegible]
	1 Gordon's Entry	—	[illegible]
	2 Taylor's Yard	—	[illegible]
	1 Ellison Street, South Side	—	[illegible]
	2 Easton Court	—	[illegible]
	1 King William Street	—	[illegible]
	1 Providence Place (West Street)	—	[illegible]
	2 Marshall's Yard	—	[illegible]
6	*Sheriff Hill:*—		
	4 West Side of Road	—	[illegible]
	2 East Side	—	[illegible]
10	*Low Fell:*—		
	7 East Side of Road	—	[illegible]
	3 West Side	—	[illegible]
1	Wrekenton	—	[illegible]
433		1	[illegible]

AGES OF THE VICTIMS.

Died in the	Living in 1851.	1832. Ch.	1849. Ch.	1849. Di.	1853. Ch.	1853. Di.	Died in the	Living in 1851.	1832. Ch.	1849. Ch.	1849. Di.	1853. Ch.	1853. Di.
1st yr.	759	0	0	6	5	16	51st yr.	412	6	3	0	10	0
2d	963	6	10	2	15	12	52d	225	4	1	0	2	0
3d	600	5	3	0	24	5	53d	200	2	0	0	3	0
4th	775	5	4	1	13	1	54th	112	5	6	0	7	0
5th	625	4	2	2	8	0	55th	125	5	4	0	1	0
6th	550	4	3	0	14	1	56th	163	5	1	0	0	0
7th	675	2	6	0	2	1	57th	100	5	1	0	4	0
8th	637	3	1	0	5	2	58th	112	3	2	0	1	0
9th	525	1	1	0	6	0	59th	62	5	3	0	2	0
10th	600	1	1	1	1	0	60th	75	4	5	1	4	0
11th	525	0	1	0	3	1	61st	187	3	3	1	6	0
12th	525	3	0	0	0	0	62d	113	0	2	0	3	0
13th	625	2	1	0	1	0	63d	62	3	1	0	3	0
14th	525	1	0	1	3	0	64th	125	3	1	0	5	0
15th	600	5	1	0	1	0	65th	125	2	1	0	5	0
16th	588	1	2	0	3	0	66th	200	2	3	0	1	0
17th	462	0	0	0	1	0	67th	113	2	0	0	3	0
18th	525	0	1	0	5	0	68th	100	1	2	0	3	0
19th	562	2	2	0	2	0	69th	50	3	0	0	2	0
20th	325	3	1	0	4	0	70th	75	2	0	0	4	0
21st	513	1	1	0	3	0	71st	87	0	0	0	0	0
22d	575	3	4	0	3	0	72d	38	2	0	0	4	0
23d	550	1	2	0	2	0	73d	75	2	1	0	4	0
24th	425	1	3	0	6	0	74th	37	3	1	0	1	1
25th	313	2	1	0	3	0	75th	12	2	1	0	1	1
26th	412	5	1	0	6	1	76th	13	1	1	0	3	0
27th	488	2	1	0	7	0	77th	25	0	5	0	0	0
28th	425	0	3	0	12	1	78th	12	0	2	0	2	0
29th	412	3	4	0	9	0	79th	37	1	0	0	1	0
30th	253	3	2	0	4	0	80th	12	0	1	0	3	0
31st	612	6	5	0	9	0	81st	0	1	0	0	1	0
32d	313	1	5	0	5	0	82d	50	2	0	0	0	0
33d	325	2	4	1	3	0	83d	0	0	1	0	0	0
34th	212	1	3	0	6	0	84th	12	0	1	0	0	0
35th	400	2	2	0	13	0	85th	13	1	0	0	1	1
36th	500	3	5	0	4	0	86th	0	2	0	1	0	0
37th	375	2	1	0	7	0	87th	0	0	0	0	0	0
38th	225	5	3	0	5	0	88th	0	0	0	0	0	0
39th	262	1	2	0	8	0	89th	0	0	0	0	0	0
40th	175	2	1	0	3	0	90th	12	0	0	0	0	1
41st	412	11	4	0	16	0	91st	12	0	0	0	0	1
42d	275	3	3	0	1	0	92d	0	0	0	0	0	0
43d	312	4	2	0	4	0	93d	0	0	0	0	0	0
44th	263	5	1	0	6	0	94th	12	0	0	0	0	0
45th	162	2	5	0	5	0	95th	0	0	0	0	0	0
46th	300	8	0	1	5	0	96th	0	0	0	0	0	0
47th	200	5	1	0	10	0	97th	0	0	0	0	0	0
48th	187	4	0	0	4	0	98th	0	0	0	0	0	0
49th	225	6	3	0	4	0	99th	0	0	0	0	0	0
50th	225	1	3	0	8	0	100th	12	1	0	0	0	0
							No age named	0	8	1	0	0	0
								25,495	234	168	18	387	46

The ages contained in this table are derived from the Parish Registers of Burials in 1831-32, and the Register of Deaths in 1849 and 1853.

The column showing the number of persons living at different ages in 1851 is partly conjectural, being founded upon the actual numbers so living in that year in three "enumeration districts," namely, Wrekenton, Whickham, and the Oakwellgate-and-Garden-Street district).

DEATHS IN EACH DECADE.

Decade.	Living in 1851.*	Mortality of the Three Epidemics. 1. c.	2. c.	2. d.	2. tot.	3. c.	3. d.	3. tot.
First	6,700	31	31	11	42	93	38	131
Second	5,262	17	9	1	10	23	1	24
Third	4,366	21	22	0	22	55	2	57
Fourth	3,399	25	31	1	32	63	0	63
Fifth	2,561	49	22	1	23	63	0	63
Sixth	1,586	44	26	1	27	34	0	34
Seventh	1,158	21	13	1	14	35	1	36
Eighth	340	11	12	0	12	19	2	21
Ninth	87	6	1	2	3	2	1	3
Tenth	36	1	0	0	0	0	1	1
Estimated population	25,495	226†	167‡	18	185	387	46	433
Actual population	24,805	* Ascertained as in preceding table.						
Population in 1841	19,505	† Wanting 8, no age given.						
Population in 1831	15,177	‡ Wanting 1, no age given.						

The writer has now closed his record of the *mortality* of the three cholera epidemics of Gateshead. The proportion which it bore to the amount of *sickness*, it is impossible to state, there being no complete record of "cases." The returns, however, made by Mr. Wilson, the medical officer of the northern (or town) district, may be taken as some measure of the prevalence of the visitation, and of its fatal character. Subdividing his district into seven sections, he made the following report thereon, commencing with the 4th of September (the date of his first case), and ending with the 19th of October. The initials signify—"Diarrhœa," "Approaching Cholera" and "Cholera."

	D.	A.C.	C.
WEST SIDE OF HIGH-STREET.			
Barn Close district	207	5	29
South of Railway Bridge	168	29	19
North of Railway Bridge, including Pipewellgate	233	16	68
EAST SIDE OF HIGH-STREET.			
East of Hillgate and East-street, including the South Shore and New Gateshead	213	12	15
South of Oakwellgate-chare	287	18	34
North of Oakwellgate-chare to Cannon-street, including Oakwellgate	265	23	47
Hillgate and Churchwalk district	190	9	49
Cases of diarrhœa prior to September 14, not recorded in sections	127	...	...
Total cases	1630	103	261
Deaths	6	0	159

Mr. Wilson reported, that the mortality was confined, almost without exception, to the cases enumerated in the third column, which had assumed the form of malignant cholera before medical aid was obtained, and of which more than one-half ended in death.

By this destructive visitation, 106 husbands were deprived of their wives in 51 days. How many wives lost their husbands—how many children their parents—the records do not say; nor is it possible to estimate, to the full extent, how heavily the pecuniary resources of the community were taxed by the epidemic of 1853—a calamity arising from causes which are removable—which lessen the enjoyment and shorten the duration of human life, and are at once our punishment and our reproach.

CHESTER-LE-STREET UNION.

The epidemic of 1849 having raged on the boundary-line between Gateshead and Lamesley, at Wrekenton and Eighton Banks, the extent of the mortality on both sides has been obtained, and is stated on page 7. The facts of the rural epidemic are instructive.

Lamesley is a member of the poor-law union of Chester-le-Street, which lies southward of Gateshead, and is intersected by the high road from this place to the city of Durham. The whole union comprises the parish of Washington, the parish of Chester-le-Street, and three of the fifteen townships constituting the parish of Houghton-le-Spring. Its area in statute acres is 33,079; and in 1851 it had a population of 20,907 persons, chiefly engaged in mining and agriculture. 135 of the inhabitants died of cholera and 7 of diarrhœa in 1849, in the following districts of the union:—the one marked thus (*) being in Washington—thus (†) in Houghton—and the remainder in Chester:—

Population, 1851.	Township or Chapelry.	Date of First Death.	Date of Last Death.	DIED. c.	d.	tot.
2,051	*Usworth	28 January	20 February	6	0	6
1,614	Harraton	2 February	15 October	11	0	11
1,914	Lamesley	3 August	14 "	46	1	47
747	Waldridge	6 "	23 September	3	0	3
1,758	Witton Gilbert	12 "	8 October	6	0	6
891	†Bourn Moor	27 "	14 September	31	1	32
2,580	Chester-le-Street	28 "	24 October	25	4	29
1,739	Great Lumley	1 September	11 September	1	1	2
300	Ouston	5 "	5 "	1	0	1
337	Little Lumley	6 "	6 "	1	0	1
348	Edmonsley	27 "	27 "	1	0	1
1,823	Birtley	9 October	17 October	3	0	3
16,103				135	7	142

The Harraton deaths occurred — 6 in February at the hamlets of Harraton and Fatfield, and 5 in October at Peel's Houses.

The Lamesley deaths occurred—4 in August, up to and including the 25th; and 42 in September, from the 9th to the 27th; all at Eighton Banks, with the exception of the last, the death of a tramp at Millgreen Cottage. The solitary death from diarrhœa took place on the 14th of October, when the epidemic had passed away.

It has been seen that Gateshead, urban and rural, with 24,805 inhabitants in 1851, unequally spread over an area of 3,255 acres, lost 185 men, women, and children, in 1849, by cholera and diarrhœa.

In the adjoining union of Chester-le-Street, comprising an area ten times more extensive, 142 died out of 20,907, inhabiting 4,121 houses.

Thus the rate of mortality was little greater in the parish of Gateshead than in the union of Chester; nor is the sanitary condition of our villages much better than that of our towns.

"A Traveller Underground," who has written of "Our Coal and Our Coal Pits, the People in them and the Scenes around them,"

describing the "pit villages" of Northumberland and Durham, says:—"The space between each two rows of back-doors presents along the centre one long ash-heap and dunghill, generally the playground of the children in summer; with a coal-heap, and often a pigsty, at the side of each door. There are no conveniences."

In one of the mining districts here referred to, most severely visited by the epidemic of 1849, the compiler of these statistics asked a pitman's wife to what cause she ascribed the epidemic. She was as modest in her judgment as the most candid of medical men, confessing her perfect ignorance of its primary origin; but this, she said, she knew, that the cleanest cottages were not exempt from attack. A neighbour, however, remarked, that while this was so, conveniences were uncommon; and that, in a neighbouring village, where the cholera was peculiarly prevalent and fatal, there was not a single privy. The epidemic, she added, broke out in the township immediately on the opening of a very filthy drain.

These facts are important, as evidence that the cholera is not a disease of our large towns alone, or even principally, but is engendered also in our villages, and with equally destructive consequences. Bourn Moor and Lamesley were as severely scourged in 1849, as were Newcastle and Gateshead in any of the three epidemics. The dense population surrounding the Norman keep of Newcastle-upon-Tyne, was but three times more fatally ravaged than the sparse population of the whole union of Chester-le-Street, surrounding the fair baronial halls of Ravensworth, and Lambton, and Lumley. Everywhere there is room for reform. While these pages are passing through the press, Matthias Dunn, Esq., who, as Government Inspector of Mines, has charge of the mining district now under consideration, is driven, by the unwholesome condition of his private residence in St. Mary's-terrace, on the outskirts of Newcastle, to apply to the Borough Magistrates for redress, the atmosphere of his house being poisoned by "an incessant discharge of noxious gases" from "branch drains." "During the cholera," says Mr. Dunn, "there were 9 deaths out of 120 people in the neighbourhood."* The Stipendiary Magistrate can only admit that "something should be done," and express his regret that he has not the power, and others have not the will, to do it. The helpless Government Inspector retires with the remark:—"There will be plenty of cry when the cholera reappears."

* Men talk of the "better parts" of our towns—and, looking only at the surface of things, when they see epidemics scourging such localities, deny the connection between fever and filth, pestilence and poison. Such revelations, therefore, as Mr. Dunn has so wisely made in the common ear, are above all price. They tear aside the veil, and force upon public observation the fact that not alone our Sandgates and Pipewellgates, our Cloggers'-entries and our Leonard's-courts, but also our St. Mary's-terraces and our West-streets, our Ridley-villas and our Mulgrave-terraces, however fair their exterior, are far from being, within, in a perfect sanitary condition. Less crowded than the more neglected localities—inhabited by persons of ampler means and superior habits—epidemic influences have not the same sway and power upon them; but they do suffer, if to a less extent, from pestilential diseases, and also from excessive mortality.—*Gateshead Observer* (May 6, 1854).

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Richard Griffith
from the Author

AN ADDRESS

TO

THE PUBLIC

AND THE

CITIZENS OF CORK IN PARTICULAR,

ON THE

PREVENTION AND TREATMENT OF CHOLERA, ON RATIONAL PRINCIPLES.

Second Edition.

CORK:
GEORGE PURCELL & CO.,
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1853.

ADDRESS.

Fellow Citizens,

As the Cholera appears to be approaching us with rapid strides and fearful mortality, it behoves you to be up and stirring; and to consider what are the best means of prevention and cure—I beg leave to offer you my humble opinion, in the following pages, with a hope that it may lead you to investigate the subject with calmness and judgment; and to avoid being led away by the opinions which have been promulgated by boards of health, &c., which in times of need have been found sadly deficient; nay I will go further and assert, that the principles which guide those gentlemen are irrational in theory, and too often fatal in practice.

First as to prevention,—we are desired to abstain from Vegetables, Fruit, Fish, &c., but no interdictions are laid on the use of ingredients of a stimulating character. Now as this disease is preceded by irritations of the mucous membrane of the stomach and bowels, it stands to reason, that a diet chiefly composed of bland vegetables and fish, if carefully cooked, can do no harm; whereas a system of diet altogether restricted to stimulating substances; such as meat, highly seasoned dishes, and alchoholic drinks, must of necessity lead to stimulation and congestion of these delicate surfaces.

It has always been found that persons fond of strong drinks are sure to suffer most severely from this disease—alchoholic drinks stimulate the internal mucous surface, and depress at the same time the nervous energy of the system, (results which are sure to follow from undue excitement, either local or general,) independent of the quantity of the vital principle exhausted from the blood, by the introduction of

substances, containing so large a proportion of Carbon and Hydrogen as Alchohol in any shape possesses—all this, points out the absurdity of a system of diet framed on such principles; I would strongly recommend therefore the adoption of a mixed diet of vegetables and meat, in fact to make no radical change in the usual mode of living, except so far as avoiding all spices and stimulants, and alchohol in every shape whatever; and as regards tea and coffee, to use them with very great moderation, as there can be no doubt but that these liquids, when taken to a large extent, have a tendency to derange the nervous system; and every thing calculated to change that system from its natural standard of well being, renders it highly susceptible of morbid impressions.

In every individual there is an athletic standard of health, and every means calculated to force the system beyond this standard, by high feeding, &c., tends to derange it, and gives rise to various morbid affections—on the other hand, if the system by bleeding, medicine, improper diet, or insalubrious air, is reduced below the standard above referred to, it becomes highly sensitive to all external impressions: in a word, a deviation towards either extreme, deprives the vital powers of that resisting energy which is the great safeguard against all morbid impressions.

I should also recommend you, if possible, to keep mind and body pleasingly occupied, to take plenty of out-door exercise, and to give up your purgative Pills, and nauseous draughts, and to drink plain water, the first thing in the morning and the last thing at night; there is no pain or headache in it, it is a tonic to the internal mucous surface, it is the grand solvent of nature, and is the medium for carrying on all the beautiful chemical changes in the system—it promotes all the secretions, diluting them and rendering them less acrid, and thereby assisting the various functions of the animal economy—it will be found on experience to supersede the weekly or (what is more often) the daily use of aperient medicine, and by keeping up a regular and healthy action of the bowels, removes all the morbid secretions, and produces in their stead a healthy discharge of the functions of those delicate organs—I cannot speak too largely of the value to be derived from this source alone.

The board of health recommends cleanliness, and so do I, but we differ as to the extent to which it should be carried; they cleanse the houses, streets, and sewers, but leave the

occupants dirty. I have before pointed out to you how to clean the interior of the "House we live in" by drinking water, but I must say a few words on the external ablutions of the body.

When we consider the close and intimate connection that exists between the external and internal surfaces, one being a mere extension of the other, though modified in its appearance and functions from its position, and still retaining that close sympathy from its intimate connection by structure, nerves and blood-vessels; when we consider that the perspiratory pores on the surface, are several miles in extent, and are constantly secreting from the blood effete materials, and that these animal secretions are allowed to accumulate on the surface, clogging up these pores and thus interfering with their natural functions, whilst nature vainly tries to correct this want by calling on the mucous membranes of the interior of the body to perform additional offices, to make up for the deficiency of the action of the skin, thereby throwing additional labour on those parts which renders them more prone to disease; when we consider moreover that these animal secretions when allowed to remain on the surface become putrid and offensive and are again reabsorbed into the system, (for the skin is an absorbing as well as a secreting surface,) need I point out to you the injurious results likely to arise from these morbid poisons being introduced into the system? Is it not wonderful that nature is so powerful as to preserve the system from disease under such unfavourable circumstances?

I would say then, once every week or ten days, wash off these secretions from the surface by an ablution of warm water at bed time, with soap and coarse flannel; an occasional use of a vapour Bath or warm Bath under proper directions will be also useful, as tending to force open the clogged pores.

As regards clothing, we have been recommended to wear a flannel belt, called a "Cholera Belt," round the person, while no mention is made of the injurious tendency of cold extremities, caused by light stockings, want of exercise, or wearing tight shoes, which cramp the circulation, and thus produce coldness of the feet. A chill is very apt to produce Diarrhœa from its causing the blood to recede to the internal mucous surface, but this is owing to the irrational way we treat the surface of our bodies. We put flannel, chamois, and furs, on the great centre of the frame where vitality is strong,

and consequently resisting energy great, while we do not attend to the extremities which require warmth.

I recommend you to render the surface of the person insusceptible of atmospheric changes, by the daily use of a cold bath or ablution, on getting up out of your hot beds. You get out of a high temperature of flannel and feathers, with your pores open, and dress yourselves irrationally, in place of taking a cold bath or ablution, to seal the pores of the surface. The reactive glow which follows this application judiciously performed, renders the body insusceptible of atmospheric changes, and you exchange in a moment a relaxed and warm surface, with open pores, for constringed ones, whilst a warm, dry, healthy tonic glow, with a feeling of buoyancy and refreshment follows—the morbid secretions are removed, the blood by the reaction after the cold, is brought to the surface, thus relieving internal congestion, and producing a tonic feeling of well being both of mind and body; and you produce an indifference to cold, the state of all others most likely to resist morbid impressions of any kind.

Having thus treated of the best means of prevention, my next duty will be to point out what in my humble opinion, is the proper and rational way of treating the disease in its premonitory and collapsed stage. I shall not treat of secondary fever, as I believe from my experience, derived from some cases treated in 1832, that secondary fever will not follow.

The usual premonitory symptoms are sickness of the stomach, Diarrhœa, together with feeling of coldness and cramps. As Diarrhœa may arise from a great variety of causes, it will be necessary to know from what source it proceeds, in order to treat it with success. As a general rule, we will not be wrong if we are guided by the following indications. Diarrhœa is always attended with more or less irritation of the mucous membrane of the stomach and bowels, accompanied with congestion of these parts—it will be necessary to allay this irritation by a suitable sedative, and to direct the current of the circulation from the internal to the external surface of the body, and to wash away or remove from the internal parts any irritating substances. Iced water in small quantities, and frequently repeated, will be found the most suitable sedative, as it removes by its diluent properties any disordered secretions or irritating matter. By constringing the relaxed blood vessels, it will tend to subdue congestion, and the amount of cold conveyed to these internal

parts will allay the burning heat which always accompanies this internal irritation—contrast this with the hot potions, and irritating purgatives, such as Rhubarb, Salt and Water, &c., usually recommended.

The next indication to follow, is to bring about the heat of the body, and to equalize its temperature; for the extremities will be found cold, and the internal parts heated—a general warm bath, or vapour bath, followed if possible, by a cold or tepid plunge, will be of service; this will bring the blood to the surface, and the plunge afterwards, *calling* as it does on the system, to react to the external surface, will tend to keep up the action of the hot bath, and the high temperature of the body produced by it, will ensure perfect reaction after the cold or tepid one—in the absence of these means, a hot hip bath repeated every couple of hours, together with hot bricks or salt to the feet, or a jar with hot water, will also assist—the stomach and bowels should be well stuped with flannels, wrung out of hot water, and this remedy should be followed by the application of a small towel, folded and wrung out of cold water, put on after the stupe, and well covered with flannel and oiled silk; the stupes should be repeated every two hours, and in addition, injections of warm water should be given to soothe the lower part of the bowels, and to assist in removing morbid matter. In the event of the Diarrhœa continuing, and the secretions being thin and watery, (particularly if like rice water,) then I would not hesitate, in addition to the above means, to use injections of warm starch every hour, with the addition of astringents. Nothing will allay the cramps so much as rubbing the parts with a cold wet towel—this treatment I have proposed, will I trust appear rational in principle, and I have found it highly successful in Diarrhœa of ordinary character, and I have no doubt it will be found advantageous in the premonitory Diarrhœa of Cholera.

It may appear strange why I order a cold wet towel, after the hot stupes; it is on the same principles that I order a cold bath after a hot one; the hot application prepares for the cold one; an ordinary hot stupe is always getting colder and colder, and calls for frequent repetition: this exhausts and teases the patient, and is attended with much trouble and inconvenience; whereas a cold bandage, covered with flannel, (particularly if the parts have been previously heated, so as to ensure reaction,) calls on the system to react:

the bandage instantly gets heated, from the heat of the part, and when it is covered with flannel, the heat keeps increasing till the bandage dries; it then gets porous and no longer acts as a stupe; but up to the drying of the bandage, it may be called a constant hot stupe, far more soothing than an ordinary hot one from its equable action, and its being unattended with the fatigue of frequent renewal.

I trust those few remarks, which I have been called upon to make, on the action of what the Doctors call the heating bandage, will serve to do away with the prejudice entertained by some persons, against all applications of cold water to the surface in cholera—such persons have no prejudiced feelings against hot applications, for they are considered orthodox; but if people will but just give themselves a moment to reflect, they must see, that hot applications are much more dangerous from the tendency they leave to cold, for the rapid evaporation and cooling of all these artificially heated substances, in the shape of stupes, have a great tendency to induce the very symptom of cold which is so much dreaded. Should the means above pointed out, fail to avert the dreadful stage of collapse, they will prepare the system to bear the attack—the patient will not be reduced from over stimulation, and no violence will have been done to the mucous surface of the bowels, and it will be in a far better state to respond to whatever treatment may further be used. I am satisfied too, that this stage will be rendered milder from the previous treatment, and the patient will not be annoyed with the nauseous taste of drugs or stimulants, to both of which, in this disease there is a peculiar dislike, owing to the constant sickness of stomach. The atmosphere about the patient will be pure, and the refreshing effect of pure air upon a patient in that state, is so truly delicious and reviving, that no one can justly appreciate it, but those who have themselves experienced the difference. This I consider no trifling recommendation, nor do I think it of small importance to the recovery of the patient.

I now come to treat of the blue stage, and feel it necessary to remark very strongly on the prejudice of the profession, in pursuing the present (so called) "orthodox" treatment in that stage. They have had the experience of 1832 to guide them, and in the face of the unpromising results of their experiments at that time, they still persist in the use of hot stimulants. Let us look to *Limerick* alone, and see the

frightful mortality of the disease. The last account I read was given on the 28th of March—"Barrington's Hospital—Total cases, 691. Cured 153—Deaths, 389—remaining under treatment, 149. St. John's Hospital—total, 423—Cured 106—Deaths 231—remaining 86." We read in the paper before this return, that hot Punch is the ordinary beverage, and that the *small quantity of cold water allowed*, quieted the Stomach and relieved the sufferings of the Patients much more than the Punch; this is given on the testimony of the Sisters of Mercy, who, it appears (and be it spoken to their credit,) are most constant in their attendance on the Patients; this remark relative to hot Punch and cold water went the round of all the Newspapers a few posts ago: I have not the Paper by me, or I would give the paragraph verbatim, but I here give the substance of it. Will not this circumstance, coupled with the well known badness of the water at Limerick, satisfactorily explain the fatality of the disease in that part of the empire.

The Blue stage is marked by the coldness of the body, the purple hue of the skin, particularly at the lips and under the nails, the complete absence of pulse, or action of the heart, the cold clammy feel of the surface, the sunken eyes, the peculiar plaintive voice, the stoppage of all the secretions, coupled with sickness of the stomach, Diarrhœa and cramps. The veins become prominent, full of thick dark blood, so thick, that when a vein is opened, it will not bleed; in fact all the watery particles of the blood have been removed by the Diarrhœa. The objects then to be accomplished are to rouse the Patient from the state of Collapse, by a suitable stimulant, to promote the various secretions, to check the sickness of the stomach and Diarrhœa, and to allay the cramps.

It appears to be a law of the animal œconomy, that parts whose actions have been lowered by the influence of depressants, require to have these actions again restored by slow degrees, as instanced in the well known treatment of persons suffering from excessive cold or hunger. If a frost bitten part be suddenly exposed to a high temperature, mortification of that part would follow, and it has been found, that the friction of snow, is the best means to bring about the natural action. We often find even in this climate, that if we put our hands near the fire after they have been exposed on a cold and frosty night, that intense pain ensues, and if we persevere in this application, we bring about a high state of

local excitement constituting the well known inflammatory chilblain. It would appear then, that external warmth (acting on the above principle of undue stimulus,) must be highly injurious in the collapsed stage; to be more explicit on this subject, I must tell you, that the animal heat in all individuals, is, as a general principle, 98 degrees. The pleasing temperature to all persons, as a general rule, will be found to be about 60, leaving a disproportion of 38 degrees. If the body is exposed to a temperature, higher than its own heat, it becomes truly distressing, and insupportable, if long continued. In the collapsed stage of Cholera, the temperature of the body falls nearly to the temperature of the apartment, and the circulation having in fact ceased, no animal heat is generated; does it not then appear irrational in principle, and cruel in practice, to expose these poor sufferers to a still more disproportioned heat, both externally and internally? One or two results must follow from this treatment, either the system, like a frost-bitten part, *dies*, or a stage of high excitement follows. Theory would foretell such terminations, and the results of this irrational practice, prove the correctness of the Theory; for when a patient once gets into the Blue stage, under the "orthodox" heating principle, he must either die, or recover to go through an attack of what is called secondary fever. As I conceived that a perfect recovery from the Blue stage could never take place under the system above referred to, I treated in 1832 some cases in the Blue stage, and they recovered perfectly, without having had any secondary fever.

Patients in the collapsed stage, exhibit the greatest desire for cold in every shape, cool air, light clothing, cold drinks, &c., &c., and when a hot drink is given, they say it is like moulten lead, and that it "*burns their inside.*" I never yet saw a patient that did not cry out for cold water, and the confirmed dram drinker can with difficulty be persuaded to taste his favourite beverage; he objects more to Brandy or Punch than the temperate do; this I have often remarked—I have seen a Patient travel for miles on an open car, through sleet and rain, without any covering, and drinking cold water on the way, and remarked that he did better than when treated with Brandy, hot tins, &c. In fact I often saw such Patients beg to be allowed out again, they used to call loudly for cold water. "*For the love and honour of God, sir, get us a drink of cold water,*" was no unfrequent request amongst them, and that pronounced with an earnestness of manner most

truly impressive; but alas, in 1832, this appeal was always refused, though in 1849, a step has been taken in a right direction, and it is allowed, according to the Sisters of Mercy, "in small quantities."

In the Blue stage the blood having lost all its watery particles, can no longer circulate from its thickness; it is well known that plain water is very quickly absorbed from all the mucous surfaces, particularly the stomach, which imbibes it almost as rapidly as a sponge, it enters the current of the circulation, dilutes the blood, giving to it what it had lost from the Diarrhœa, and acts immediately on the secretions; a fact of which any one may convince themselves, by taking a couple of glasses of it before breakfast. I would recommend then, that water should be given (if iced so much the better) in such quantities as is agreeable to the patient's feelings; let no other drink be allowed, and I can tell you from experience, that there will be no relish for any other, and that plain water will be always willingly and gratefully received, nay asked for repeatedly, thereby shewing for our instruction, the requirements of nature. I would also recommend that the surface of the body, particularly the extremities, should be well rubbed with towels wrung out of cold water; cramps will at once be allayed by rubbing with wet towels, even after the failure of turpentine and other stimulating liniments.

I would advise that the Diarrhœa should be moderated by cold astringent injections; the temperature of the room should be cool, not over 50, an abundance of fresh air should be admitted, and the patient should not be oppressed with too much covering. A towel wrung out of cold water, and covered with a dry one, should be put on the stomach and bowels, this will tend to allay pain or cramps, and will soothe the sufferer very much. When reaction comes about under this system, the patient will recover without having to undergo the dangers of secondary fever; he will recover with a constitution unimpaired or injured by drugs or stimulants. The plan I have proposed is both rational in principle and consistent in theory—I have found it successful in practice in a few cases in 1832; and it is moreover agreeable to the patient, and within the reach of all classes.

In sending these few pages, written in haste, before the public, I feel the great responsibility I have incurred; but I am also convinced, that I should be wanting in the common feelings of humanity, if I did not do so. It may be asked why

I have not done so before—my reasons are these—first, that I feel my own incompetency for the task, and I had hoped, that an abler advocate would have taken the field—secondly, I imagined from the dawnings I had seen in newspaper advertisements, and other writings, that the profession were beginning to see the impropriety of using stimulants in Cholera, and that as science was advancing, they would not be backward in availing themselves of any improvement in the healing art, calculated to relieve the sufferings of persons in this dreadful disease—thirdly, I believed that either the treatment was better understood, or that the disease was of a mitigated form, until I read in the public prints a few days ago (an abstract from which return I have given in the foregoing pages,) of the great mortality in *Limerick*, and the hot punch system of treatment pursued there. These reasons will, I trust, sufficiently account for my not having come sooner before the public, with an explanation of my views.

In writing for the Press, I have of course been obliged to avoid several details of symptoms, as well as treatment, and also to abstain as much as possible from the use of technical expressions. The object of this little tract is to awaken enquiry, and with the earnest hope that it may be the means under Providence of saving many a valuable life, I commit it to the Public. In conclusion, I feel myself called upon to make a few remarks on the propagation of this disease. No one can deny but that it is both Epidemic and Endemic, but the Board of Health denies its propagation, by what is called contagion or infection. Now, as far as my humble opinion goes, it is both contagious and infectious, and that in a very high degree. We have only to read the reports in the Newspapers, to convince us of this fact. A person goes to *Limerick* to attend the Assizes, he takes the disease, goes home several miles to his family, and immediately some member of his household whilst attending on him, takes it, and thus it spreads through the circle. From my own experience in 1832, I could give several such cases, and it is only in country practice, that such observations can be made. Before I close, it may be requisite that I should give some explanation why I do not affix my name to this *brochure;* my reason for not doing so, is simply that I have no ambition to be styled an author. I have written from a feeling of pure philanthropy; the arguments I have used are, I conceive, plain and easily understood; the deductions from them are so self-evident,

and the whole matter so plain and intelligible, that it needs not the name of the author to puff it to the public. He only claims a fair unprejudiced perusal, he has no wish to convey censure or impute wrong motives to any person or class, but he feels that the peculiar circumstances of the case call for peculiar management, and if he has considered it his duty to convey censure by his remarks, he has done so altogether on the broad principle of humanity. He sends it then to the public and to his fellow citizens in particular, with the utmost confidence, and with an earnest prayer, that it may be found useful, and at any rate may be read in the spirit of kindness in which it is put forth.

As my little tract was passing through the press, I delayed its publication, in order to place before the public a few extracts, which appear strongly to substantiate the arguments I have used.

Extract from a letter of Mr. MORGAN'S, which appeared in the "Limerick Chronicle," of the 4th Inst.

"In a temporary cholera hospital at Gloucester, there were sixteen patients—one of whom was an interesting young female between 15 and 16 years of age, for whose recovery the attending physician (Dr. Shute,) was most anxious. On leaving the hospital in the evening, the girl was in collapse, and quite blue; he called the nursetender, and bade her be attentive to her, and give her whatever she may call for, as all hopes had vanished. In the course of the night the nurse went to increase the fire, which was near the girl's berth in the ward; but she begged the woman not to do so, as she was almost suffocated, and, at the same time, asked for a drink; the nurse brought her a bowl of tea, which was rejected, but she requested water; remembering the Doctor's directions, the nurse, not without some reluctance and apprehension, brought her a pint mug full of water, which she drank with avidity; and continued to call for water about every five minutes, until she had taken two gallons of it, when she fell into a profound sleep, in which she was found by the Doctor in the morning, when her natural complexion reappeared, and she was, to his astonishment, in a state of convalescence; having, with amazement, elevated his eyes, exclaiming this is something like a miracle! he called the nursetender, who related what had taken place; and perceiving the window open over the patient's berth, he asked why it was not shut, and was told by the attendant that it was left open at the earnest desire of the girl. The Doctor immediately ordered all the windows of the ward to be opened—the heavy bed covering on the patients to be removed, and replaced by light rugs: directed that no drink should be given but cold water; and the result was—that the whole 16 persons were cured of Cholera: one, however, died of consecutive fever, produced by eating too much chicken and drinking too much broth whilst convalescent. The case was reported to the Government board of health then sitting in London; and similar treatment was pursued by all the medical men in and about Gloucester with the most complete success. The report, names of the doctors, and all the correspondence are minutely detailed in the columns of the *Chronicle* in the year '32.

"Need more be offered upon the subject; and yet with such facts on record, "hot punch" is now given to the poor patients in the cholera hospitals in Limerick. Those pious and Angelic Sisters of Mercy, to whom you have alluded in the CHRONICLE, never in all probability, heard or read of the treatment of cholera as

above narrated; but ever attentive and observant as they are in the performance of their hallowed vocation, they have not been unmindful of the good effects of cold water. Nature prompts the sufferer to call for it, and it should be always supplied. In cholera, pure water is balsamic.

"Doubtless the professional gentlemen of the cholera hospital have acted according to the best of their judgments, and left nothing untried or undone for the relief of their patients, and they might have found that "hot punch" was useful in stimulating the sinking energies of drooping nature; but the observations of the Sisters of Mercy will, notwithstanding our strongest inclination to commend the doctors for their skill and science, be fixed in our memories.

"As to the operation of cold water on the human system in cholera, or the action of the system on water, I will not presume to pronounce; but I may say that it is commonly supposed that when the serum (one of the important constituents of the blood,) is exhausted by discharges, collapse takes place, and the livid hue of the countenance follows; and every body has heard of the experimental operation of transfusion of warm water, combined with albumen and soda, into the veins to supply the absence of serum, in order to give the vital current its natural and healthy flow; whether cold water, from the oxygen it contains, and the necessary heat it is therefore calculated to impart, is taken up rapidly by the absorbents to cherish and feed the blood, and fill the channels of circulation so as to remove collapse in cholera, I shall leave physiologists to determine; but it is indisputable that cholera patients have anxiously asked for, and eagerly swallowed copious draughts of cold water, till their thirst was allayed, genial warmth restored, agony banished, and the vital functions vivified and invigorated.

"I have heard that during the month past, no less than 2,000 persons have been ill in Limerick, and its charitable institutions; and it appears by the last CHRONICLE, that the remains of 1500 destitute persons, who died in the permanent and auxiliary hospitals, and work-houses, were buried in one cemetery, between the 1st and 31st of March. This mortality is appalling; but the energy, benevolence, and philanthropy of the good and brave and generous men of Limerick, are capable of coping with any danger and surmounting every difficulty; and wishing them health, happiness, and prosperity,

I am, yours, &c., &c.,

Cork, 2nd April, 1849. JAMES MORGAN."

Extract of a letter from Lt.-Col. CUMMINS, C.M., dated New Orleans, February 20th, 1849.

"Tell BARTER that his system has lately become the universal practice in the Southern States, for Cholera; *and since its adoption, although it is of course but imperfectly carried out, the mortality is not one-fourth.*

"I never saw Cholera of so frightful a character; that at Quebec, which you recollect was so near doing for me, was nothing to it; the violence of the spasms was such, that blood oozed through all the pores of the skin, especially with the niggers. It did not give the slightest warning, the men often fell while at work, and before four hours were dead."

"PROVIDENTIAL ESCAPE FROM BEING BURIED ALIVE—Wednesday morning, a young woman in Boherbuoy, who had been ill for twenty-four hours with cholera, to all appearance died about three o'clock. Her mother had the body washed and laid out; and, whilst awaiting until her father got a coffin, to the astonishment and delight of the family, at nine o'clock, she revived!—soon conversed with them, and is now fast recovering. This remarkable circumstance should serve as a caution to those concerned in interments, and in all cases where practicable, a medical man should ascertain that the person was dead; but when that cannot be done, a well-cleaned looking-glass should be placed over the mouth for some hours, to ascertain if any breathing be perceptible."—*Limerick Reporter.*

I have seen a letter from DR. CURTIN, in the "Cork Examiner" of the 6th instant, in which he quotes as follows, from Braithnorth's retrospect of Medicine, a standard Professional work.

"I am acquainted with three persons, who, after they had been laid out for dead, on being washed previous to interment, in the open court yard, with water, to obtain which the ice had been broken, recovered in consequence, and lived many years. I received from Erzeroon, in Turkey, a letter from our excellent Consul, Mr. Brant, who states, that Dr. Dixon of that place, was then curing more patients by frictions with ice or snow, than by any other treatment. The same practice is reported to have been the most effectual in Russia."

GEORGE PURCELL AND CO., PRINTERS, CORK.

CHOLERA.

Copy of a Letter

TO

THE EDITOR OF THE "STANDARD,"

FROM

DAVID MACLOUGHLIN, M.D.,

MEMBER OF THE LEGION OF HONOUR.

LONDON:
CHURCHILL AND SONS, NEW BURLINGTON STREET.
1866.

LONDON: T. RICHARDS, 37 GREAT QUEEN STREET.

To the Editor of the "Standard."

SIR,—As you were so kind as to notice, in *The Standard* of the 30th of May last, my letter to Lieut.-General Sir Edward Lugard, relative to the excessive rate of mortality, from Cholera, in the Army Hospitals, and suggesting the necessity for inquiry:

As the great mortality, from cholera, during the last season, in the Army Hospitals in the garrisons of Gibraltar and Malta, as compared with the mortality in the civil hospitals in the same locality, has proved the correctness of my statement to Lieut.-General Sir Edward Lugard,—that the soldier, labouring under cholera, is hurried out of existence by the disease, assisted by the so-called medical treatment he receives in the Army Hospital:

And as these facts will be brought before the House of Commons this ensuing session, with the view to ascertain if the soldier, labouring under cholera, receives in the Army Hospitals the best medical aid that medical science can give, to assist nature to save his life; or if he receives the best aid that can be given to assist the disease to destroy his life:

In the interest of the public and in the interest of the army, permit me to place the following facts before you:—

It is on record that, after an absence of thirty years, when I returned in 1848, I found this country greatly

alarmed relative to an expected outbreak of Epidemic Cholera. I found that the medical profession had not profited of the former outbreak of this disease in this country, and had not gone to the bedside and there interrogated nature. All, without any examination, accepted as correct the opinion of Messrs. James Jameson and William Scot, that cholera was a disease *sui generis*, attacking persons in perfect health, suddenly, with vomiting, severe purging, spasms, etc., etc., and destroying life in a few hours. That diarrhœa and cholera were two distinct diseases; that where diarrhœa and cholera were remarked to be epidemic at the same time, that the diarrhœa, they said, weakened the patient, and made him more liable to be acted on by the cholera poison.*

* The Reports on Cholera, published by the General Board of Health, in 1850, 1853, and 1854, and the Report on Cholera, published by the Royal College of Physicians of England, are there as proof that those two great offices of state had not, up to 1854, the slightest idea that diarrhœa is the first,—the essential symptom of cholera; that a painless diarrhœa may have drained almost the whole serum from the blood; that the blood may have ceased to circulate; that the heart may have ceased to contract; that the person may be past all human aid. Yet, he is at his usual occupation, or walking about for pleasure or for business, unaware that he has anything the matter with him, except that his voice is weak; and, at a moment when he and his friends believe him perfectly well, he is struck down with vomiting, severe purging, spasms, etc., etc., and he ceases to breathe in a few hours.

The appointment of the house to house visitors,—which is so valuable an institution, and which ought not to be omitted when cholera is epidemic,—owes its origin, not to the knowledge that diarrhœa is the first, the essential symptom of cholera, but to the fact that, in 1849, almost every second person in London had a diarrhœa. And as the Board were informed that diarrhœa weakened the individual, and made him more liable to be acted on by the so-called cholera poison; the General Board of Health appointed the house to house visitors

It is on record that, regardless of time, of labour, and of expense, I publicly demonstrated at the bedside, before the whole medical profession of London, in 1849 and 1853, that every case of cholera is *invariably* preceded by a diarrhœa for a few *hours*, or for a few *days*, or for a *few weeks;* and that if this diarrhœa is promptly cured, the developed stage—that of vomiting, severe purging, spasms, etc., etc.—is prevented, and life is safe.

Prompted by gratitude towards the Registrar-General, Major Graham, and the gentlemen of his department, for the valuable information they had given me, I addressed a letter to Major Graham, in which I gave him an account of the results of my researches, which letter was published in his weekly report of births, deaths, etc., etc., on the 24th of September, 1853. See Appendix, No. 1.

As the results of my researches were new to the profession, and as they were of great importance to the public, I forwarded a copy of my letter to Major Graham, of the 24th of September, 1853, to the Imperial Academy of Medicine of France. On the receipt of my letter the Academy, with the sanction of the Government, sent Dr. Métier, a distinguished member of the Academy, to see me, to verify my facts, and to report.

Happily, since 1853, no outbreak of epidemic cholera occurred in France till last season; consequently, the Government had no opportunity to ascertain the correctness of the results of my researches. However, when cholera broke out in France as an epidemic last season, the Government directed pathologists to go to the bed-

to go to each house, and there ascertain if any one laboured under diarrhœa, and see that they had immediately medical advice, so as to prevent them from being weakened, and thereby made more liable to be acted on by the cholera poison.

side, and there ascertain the correctness of the results of my researches, and to report.

The pathologists reported that every confidence might be placed in the results of my researches. The Government then published instructions relative to cholera, in the *Moniteur* of the 18th of October last, based on my letter to Major Graham of the 24th of September, 1853. See Appendix, No. 2.

Therefore, since the French Government, after due inquiry, has accepted the results of my researches as correct, I feel that by having demonstrated that every case of cholera is *invariably* preceded by a diarrhœa for a few hours, or for a few days, or for a few weeks, and that if this diarrhœa is promptly cured, the developed stage,—that of vomiting, severe purging, spasms, etc., etc.,—is prevented and life is safe: I feel, I say, that I have placed the information within the reach of everyone, how to protect himself against an attack of developed cholera; that I have thereby done what no constituted medical authority or private medical practitioner has done to benefit the human race; and that for myself I enjoy the conviction that, relative to cholera, my life has been useful to my fellow men; that whatever fate may have in store for me, that my name, in connexion with cholera, will go down to posterity as a benefactor to the human race.

I have the honour to be, Sir,

Your obedient Servant,

DAVID MACLOUGHLIN, M.D.,

Member of the Legion of Honour.

London, 13*th January*, 1866.

36, *Bruton St., Berkeley Square, W.*

APPENDIX No. 1.

Extract from the Registrar-General's Weekly Return, September 24, 1853.

The following note has been addressed by Dr. Macloughlin to the Registrar-General.

"34, *Bruton Street, Berkeley Square,*
23rd September, 1853.

"In your last Weekly Return it is stated that a case of cholera occurred at No. 1, Charlotte Street, Waterloo Road, in a child 5 years old, which proved fatal in 7 hours, and without any premonitory symptom. I have been to the house, and seen the mother and the medical gentleman who attended the child. The mother left the child in the morning under the care of her eldest daughter, a child of about 10 years old. She was out all day at work, and does not know how the child passed the day, but when she returned home at night the child was in bed apparently perfectly well. At about half-past three o'clock next morning, she was called up to attend to the child, who had a copious liquid painless motion; about half an hour after the child had a second liquid painless motion; she then made a fire and got some warm drink, which the child took. The child went to bed again, complained of no uneasiness or pain, and slept a short time; she then had a third evacuation, still without pain, but felt sick at stomach. In less than three quarters of an hour after, she had a fourth very copious liquid painless evacuation, and vomited freely. The mother, feeling now alarmed, sent about 6 o'clock for medical assistance, and about 7 o'clock, when the medical gentleman arrived, the child had had severe cramps, vomiting and purging, and she was then in collapse. There was, therefore, in this case, a painless premonitory diarrhœa for at least three hours before cramps came on, and of course before collapse; and therefore there is nothing in this case which forms an exception to the rule,

that in every case of cholera there is always a premonitory painless diarrhœa for some *hours*, or for some *days*, or for some *weeks*, before cramps, and of course before collapse takes place; and that it is during this painless diarrhœa that cholera is a most manageable disease; and that it is within the reach of medical science. If this child had had medical assistance immediately on being seized with diarrhœa, would she have been saved? No one can reply to this in the affirmative. But her father and two of her sisters were seized with painless diarrhœa the day after her death; they instantly had medical assistance, and they are now safe."

APPENDIX No. 2.

Extract from Instructions published by the French Government in the Moniteur of the 18th October last, relative to Cholera.

"C'est une grande erreur de croire que le choléra se manifeste à l'improviste. Ce qu'il y a de vrai, au contraire, c'est qu'il avertit en quelque façon de son arrivée un jour, deux jours, huit jours même à l'avance.

"L'avertissement consiste, en général, en un dérangement de corps plus ou moins prononcé, avec ou sans coliques, en une diarrhée glaireuse ou séreuse, accompagnée ou non de malaise et de dégoût, avec pâleur de la langue.

"Il convient de prendre garde à cette diarrhée qui ne manque pour ainsi dire jamais et qu'on a appelée *prémonitoire*, à cause de sa signification. Abandonnée à elle-même, elle aboutira souvent au choléra; traitée promptement et arrêtée, elle coupera court au mal, et il sera dans le plus grand nombre de cas enrayé dans son développement. Les observations les plus précises ont été faites à ce sujet tant en France qu'à l'étranger, en Angleterre notamment."

Dr Aitken
with Dr. Fayrer's compliments

APHASIA AND DEATH RESULTING FROM SOFTENING IN LEFT ANTERIOR CEREBRAL LOBE AND CEREBELLUM, DUE TO ATHEROMATOUS DEGENERATION AND EMBOLISM OF THE CEREBRAL ARTERIES.

By J. FAYRER, M.D.,

Professor of Surgery, Medical College, Calcutta.

The following very interesting case appears to corroborate the views recently advanced by certain pathologists as to the cause of loss of power of speech, or of the memory of words; it is also very remarkable as an example of cerebral softening, at a comparatively early age, from atheromatous degeneration of the vessels of the brain, with embolism of the basilar artery. I therefore give the notes I made of it, before and after death, in detail.

I have known Mr. —— for several years, and until three years ago his general health was good; he is about 42 years of age, of a nervous, excitable temperament, and of energetic and active habits of mind and body. About three and a half years ago he consulted me concerning one or two sores on the leg, which were of a suspicious character, and which he seemed to consider might owe their peculiarity, if not their origin, to a constitutional taint; if so, the disease must have been contracted in early youth, for he denies the possibility of any infection for many years. His habits and mode of life have been temperate and active, his occupation necessarily exposing him to frequent change of station, with much of his time spent in the open air. I did not attach so much importance to the sores as he did; they readily healed with rest and simple applications. But I prescribed iodide of potassium, with reference to the possible specific origin. In September, 1863, I was

informed that he had been attacked, suddenly, with hemiplegia of the right side, and have since seen the following note :—

"*January 7th*, 1866.

"My Dear Sir,—Mr.——had a stroke of paralysis in September, 1863, for which I gave him a certificate home. He returned to India in June last very much improved in health, so much so, that I was particularly struck with his strong healthy appearance.

"About a couple of months after his return he suffered for some days with a severe headache, which fixed itself in the back of his head, and though I could get no definite description from him of the nature of the pain, yet I could see from his restlessness, both during night and day, that he suffered a good deal. A few days' rest and quietude within doors and some mild treatment restored him to health to a certain extent, but not to the state he was in when he returned to this country. He went out on a long tour of inspection, and I dare say was not as careful of himself as he should have been; but a few days after his return, he had a return of the headache; he had great nervous tremor of the hands. His memory (of which there was previously some failing) had now fallen off in a very sudden and marked way; he used to remain in a half-dreamy, half-drowsy state all the day, sit to meals in this state, and talk as if he had not quite awaked from sleep. He partially recovered from this state, in fact quite enough to set him thinking about his duties, and he, strongly against my advice, left this on a tour in the Orissa country; he has not yet returned, but his Baboos tell me he will be back about the middle of the month.

"I have now quite made up my mind that he is not fit for further service, but I shall, in the first instance, and that will be so soon as he returns to the station, give him a medical certificate home; any steps that are necessary for his retiring from the service may very well be left for future consideration.

"Yours, &c., &c., &c.,

"*Civil Surgeon.*"

He had, apparently, no warning; the attack occurred during the day, when he was talking to some one. He appears for a time to have lost all power in the right side, though he retained consciousness, but this paralysis was not of very long duration. He recovered partially, and subsequently regained power in his limbs; his speech improved, though some thickness, slight difficulty of articulating certain words, and a quick and excited mode of speaking remained. He was most judiciously treated; no depletion was had recourse to, and his powers were husbanded as much as possible.

In 1864 he went home to England, round the Cape, and on the voyage he appears to have been subjected to much anxiety and excitement from the danger to which the ship was exposed in a gale of wind, which required that she should be taken into port in the Mauritius and there detained for some weeks. It does not appear, however, that he suffered from this exposure; on the contrary, his health and strength improved with the change, and the improvement was further confirmed during his residence of fifteen months in England. He returned to India in June, 1865, and I saw him soon after his arrival; he looked well, and all traces of hemiplegia, so far as the limbs were concerned, had passed away. His voice, however, was still slightly affected; there was an indistinctness in the articulation of certain words; there was also an unnatural rapidity of utterance. His intellect seemed perfect, and he resumed his appointment. As the hot weather came on, he appears to have begun to fail; his memory became defective, his manner excited, and his speech more rapid and uncertain. There was a tendency to forget, or to substitute words, and his intellectual powers, naturally great and much developed by scientific and literary study, to show signs of failing.

On one occasion I was asked to see him when he was in Calcutta, and I found his manner excited, his speech quick and somewhat indistinct. His memory was evidently on the strain, and though I could see no absolute indication of the original disease returning, it was evident that some permanent defect remained, which, under the excitement of heat and duty,

was becoming more marked, and indicated that cerebral change (whether dynamical or structural was uncertain) was at work.

23*rd March*.—A few weeks ago I heard an unfavorable report of him; there were no details beyond the fact that his memory was altogether gone. On the 8th of April I was asked to see him here; he had been sent in from ——— on his way home. The accompanying statement of his case was subsequently forwarded by the medical officer who had seen him during his last attack; and it clearly explains what happened shortly before he came to Calcutta.

Dr. ———'s Statement.

"Mr. ——, aged 42 years, has been in India fourteen years.

"On the 23rd March last I was called to attend Mr. ——. On my arrival I found him insensible, with a small pulse, pupils dilated, breathing easy, at times muttering to himself the most absurd nonsense; his breath was extremely fœtid. No paralysis, but slight convulsive movements of the right side of the body. His servants informed me that Mr. —— had been accustomed to fits of drowsiness, and on one occasion, I am told, he slept for three days. I was further informed that his bowels were not moved for three or four days.

"The Sub-Assistant Surgeon, who was called in before my arrival, had cut off his hair and applied cold. We then gave Mr. —— an injection of ol. ricini and turpentine, which acted once; he was further given a couple of calomel and colocynth pills with croton oil, and mustard plasters applied to the nape of the neck. Next morning he had a strong dose of senna mixture; this produced one very copious evacuation.

"During the day I found him better, *i. e.*, he was able to walk; he could not recognise people at once, but did so after an effort. On questioning him he gave a reply, but it was all nonsense; he improved a little, and on the 5th April I sent him to Calcutta.

"I treated him principally with purgatives; every blister failed, partly from his obstinacy, partly from their uncertainty of action. I also gave him small doses of mercury, partly as a

purgative and partly to affect his system; this last did not occur. I made him pass his urine daily in my presence, to satisfy myself as to the state of his bladder; the urine was thick and very ammoniacal in smell. All this time I kept him up with light nourishing food. When he left me he was able to walk; he had an appetite, could recognise people, and could answer questions very rationally; but if he attempted to carry on conversation he was lost; it was quite apparent his memory was affected.

"Of his previous history I know nothing. I am told he suffered from an attack of apoplexy and subsequent paralysis. There are marks near his joint as if he had been bled. I am fully convinced and am of opinion that Mr.——'s brain is most seriously affected, and I am further of opinion that this present attack is a continuation and result of his previous attack of apoplexy or paralysis. Under these circumstances, I now beg to recommend him for leave of absence for eighteen months, to go to England."

I found him looking remarkably well, as to physical health, stouter and stronger than I have ever seen him. The right hand grasped as powerfully as the left; the legs were equally strong. The tongue was protruded perhaps a little to the right side, but the cheeks, lips, and eyelids were all perfectly natural. The voice not thicker than before; the words articulate, but the speech altogether incoherent. The expression of countenance and the pupils natural; no look of fatuity, insanity, or imbecility; he at once knew and seemed pleased to see me. He was accompanied by a nurse, who says that he eats and sleeps well, and that he is perfectly quiet, tranquil, and easily managed. Indeed, but for his shaven head and incoherent speech, it would be difficult at first sight to believe that he is so ill as he really is. His condition is indeed one of great urgency, and there is reason to fear that some structural change, degeneration, or softening in the cerebral lobes is taking place. The prominent symptom at present is loss of memory of words—"Aphasia" as it has been designated by

Trousseau and other pathologists. It is difficult to say how far the intellect is affected ; but certainly the main difficulty manifested is the utter inability to give utterance to more than the first few words of a sentence. He seems perfectly to comprehend any question that may be put to him, and makes an attempt to reply ; but the first three or four words have barely found utterance before he lapses into the most incoherent and purposeless jargon, which appears to indicate that the memory of words is not only lost, but that ideas in the wildest and most incoherent jumble supervene on the forgotten sounds.

During the recent very hot weather he has shown some restlessness and impatience of control, wanting to go out and refusing to remain in his room. But he is easily persuaded, and with me he is cheerful and gentle in the extreme ; indeed, were one only to see him, and hear only his reply to such a question as "How have you slept ?" or "How do you feel to-day ?" it would be difficult to believe that anything was the matter.

He takes a walk or a drive with a friend every evening.

His attempts at writing are as incoherent as his speech ; and a note I received the other day was barely legible or intelligible.

His appetite is good and his secretions are tolerably natural. A tendency to constipation is obviated by a croton pill, and cold to the head seems to be grateful and soothing. His pulse is natural and his digestive organs in tolerable order. The tongue has a tendency to be coated, and the breath to be offensive, but the aperient removes or, at all events, improves these conditions.

The nurse says that he occasionally wets his bed, and once or twice he appears to have forgotten where he was emptying his bowels ; but there is neither incontinence of urine nor fæces. A cold bath, the douche or shower-bath is given every morning, and this, with cold to the head, quiet, the removal of any cause of excitement, (mental or physical), and a regulated diet is all the treatment that has been adopted since he came here. There can be no doubt that the heat aggravates his condition ; he is more incoherent and more restless under its influence, and less patient of control. I cannot help fearing, though I do not feel certain, that this is more than mere functional disorder, and that

such changes as have been described by M. Bouillaud, Trousseau, Dax, Hughlings Jackson, Saunders, and others, are taking place in the anterior cerebral lobes, and that these changes are the continuation and results of the cerebral disorder that was manifested three years ago in a transient attack of hemiplegia. Without in any way insisting on the connection between the conditions, in the relation of cause and effect, it is right to bear in mind the possible connection that the suspicious patches of ulceration formerly alluded to may have with the pathological condition of which the symptoms described are the manifestations. It is possible that the symptoms may be the result of merely functional disorder, but the previous history is opposed to the theory.

April 30th.—He has been doing well, much as I have reported, until last night. The nurse reports that at midnight he was sick ; that he became more peculiar in his manner ; passed urine in bed ; was more incoherent and seemed to have more restless or irregular movements of the limbs ; was quite conscious, and answered all questions as usual. I find him in the morning with a peculiar expression of countenance, the eyes partially closed, his body and limbs partially curled up in bed. His head was cool, pulse quick, tongue clean, bowels confined. Ordered an enema. He had had a pill at bed-time. I observed that the right arm was more rigid than the left, and that he used the left most ; he could grasp firmly with the right, but he could not control the movements, and when he wanted to move it, he had to drag or lift it with the other hand. He was cheerful as usual, laughing and trying to joke, but unable to remember his words. I ordered ice to the head, rest, quiet, and a purgative.

Vespere.—The same condition ; the nurse thought perhaps a little better ; but I observed that rigidity and loss of control, not of power, was greater. He was quite conscious ; said he felt the right arm was not right ; but in a moment was more incoherent than ever, not remembering the whole of a word. The leg is not affected, the pupils are natural, and the pulse is slow and regular. Voice is natural, that is to say, no signs of paralysis, so far as it is concerned.

Ordered—A croton pill, blister to the scalp, and plain but nourishing diet.

May 1st.—He is no better; the bowels were moved freely, and the enema acted. He has had a restless night; has passed urine in the bed, and when he speaks is quite incoherent. I find him looking much the same. Right arm and fore-arm more rigid, but the wrist flexible; he cannot use it freely, aiding its motion with the other hand. The right leg is also feeble, and towards the afternoon it became more so. He understands all that is said, and answers in a peculiar half-sleepy and incoherent tone. He keeps his eyes half-closed, and the eyebrows contracted; the pupils are natural. His face looks less intelligent, heavy, dull, and oppressed. The blister on the scalp has risen. Pulse varies from 60 to 65; it rises with any exertion. Temperature of body natural. I directed nourishment—beef tea—to be given frequently; and the enema and pill if the bowels do not act again. Cold to the head; blister to be kept open.

His brother said that about noon he appeared to become more conscious, and became much affected, saying it would soon be all over. I expressed my fears to-day that he could not last much longer.

2nd.—No improvement; the arm and leg are still rigid. He quite understands what is said and tries to give an answer. Bowels have been freely moved; has taken nourishment. Keep the blister open; cold to the head. Repeat the enema in the evening, and give another pill if the bowels are not freely moved. Eyes closed, but opens them when told. He replies in a few incoherent half-formed words to what is said, but it is difficult to make out how far he is conscious. The head is cool; pulse 60; skin natural in feeling and temperature.

3rd.—This morning I find him changed, and the change appears to have commenced about 9 p.m. yesterday. He is lying in the most profound sleep, snoring occasionally. The limbs are certainly more relaxed than they were, and the rigidity in the right arm is diminished. His mouth is closed, and he has taken no food. The enema operated freely. Pulse 60;

skin cool; thermometer 98° in axilla; pupils natural—if anything, slightly contracted; but they respond freely to light. He is quite quiet, and has not spoken. He opens his eyes partially; makes a feeble effort to protrude the tongue when spoken to, which shows that he is still partially conscious.

Ordered—Beef tea enemata; food by mouth, if he can open it. Keep the blister open; ice also to head.

Vespere.—I find no change; he is as he was in the morning. The urine is passed in bed.

4th.—He is no better; much in the same condition; more comatose, if anything, but still appears to recognize the voice, for he opens his eyes when told to do so, though he makes no other sign. Enema and nutrient enemata return as given. No food has been given by mouth, for he cannot swallow. Face congested. Pulse 112, feeble.

5th.—He is much the same, if anything, weaker. Pulse 112; urine passed freely; bowels have not acted.

Ordered—Calomel .. .. gr. x
Elaterium .. .. „ ½
in butter.

There is rather less stertor; pupils act freely; opens his eyes when asked to do so; draws up the legs when they are pinched.

6th.—Bowels have acted; blister risen; he is much in the same condition; coma perhaps less profound; pupils act freely; he opens his eyes when spoken to. It is very difficult to get his mouth open, and any attempt at swallowing seems to cause spasm.

Repeat calomel and elaterium; nourishment as before by enemata. Beef tea and Brandy; food by mouth when possible.

7th.—Much in the same state; skin hot in afternoon; pulse quicker; less stertor; has taken some broth with great difficulty; does not seem so conscious as he was; hardly opens his eyes when told to do so. Let him have iodid: potass: gr. v. every three hours; nourishment as usual. His pupils are perfectly sentient.

8th.—Much the same; pulse 120, rapid and feeble; pupils still quite sentient; involuntary discharge from bowels.

9th.—Weaker; symptoms the same; a sort of catch in inspiration; pulse 140 to 160; involuntary discharges. Death at 5-30 p.m.

Post Mortem Examination (13 hours after death.)

The body was well nourished. The head, which was remarkably well formed, had been shaven, and marks of vesication existed on the scalp.

Head.—On opening the cranium, a small quantity of opaque fluid was seen lying under the dura mater; underneath the situation of the blister, the vessels of the dura mater and corresponding bone were somewhat congested. On removing the brain from its attachments, opaque, but not inflammatory, exudation was observed in excess about the fissures of sylvius and generally in the subarachnoid space. When the dura mater was completely removed, and the brain turned with its inferior surface upwards, the whole of the inferior surface of the left anterior lobe of the organ appeared shrunken and smaller than that of the opposite hemisphere. There was also noticed matting together of the convolutions on each margin of the fissure of sylvius on the left side. Just on the antero-lateral aspect of the left corpus striatum in the nerve matter, intervening between that ganglion and the convolutions, there was a portion of yellowish and softened brain, from which, when cut into, a small quantity of opaque serous fluid escaped. The size of the cavity remaining after the fluid flowed away was about that of a pea; and this, in all probability, represented the centre of the mischief which produced the hemiplegia, and interference with the faculty of speech three years ago. But now there was observed somewhat extensive white softening all round this spot, affecting the convolutions on the one hand, and the anterior portion of the corpus striatum on the other. The softened brain here contained granules, broken down nerve tubules, and nerve vesicles, but it was mainly composed of fat globules of variable size.

On the left and inferior aspect of the pons varolii, a portion of white softening, as large as a hazel nut, existed. The nerve structures were so altered in consistency that on pouring water on the part, the softened material was washed away, exposing a breach which penetrated the transverse or commissural fibres, the upward fibres from the corpus pyramidal, and the vesicular continuation of the olivary ganglion. But the whole structure of the pons—the medulla oblongata and crura cerebelli—was softer than natural.

The disorganized nerve substance of the pons was found to be constituted of a great quantity of granular matter, a few stray tubes and vesicles undergoing disintegration, and abundance of fat globules of different sizes. Neither in this nor in the softened part of the left anterior lobe could a single exudation corpuscle be seen.

The arterial circulation was examined with care. The vertebrals and basilar were thickened, rigid, and of a yellowish opaque colour from atheromatous or fatty degeneration. At the commencement of the basilar, the thickening of the vessel was so remarkable as to narrow its calibre most materially. It felt hard, like a piece of cord to the touch; on laying it open here, its internal lining was opaque and roughened, having lost its brilliancy and smoothness. Immediately on the distal aspect of the atheroma, a dark-coloured clot of recent standing was seen completely blocking up the artery, and thus cutting off the normal supply of blood to the cerebellum, pons, and the posterior lobes of the brain on both sides, until a supplemental supply could be furnished by the internal carotid arteries, through the anastamotic system of the circle of Willis.

The whole of the primary and secondary arteries of the cerebrum and cerebellum were more or less spotted with a yellowish coloured atheromatous material. It was most characteristically developed, however, in the vessels on the left side of the brain.

The heart was flabby, aortic valves healthy; but the ascending aorta, the curtains of the mitral valves, the innominata,

left subclavian, and carotid all contain atheromatous material.

For the above description of the post-mortem appearances I am indebted to Dr. Joseph Ewart, Professor of Physiology, and Pathologist to the Medical College. He and Professor Partridge, who saw the case with me, were good enough to assist me in conducting the examination.

REMARKS.

This case is one of great interest and importance. I have not been able to ascertain that there was any hereditary tendency to disease, either of the vascular or nervous systems; and the history of the patient, previous to the attack of hemiplegia, three years ago, tells only of a sound mind in a sound body. His mental and physical vigor were both remarkable, and although he was always of an excitable and vivacious disposition, there was nothing in the least suggestive of any organic or structural disease.

On hearing of the attack of hemiplegia three years ago, and learning that it was not in any way connected with recent exposure to the sun or to great heat, I was at a loss to account for it, and my thoughts reverted to the ulceration of doubtful origin as suggestive of a constitutional cause. I also thought of embolism, but not having the least idea that he was the subject of any vascular unsoundness, was equally unable to account for it on those grounds. I happened to know that the cardiac sounds were natural, and that he was free from any indications of valvular or other form of heart disease.

That a small vessel had given way, and temporary hemiplegia resulted from the pressure of a small clot in or near the left corpus striatum, was the last conclusion at which I arrived, and the subsequent history, up to his return to duty, appeared to support that conjecture.

The post-mortem examination proved that it was even more than that. The universally diseased condition of the arterial system, and the extent to which it had proceeded in the cerebral vessels, fully account for all, not only the past, but the recent symptoms.

The arteries of the brain—especially of the left side, and more especially those of the posterior part of the encephalon—the vertebrals and the basilar were diseased to a degree that I have never before seen. The vessels of the left side were unusually thickened and irregular from atheromatous deposit, and the basilar itself was completely plugged with a colored but firm clot. This, no doubt, was of very recent origin, and dated about the period when he passed into a state of almost perfect insensibility some days before his death.

The gradually progressive disease of the vessels had, no doubt, so far interfered with the circulation generally, through the left side of the brain, as to induce the gradually increasing symptoms of cerebral softening to which his history points as having been present, and the probability is that other and smaller embolisms have, like that of the last attack, formed from time to time, and compromised the nutrition of the brain, though not occurring in the vicinity of, or where they immediately affected, the cerebral ganglia. The effects were not so striking as in the first case, where either a hæmorrhage or an embolism directly affected the left corpus striatum.

The cause of embolism, no doubt, lay in the roughened coats of the diseased arteries. As the atheromatous degeneration gradually increased, disorganizing the smooth epithelial lining of the tube, the blood could hardly flow over it without leaving fibrous deposits or coagula, which in their turn, being washed away by the current, were carried into smaller channels which they plugged, and thus the blood itself became the source of the mischief. The recent large embolism in the basilar artery—the result of contact with the roughened and diseased vertebrals—is only an example, on a larger scale, of what probably occurred years ago in a smaller vessel of the anterior lobe, and no doubt often, more recently, in the cerebral circulation generally, until finally the starvation of the medulla oblongata precipitated the fatal event. It is interesting, in reference to the observations of the distinguished pathologists whose names I have already mentioned, to note that the lesion in the first place seemed to fall on the left anterior lobe, and that

certainly a marked feature in his case throughout, was affection of the speech; for even after the first attack, though perfectly recovered in all other respects, there remained some peculiarity in his speech—a rapidity of utterance, and a tendency to forget or to substitute words that was quite unnatural. As the wasting of the brain substance proceeded, this condition of *aphasia* also tended to increase, until just before the occurrence of the last fatal embolism of the basilar artery it had become the most marked feature of his condition, and pointed to what we had feared must prove to be irreparable mischief in the brain.

The arterial disease must, no doubt, therefore be regarded as the cause of mischief; it is remarkable that it should have gone to such an extent at the comparatively early age of 42.

The aorta was literally one mass of atheroma. There was more diseased than sound tissue, and it is probable that the same condition existed throughout the body, although no local gangrenes had occurred to give evidence that it was so. In all other respects he was in remarkably good health, being fatter and more muscular than I had ever seen him, within a fortnight of his death. His organs generally were sound; lungs, liver, spleen, and kidneys performed their functions naturally; the heart's action was normal in rythm and sound; and his pulse was steady and regular. The atheromatous degeneration of the arterial system appears to have been a constitutional peculiarity, and to it must be assigned the disturbance in the circulation which resulted in the pathological conditions I have described.

E. DEAN, CALCUTTA CENTRAL PRESS COMPANY, LIMITED,
5, COUNCIL HOUSE STREET.

MEDICAL REFORM A SOCIAL QUESTION,

COMPREHENSIVELY STUDIED WITH THE LIGHT OF

PHILOSOPHY, HISTORY, AND COMMON SENSE.

TWO LETTERS

TO THE

RIGHT HON. VISCOUNT PALMERSTON,

K.G., G.C.B.,
FIRST LORD OF THE TREASURY.

BY

JOSEPH SAMPSON GAMGEE,

STAFF-SURGEON OF THE FIRST CLASS AND PRINCIPAL MEDICAL OFFICER OF THE BRITISH-ITALIAN LEGION DURING THE LAST WAR, LATE ASSISTANT-SURGEON TO THE ROYAL FREE HOSPITAL AND PRESIDENT OF THE MEDICAL SOCIETY OF UNIVERSITY COLLEGE, MEMBER OF VARIOUS LEARNED SOCIETIES, BRITISH AND FOREIGN.

"For it is the truth alone I seek, and that will always be welcome to me, when or whencesoever it comes."—LOCKE.

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1857.

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"The longer I live, the more I am certain that the great difference between men, between the feeble and the powerful, the great and the insignificant, is *energy, invincible determination*,—a purpose once fixed, and then, death or victory. That quality will do anything that can be done in this world; and no talents, no circumstances, no opportunities, will make a two-legged creature a man without it."—*Extract of a Letter from Sir T. Fowell Buxton.*

"Men ought always to pray and not to faint."—*St. Luke*, 18, i.

"Mihi res non me rebus subjungere conor."—*Horatii Flacci.*

"Whatever we have said has been for the ultimate honour and security of medicine; and if, in discussing our subject independently, some hard sayings have been inflicted, the axiom *that true medical reform can only be based on medical scientific reform*, stands out the more boldly for the freedom with which it is proclaimed. While some may laugh, and some condemn, and some wince at our plain-spoken arguments, there are, as we know, amongst those who understand medicine and her position in current history best, those who will sympathise with us most; for there are no men who detect the imperfections of medicine so keenly as those who know it scientifically, and who grasp its great truth in the firmest embrace."—*The Sanitary Review and Journal of Public Health, March*, 1857.

PRELIMINARY CONSIDERATIONS

IN OPPOSITION TO

MR. HEADLAM'S MEDICAL REFORM BILL.

TO THE RIGHT HONORABLE

VISCOUNT PALMERSTON, K.G., G.C.B.,

FIRST LORD OF THE TREASURY.

My Lord,—I shall not otherwise apologize for addressing you on the subject of Medical Reform, than on the basis of the question's importance, and of a firm conviction that it is inadvisable for the honor of science and the public good, that Mr. Headlam's Bill pass into law.

It has been stated by one of the most powerful Corporations in favor of Mr. Headlam's Bill, "That the object of Medical legislation can be no other than that of securing a well-qualified Medical profession, and of providing a registration, by which the qualifications of Medical practitioners shall be certified and published." I submit, with deference, as a less objectionable mode of stating the question at issue, that the object of Medical legislation is to promote, in the largest

measure, the health of the people, and the perfectionment of a science yet far from having attained the development of which it is susceptible.

Mr. Headlam's Bill is based upon two assumptions: firstly, that the Medical Corporations represent the Medical profession; secondly, that the interest of the Corporations is identical with that of the public. The first of these assumptions is demonstrably contrary to fact, the second gratuitously begs the whole question at issue.

The majority of the Medical Corporations are oligarchies; their history is one of illiberality to the learned, of party conflict, and comparative neglect of the public welfare.

I am opposed to Mr. Headlam's Bill because if passed into law, it will in great measure check discussion on evils within the profession;—the unsatisfactory state of clinical education, the management of hospitals, and, particularly, the corrupt system by which officers are appointed to them.

I submit that if as a general proposition it be inadvisable to invest sections of the community with the power of arresting the development of opinion amongst the masses, valid reasons for exemption are not to be found in the history of the Medical Profession, any more than in that of theology and law. Medical men are like their fellows, subject to the frailty of nature, which

inspires jealousy of, and disposition to resist attempts which, however much calculated eventually to advance truth and profit mankind, exercise an immediate influence contrary to preconceived ideas and individual interests. Compulsory orthodoxy is opposed to the progress of truth, which has its surest foundation in the free development of differences.

The hope, the real requirement of the Medical profession is, to advance with the spirit of the age; that is:—not the rivetting the fetters of monopoly, not the subjecting the public to party interests, but sacrificing these if the general good demand it,—advancing on the high road of experimental philosophy.

For these reasons, I pray that your Lordship's influence be exerted in opposition to Mr. Headlam's Bill

I have the honor to be,

My Lord,

Your most obedient humble Servant,

JOSEPH SAMPSON GAMGEE,

Staff-Surgeon of the First Class,
Principal Medical Officer of the British-Italian
Legion during the last War, &c, &c.

16, Upper Woburn Place, Russell Square,
July 2nd, 1857.

FURTHER CONSIDERATIONS

ON

MEDICAL REFORM AS A SOCIAL QUESTION,

COMPREHENSIVELY STUDIED WITH THE LIGHT OF

PHILOSOPHY, HISTORY, AND COMMON SENSE.

TO THE RIGHT HONORABLE

VISCOUNT PALMERSTON, K.G., G.C.B.,

FIRST LORD OF THE TREASURY.

My Lord,—Firmly resting on the conviction of the abstract truth of the propositions laid down in the Letter I had the honor of addressing you, the 2nd instant, I might hope in the rejection of Mr. Headlam's Medical Reform Bill by the House of Commons, without further attempt to demonstate its radical demerits; and if the decision rested solely with your Lordship I should have no doubt whatever of the issue. But, reflecting that that Bill was read a second time before the House, the 1st instant, with 225 ayes against 70 noes, believing that honorable members have been misled as to the nature of the Bill by its advocates, who have with singular

adroitness used every means to secure a transitory success; believing that the smallness of the minority was due partly to inadequate consideration of the weight of the question, and partly to misplaced confidence in the abstract power of truth, I purpose addressing myself more fully to demonstrating the injustice, impolicy, and unphilosophical spirit of that measure. My statements shall be facts; my arms shall be taken from the arsenal of history and philosophy; my stand shall be taken on the stronghold of common sense. And as this is no party question, as it involves alike the honor of science and the material welfare of the people, as it concerns the palace no less than the cottage, and affects the comfort of the poor no less than the luxury of princes, I hope, I rely upon impartial consideration;—hope—reliance—which I should certainly not venture to express if exclusively appealing to your Lordship; but as I pen these words, they are being committed to the press, so that they may go before the world for judgment; that I in penning them may feel the salutary check of a heavy responsibility; the people, in reading them, have the opportunity of judging the sincerity, the force, of logic in spontaneously overflowing truth. And, if I be found to utter real truth, I hope in the few hours which elapse before the time appointed for the third reading of Mr. Headlam's Bill, a resolution will be

come to, if not to reject it for ever, to send it before a select Committee of the House, as the safest means of testing its merits; as the surest guarantee of deliberation in a question, which above all others demands no rashness.

I beg permission to address myself directly to the state of the question at issue.

Medical reform has now been publicly agitated for a quarter of a century; discussed under several governments with no other apparent result, than so strange a confirmation of the proverbial differences of doctors, that the disputants appear to have grown ashamed themselves; and the clamour now is, *a* Medical Reform Bill better than none at all—union better than division; but I say better no bill than a bad one—better a free expression of convictions and a generous emulation in the pursuit of truth, than complacent compliance with the imperious coercion of allied monoplies, pecuniarily interested in the maintenance of a state of things, alike derogatory to the march of learning, and to the health—moral and social of the people, and of the profession.

I say better no bill than a bad one ; a legal enactment must prove practically injurious unless conceived in accordance with sound principles of political science ; legislation for a section of the community must be detrimental to its honor, as a part of the great Commonwealth, if it do not

provide, in the largest measure, for the public want.

Sections, and such are professions, *a fortiori* corporate bodies, belong to the public, not the public to corporations and professions. But the Medical corporations, the supporters of Mr. Headlam's Bill, have gratuitously assumed that the health of the public is their appanage, and that to them belongs its administration *de jure* and *de facto*. It is because such assumption is unwarrantable that I oppose the Medical corporations—the supporters of Mr. Headlam's Bill.

It is not true, as an absolute proposition, that union is better than division, unanimity than difference. Englishmen, above all men, must oppose such errors, unless they are prepared to admit, without question, that the *one* voice of the Vatican, is, from the simple fact of its being *one*, a greater evidence of truth, than the independant religious belief of this great people,—unless they are prepared to admit that the President of the French Chamber is a more real embodiment of the sacred principles of freedom, than the Speaker of the Commons of England ;—unless they are prepared to affirm, what they never will affirm, that under the sentence of the second of December, which silenced eloquence in Berryer, history in Thiers, social science in Guizot, France is more happy and prosperous than England under the Magna Charta Libertatum.

It is because Mr. Headlam's Bill in creating a gigantic monopoly, in attempting to coerce the free development of learning, is opposed to the fundamental spirit of English laws and customs, that I oppose it.

Forced unity is tyranny, and such is the policy of the Medical oligarchies, who support Mr. Headlam's Bill. Free development of opinion is the essential of scientific and social progress ; this is what the public stands in need of ; and it is only in proportion as it ministers to the wants of the public, in accordance with the spirit of the age, that the Medical profession can hope to be honored, can claim to be protected with the authority of Parliament. It is because Mr. Headlam's Bill places the public after a section, general good after interested monopoly, that it does not deserve the sanction of Parliament.

I am opposed to Mr. Headlam's Bill because in aiming at the entrenchment of monopoly, it threatens invasion of the public domain ; it is opposed to the spirit of the age, which is—growth in wisdom without restriction, beyond that which the Creator has imposed, as the boundary of the human understanding ; within which boundary, it is well to plant marks as signals of progressive stages ; but it is contrary to the principles of Divine law, to the soundest principles of political science, to plant barriers, which shall

do violence to efforts to progress in the development of truths possessing universal interest.

And yet it is in this age, when the future King of England fathoms the depths of natural philosophy in the public lecture-room guided by the demonstrations of Faraday—when in the halls of Lambeth Palace the Primate of England invokes the Divine blessing on the Evangelical Alliance after a prayer by a Dissenting minister —when the Consort of the first Lady in the land, our gracious and beloved Queen, comes down to Willis's Rooms to head a movement for the education of the people,—when the most eminent Bishops in the hierarchy have resolved on preaching to the masses the pure truths of religion from the platform of Exeter Hall,—when the old universities have determined on throwing open their portals to the hungry and thirsty after learning, whatever their birth, their fortune, or their belief, —it is in this age that a few interested Medical oligarchies apply to Parliment for monoply—for penal enactments, no less powerless against evil, no more powerful for good, no less a stain on the escutcheon of science, than were the prejudiced and cruel laws with which learning was fettered in ages of the past. It would seem as if the Medical corporations were never to learn, that Truth only unveils her fair form at the wooing of pure souls, who love her for her own sake. She withers unto death when accosted by the claw-

ing hands of the rapacious, who try to beguile her with handcuffs as bracelets, to persuade her that the tyranny of dictatorship is the protection of just law.

It is because such is the illiberal, unphilosophical, and impolitic spirit of Mr. Headlam's Bill, that it deserves to be opposed, by all who believe that the interests of the world demand greater regard than do those of a *cóterie;* and that interested monopolies merit no support, in a question which involves the glory of science—the health and welfare of an entire people.

I infer great reason for opposing Mr. Headlam's Bill, from the fact that it was *unanimously rejected by a select Committee of the House of Commons* in the last session of Parliament; from the manifest falsity of its plea of giving a representative voice to the Medical profession; whereas it only provides a ballot box for the secret votes of the money-gorged palsied corporations. I infer further reasons for opposition to Mr. Headlam's Bill from the fact, that it claims vast powers of taxation not to be amenable to the supervision of Parliament; the grounds for opposition are still further strengthened by analysis of the composition of the bodies which support the proposed law. Only the most powerful of these bodies is it necessary to examine in detail, and firstly the Council of the College of Surgeons of England.

I venerate and love the Surgical Councillors

William Lawrence, Benjamin Travers, and Joseph Henry Green; I venture to believe I accurately weigh the works of John South and Moncrieff Arnott, but I can only regard them as the surviving relics of an extinct generation, not as the philosophers of the present, the legislators for the future; if it be objected that the Houses of Parliament offer marvellous examples of the representatives of a former epoch, moving war and making peace, inspiring vigour and checking folly in the present generation, I reply yes; but Brougham, Palmerston, and Lyndhurst, have lived working for mankind half a century in public assemblies; in the fire of contest ever chaining victory to the standard of intellectual progress and of social right; whereas the ancients of the College of Surgeons have, in their dotage, been deaf to the voice of science, have struggled against popular opinion, have oppressed the Medical profession; and at its expense, at the sacrifice of learning, and of the people's welfare, have divided in a virtually self-elected *cóterie* the proceeds of gain ill-gotten, by power undeserved, in a borough as rotten as old Sarum but infinitely more disgraceful; for its rottenness has been hidden with the mantle of Hunter—that immortal genius, whose history from childhood to death, whose mind, whose works, whose every feature, are living protests to the principle and practice of the Council of the College of Surgeons, which is one

of the chief, if not *the* chief, supporters of Mr. Headlam's Bill. What is such support?

Why should not Paget and Bowman, Fergusson and Simon, long since have replaced those of the College Councillors who are even richer than their fellows in reminiscences of the close of the last century, most in arrear of the knowledge of the day? Because the Council of the College of Surgeons has never deemed it to its interest to understand the saying of the immortal Liston, that, in surgery at least, years are not necessarily the measure of experience; they have never perused that eloquent passage of history which records the leading of the Commons of England by William Pitt at twenty-six years of age No, the ancients of the College of Surgeons have grown in despotism with age, irresponsibility, and opulence; they have to the utmost excluded vigour and learning from their councils, and therefore their creature, Mr. Headlam's Bill, does not merit the approval of the British Legislature.

In a specious document, just published, entitled "The Case of the Council of the College of Surgeons," that body claim consideration for the material works with which they have embellished their institution, for the means they have expended in thereby adding to the monuments of the nation. But those funds have been in great measure supplied by votes of Parliament, for the express object to which they have been

applied; and the Council have no claim for special consideration on the plea of having done that which, by common law, they were bound to do. Another source of those funds have been the fees obtained by granting diplomas after examinations so paltry and unreal, as to be alike derogatory to scientific honor and to the national welfare.

What credit to the Council of the College of Surgeons if in the museum and library they have deposited the surplus of ill-gotten treasure, after dividing a lion's share *pro bono proprio?* What credit can that Council claim for the genius of Hunter and Owen, the enlightened devotion of Queckett, the real causes of the present aspect of the Hunterian museum? What credit can that Council claim for the appearance of the library, sole work as it is of Stone and Chatto? What right have that Council to hide themselves behind such a bulwark as Belfour, the Napoleon of secretaries, who, in spite of corrupt inspiration, after mediæval precedents and party squabbles, has wondrously succeeded in hiding the monster's face with a passable mask.

How is it that the Ancients of the College of Surgeons point to the Museum and Library as their apologists? By the same logic, the excavations of Pompeii and Herculaneum, the treasures of the Museo Borbonico, and of the Palazzo Farnese, might be adduced as justification for the

horrors of Procida and Montesarchio, of the Bagno di Nisida and Castel Sant' Elmo. It has always been the custom of despots to claim immunity for the moral violence they inflict, by pointing to the monuments raised with the treasures too colossal for self-indulgence to usurp and spoil. Why does not the Council of the College of Surgeons point to the votes of its constituency? why does it refuse discussion on its acts? why does it repudiate the healthy maxim, that public servants should be responsible to their public masters? Because it has habitually done violence to intellectual freedom, oppressing the learned whenever it could, and loving lucre more than wisdom. To use the words of one of the Medical authorities, "It is not the men but the money; not the general practice, but the price of the College diplomas which the College of Surgeons desire to 'recognise' for the future, as they have in times gone by."*

In issuing the specious document already alluded to, under the signature of its three chief officers, and the title of the "Case of the Council of the College of Surgeons," that body unwittingly cast a missile which rebounds against itself. What case has the Council apart from the Members of the College; why has it *never* advocated, indeed never recognized, the rights of its

* "The Lancet," 1842, vol. i. p. 237.

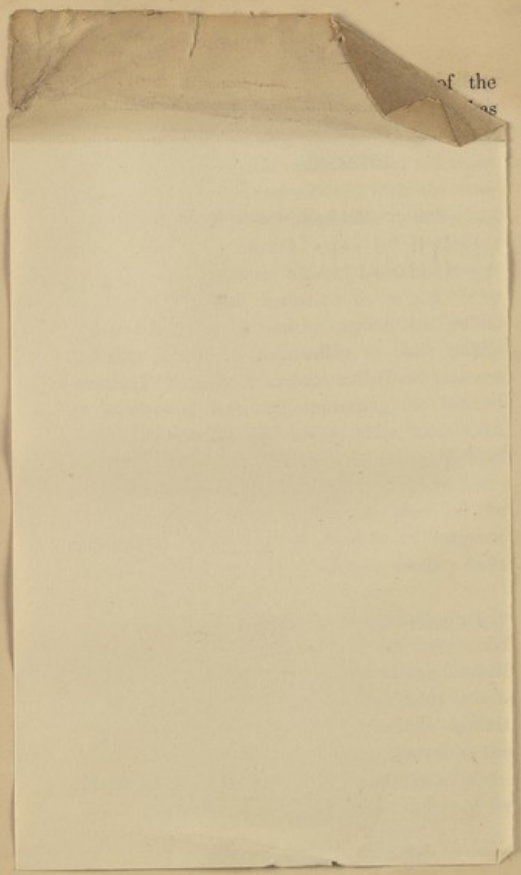
MEMORANDUM

From:- Professor of Army Health

To:-

Date:- Colonel

* Professor Laycock, in "Medical Times and Gazette," June 20, 1857, p. 628.



constituents? What *case* has the College of Surgeons *at all* in the social question of Medical Reform, at variance with public interest, inconsistent with its provision, on the sole basis of claim to the greatest good on the whole community. The very fact that that Council comes forward *speciously to plead a case at all against the public*, is proof of its interestedness,—fatal disqualification, because inevitably fatal to its impartiality.

I am opposed to Mr. Headlam's Bill, because in a matter of learning, by its proposed system of registration, it parcels out the British Empire as the domain of a joint-stock Company of Medical Corporations, which it invests with powers over the rights and persons of men of learning, as vexatious as the passport system of the Continent,—utterly at variance with English notions of right and independance.

I am opposed to Mr. Headlam's Bill because under the mask of protecting the public by putting down quackery, it is powerless against the brazen-faced impostor, only tyrannical against the educated surgeon and physician. I am about to quote from the reasons adduced against that Bill, by one of the most distinguished medical philosophers of our time;* "In this Bill there

* Professor Laycock, in "Medical Times and Gazette," June 20, 1857, p. 628.

are no pains and penalities for ignorant quacks; these are only for the duly qualified practitioners You tell me the quack cannot recover his fees under the Bill. What of that? He is a business-man, and always takes his fee before he gives his advice. And if he cannot be legally appointed surgeon to a union, or hospital, or regiment, or ship, may I ask, Has the ignorant, mischievous quack ever applied for those offices? You say he will incur penalties if he does anything to imply that he is registered under the Act: then he will glory in his superior freedom, and have a large brass plate on his door, deeply lettered, 'John Snooks, Herbal Doctor and Water-Caster, *not registered*.' By what logic do you reach the conclusion, that when you have fined, say Sir B. C. Brodie, before two city aldermen, for not being registered (if he chance to be in that predicament) and sent him to prison for obstinately refusing to pay, you have hit John Snooks a heavy blow, and given his practice great discouragement? Will he not, with some show of reason, argue that he is the safer man of the two, or the law would have looked as sharply after him as after Sir Benjamin."

Yes, according to Mr. Headlam's Bill it is only John Snooks and his fraternity who are to enjoy the privileges of *habeas corpus*, without the intervention of the Medical Corporations; their official authority is reserved,—to be exercised in

granting tickets-of-leave to the Symes and Lo-cocks, the Andrew Smiths and Brodies, the Walshes and Forbes Winslows.

The advocates of Mr. Headlam's Bill argue that it is the Bill of the Profession, that it is supported by the Corporations. As to the first part of this statement, I utterly deny the truth of its spirit; the profession, as a body, has never been consulted; the Corporations, as sectional councils, have never asked for the vote of their constituents. True, the great moneyed interests concerned, the clamour,—*better a bad Reform Bill than no bill at all*,—the artful suggestion that a large number of petitions to the House of Commons with few signatures have more weight than a few petitions with many signatures,—a *ruse* actually suggested by the supporters of the Corporations, all these influences, I say, have created a movement, which would exercise undue weight, if its fictitious nature were not exposed, if it could not be urged as a challenge for disproof, that the Medical profession has never been consulted, in the only sense that the voice of a great public body can be heard, so as to have constitutional weight. Let the Corporations take up this challenge, and disprove the charge against them by deputy, when the Speaker of the House takes the chair on Wednesday next, and Mr. Headlam's Bill comes on for a third reading.

Granting for the sake of argument,— a vicious

argument I preface,—that all the Corporations are in favor of Mr. Headlam's Bill, how is it that those oligarchies which, ever since Medical reform was first mooted, have been quarrelling about the contents of their coffers and the relative thickness of the dust on their parchments, are now unanimous? What common bond has united them? What medley of forces has been combined into the resultant,—the pretended line of truth and equity? MONEY,—EGOTISM,—FALSE PRIDE,—ANTIQUATED PREJUDICE,—into these forces does the resultant trace back.

Here is another challenge for the Corporations. Let them on Wednesday next, when the Speaker takes the chair for hearing the motion that Mr. Headlam's Bill be read a third time, instruct one of their supporters to enlighten the House, as to the real cause or causes of their singular accordance; and further let them state on particular grounds, by what process, on what principles Mr. Headlam's Bill, if enacted into law, is to further science and benefit the public,—in the large measure which the public has a right to anticipate. No more for the moment of the discussion.—better Mr. Headlam's Bill than Lord Elcho's; for, in comparisons, the real merits of individualities are too apt to be misjudged; the philosophical plan is to examine quantities singly before confronting their relative values. In pursuance of this process, what, it is enquired, are the

absolute merits of Mr. Headlam's Bill? Why, in the interests of the commonwealth, on the basis of history, philosophy, and common sense, is that Bill a good one? I submit that if its supporters cannot answer these questions, on evidence, to the satisfaction of the House of Commons, then that Bill is a bad one, and deserves to be denied the force of law by the British Legislature.

Still, for the sake of argument, proceeding upon the assumption that all the Medical Corporations support Mr. Headlam's Bill, it may be well to enquire further, how hitherto they have supported it. The *Case* of the College of Surgeons has been disposed of,—I hope satisfactorily to logicians and common sense Englishmen, if not to the Council of that Institution. What now is the case of the College of Physicians? In addressing my self to this question, I desire to mark the estimation in which I hold the College of Physicians relatively to the College of Surgeons, of which I have already treated. The latter was incorporated in 1800, on the pretext of the Hunterian name; the spirit of its council's administration has been little else than an insult to the memory of its greatest ornament,—its first cause. But the College of Physicians is really a time-honored body; and who is it that does not feel a veneration for age, even apart from every other consideration? The College of Physicians has, for ages, held power

in the State; and even though that power have not unfrequently been exercised for evil, though it has often been dormant when the cause of truth invoked it in vain, it commands reverence as one of the bodies of the State. Even as a body it has claims on the spirit of equity, which Southey, in his Book of the Church, inspires in

> "Those who seeking to give and merit fame,
> Justly should bear a critic's noble name."

"It behoves us ever to bear in mind, that while actions are always to be judged by the immutable standard of right and wrong, the judgment which we pass upon men must be qualified by considerations of age, country, situation, and other incidental circumstances, and it will then be found that he who is most charitable in his judgment is generally the least unjust." With this spirit do I judge the President of the College of Physicians, who, in 1693, committed Groenvelt to Newgate for employing cantharides! But if that time-honored body in the person of its chief officer desire to claim exemption from the sentence—

> "Il lupo perde il pel ma non il vizio,"

it should consider that on it falls the *onus probandi* the titles to exemption. If we are to judge the

expressions which fell from honorable members of the House, last Wednesday, with reference to the arrogant spirit of a famous circular, it would appear as if the required titles of exemption would be rather difficult to prove, for that document is indeed a most extraordinary combination of bad judgment and misplaced intolerance. It says in one part, "it is earnestly to be deprecated, therefore, that this Bill should fall under the hands of a Select Committee of the House, by which means it might be so mutilated that it would be impossible for the Profession to receive it." What have we come to that Doctors talk of a Bill—their cur—*falling under the hands of a Select Committee of the House of Commons.* ESPRIT DE MOLIERE ILS TE DEMANDENT ENCORE. Who is it that empowered the scribes to threaten Parliament with the rebellion of the Medical profession against its mandate. Were it needed, were not the insult too arrogant, the profession would tender apology *en masse* for so unwarrantable an offence. And yet its perpetrators ask to be allowed to enjoy, *versus* the meek and lowly,—for such are the learned,—the penal laws of Henry VIII. No fear of the House of Commons granting such a request on the part of the modern Medical Ancients.

But however sincerely I am influenced by the highest considerations in the special behalf of the College of Physicians, it is impossible to lose

sight of the fact that that institution—as an institution—is very far behind the age; that it has most ungenerously, most unbecomingly, most unphilosophically, treated the general body of the Medical profession; and, on the present occasion, when the honor of that profession is involved in a question pending before the Commons of England, the College of Physicians of London is said to have descended to publishing, or causing to be published in its behalf, the scurrilous anonymous document above alluded to, against the principles dearest to the fraternity of the learned. The Dulcamara manifesto is to be seen in the halls of Colleges, and on the tables of most libraries; it has appeared in the public journals, and by some of them, by the best informed, has been attributed, seemingly on good grounds, to the College of Physicians, from which body, be it noted, no disavowal of the disreputable affiliation has hitherto been published.

Besides advocating the supposed merits of Mr. Headlam's Bill on the most flimsy pretexts, the manifesto purports to demonstrate the alleged defects of Lord Elcho's contemplated measure, and in doing so, it urges as an objection to it, that it is a Scotch measure, designed unduly to benefit the learned North of the Tweed,—a brotherhood at which it professes to sneer. This new species of patriotic love and scientific cosmopolitanism has found echoes in others of Mr. Headlam's

advocates, who now plead support for his Bill because it is *not Scotch*. But what philosophy is this? Headlamites where is your history—where your common sense? Have you no respect for the dead that are immortal—no reverence for the sentence of contemporary justice?

It would be beneath me, and that because beneath the high merits of the cause I plead, to attempt to disprove the charge of partizanship against Lord Elcho. I admit—how many admissions have I made for the sake of argument in the futile attempt at defence of the Medical oligarchies—I admit that Lord Elcho's Bill *is Scotch*. What then? Did William and John Hunter come from Kamschatka? Is Brougham of the land, even though he be of the family, of Pericles? Spirit of Liston, wert thou embodied in Pall Mall? James Syme, William Sharpey, James Clarke, and Andrew Smith, what are you? *Donner Wetter*, they are all Scotch!

Yes, Modern Athens has been the cradle of our greatest intellects, the London world is in most instances but the battle-field for mastery. When the old Universities of England had barred their gates after the fashion of mediæval intolerance, where did the great spirits breathe and wax in strength, to bless the land with the glowing radiance of their light? What would the gold of England have been without the genius, the heart, of her two sisters? Enough, I

hope of this discussion, in a question above all others pertaining to the entire people. Where the learning comes from it matters not; learning, real, deep, rich, varied, philosophical learning must settle the question; and if a Laplander is to be the man to propose the scheme of Medical Reform which is most to honor science and benefit mankind, then let two monuments be erected to the Laplander; firstly, the elevation of his propoal to the dignity of law; secondly, the perpetuation of his image in the first building of the empire destined for the assembly of Medical men.

It has indeed been a most ill-judged zeal on the part of the College of Physicians, or its Commissioner, to raise itself in the popular esteem by attempting to sneer at the learned, amongst whom the Scotch have no superiors; to attempt, at the expense of truth and justice, to make a parade of the claims of Medical Corporations. The College of Physicians should have known from history, that, if Medical corporations have little right to sympathy from the masses, they have less from philosophers; except in so far as these know that the cause of truth is often propitiated by antagonism. In the history of Medicine, it is not the Medical corporations that fill the greatest number of pages with the annals of discovery—blessings to mankind. After the night of ages it was not a corporation, it was Mondini, who in Bologna

made the first step towards a positive Medical philosophy, by examining first the organization of human bodies. In the 16th century, the great benefactors were not corporations, but Paré, Vesalius, and William Harvey; who all worked in spite of corporations! And, what of Jenner, of the Hunters, and hundreds more? The Medical corporations have been our Nero and Bellarmino—not our Solomon and Lorenzo il Magnifico.

Having touched Lord Elcho's measure, which was withdrawn from the House after Mr. Headlam's unexpected success, on Wednesday the 1st instant, it may be deemed bounden on me to express opinion more fully as to the relative merits of the two Bills. But I do not feel called upon in the interest of science and of the public to enter into such comparative consideration; and that, because I have disputed Mr. Headlam's Bill on its own grounds; I have dissented from the proposition,—better a bad bill than none at all; I have avowed the maxim, better *not* to affect science with legislation, than to fetter it with *bad* legislation. Yet, in the firm belief that Mr. Headlam's Bill will not pass into law, I venture to comment further on some points in Lord Elcho's, as an exposition of the positive ideas I entertain, with reference to the principles worthy of adoption in the foundation of medical legislation.

The principle of Lord Elcho's Bill—to form one Medical Council to take cognizance of *all* that regards the public health—is pre-eminently philosophical. The proposal to place that Council under one head to have a seat in Parliament, appears commendable in policy, especially honorable to the Medical profession. The implied proposal in Lord Elcho's measure, so to class the existing Medical interests, that they shall all be subject to the public welfare, and to the honor of the general profession, is manifestly based on the soundest principles of political science. When that proposal shall be raised to a law, the public, the world, will have the benefit of generous emulation between institutions the *vis vitae* of which has hitherto been expended, much too largely in antagonism of cliques incompatible with the interests of science. Lord Elcho's proposal to empower the Crown exclusively to nominate the general Medical Council suggests a desirability of modification, in so far as it seems to imply lack of respect and confidence in the body of the Medical profession; which is a body second to none, I deferentially venture to submit, in the sincerity of its allegiance to the throne—in its attachment to the truths of religion—in its claims on the confidence of Parliament; claims which, to be fully developed, only require that the parasites which have so long preyed on the very vitals of the Medical Family, be kept in due subjection.

Since no degree of self-confidence in impartiality can warrant, on the part of a disputant, presumption of ability comprehensively to consider philosophical questions amidst the clamour of antagonisms, I do not presume on this occasion fully to develop a scheme of Medical Reform. But if I may venture succinctly to sketch a plan, it is this. The interests of the public, in the widest sense, require to be consulted and provided for, so as not only to fulfil present want, but to allow of natural devolopment with time, as wants grow and extraordinary exigencies occur. The interests of the public are the best interests of science. The Medical profession requires to be so organized, that while it shall have the vigour of a body, scientific and politic, composed of healthy families, it may grow as a great repository of learning, for the glory and practical benefit of men.

In drawing out a scheme for the attainment of these objects, the general principles of science and of social economy are applicable. But some special considerations should have weight. Medicine stands in great need of being worked at, more in accordance than it now is, with the general plan of experimental philosophy; nature requires to be studied more comprehensively than has hitherto been done, by the majority of students of the frame of man. By comparative examination alone can nature's laws, in health and disease,

be undestood. In few words, medicine must be studied with a more decided spirit of practical philosophy than it now is. Provision must be made for the best possible preliminary training ; when the professional curriculum is entered upon, public health, the management of hospitals, the thorough study of health and disease, require deeper thought than is generally imagined ; and it will be quite as easy to manage hospitals, colleges and libraries well, as to manage them badly. The first great thing is, to be aware of the want. The want is great ; I said three years ago in public, that *walking a hospital*, and *operating theatre*, are about the two most literally correct expressions in the English language. More reality, less tinsel, such is the want. Hospital appointments must be made by merit, not by favor corruption and purchase, as is now very extensively done.

Incidentally I may remark, the physical and therapeutical knowledge of medicinal agents, requires study. Apothecaries company should be *de facto* what it pretends to be. Let it take up the science and practice of pharmacy, and leave the science of medicine proper to the medical body; but be it noted, with a wretched constitution and bad principles, it has worked very respectably. If the Councillors of the College of Surgeons and of Physicians had rivalled in good intent the Apothecaries at Blackfriars, their debt to posterity

would be less crushing. Be it further noted, I pray, that I have not the honor of being an Apothecary. This statement is made to avoid the charge of interestedly flattering the Most Worshipful Company.

Medico-political considerations must be brought to weigh especially for the benefit of the masses of the profession,—exceptions—individuals—take care of themselves.

As to the question of QUACKS, I have nothing to propose for their regulation; because I am unable so to define them as to ensure their recognition by the officers of the law. Such a definition—concise and unmistakable—would be a real addition to the English language and to lexicography generally.

Finally, in the capacity of a humble advocate of Medical reform, I may state confidence in philosophy, history, and common sense, as fully equal to promote the honor of the Medical profession. But beyond the pale of that triumvirate, the Medical family would be disgraced ; it is because Mr. Headlam's Bill is not within the domain of philosophy, history, and common sense, that I again pray your Lordship to pronounce judgment against it,—*for science—for the general welfare.*

Here, my Lord, I should close but for necessity of apology to you and to the world. All I have said you have long known. I have not presumed to inform you, I have only trespassed on you to

petition for the cause of truth and public good. I have thought the chances of my request being granted would be enhanced by stating the reasons of my prayer, for I have felt that those reasons are in accordance with the history and spirit of your Lordship's life.

I have had another motive in stating reasons more fully. Having ventured to engage in discussion on a public question on the political matter most directly touching the profession to which I have the unspeakable happiness and pride of belonging, my only justification rests in the reasons which induced me.

I have not the honor of being personally known to your Lordship; I might have obtained the honor of an introduction, but as an individual I could have no weight in the decision of the question. It is only in proportion as I have addressed you in accordance with large philosophy, impartial history, and sound common sense, that the cause at issue can be materially benefitted.

Your Lordship will, I trust, regard me as an example of the great family of Medical Students, —I use the expression in its real sense,—under the yoke of rapacious, retrograde Medical Oligarchies. You will I trust remember that for us pleads the British Athens, for us pleads the University of Young England,—the inspiration, aye under divine permission the creation of

Henry Brougham; for us pleads the Alma Mater of William Harvey, under the chancellorship of our Queen's Consort; for us, my Lord Palmerston, pleads the history of your whole life, of the life of William Pitt, John Russell, and Robert Peel —of the lives of the really great ones, of all parties and of all ages ; for us have pleaded in the House of Commons, amongst many others, Mr Duncombe, Mr. Cowper, Lord Elcho, Viscount Goderich, and the illustrious scion—hope of the future—of the house of Derby; for us plead all history and all philosophy ; for us pleads the Sense of senses—the Universal—the Common Sense.

I pray you, my Lord, to be indulgent if I have been indiscreet; in such a cause, with but few hours to plead it, it was difficult to control excessive zeal as Talleyrand bid his secretaries. The bed-side and the dead-house, not the forum and the Court, having been my school, I have perhaps pleaded with too much rashness; doubtlessly an experienced advocate would have pleaded with less anxiety, but the cause in hand, mankind, the world of science versus monopoly and prejudice, needs no artifice. Plain-spoken truth will gain the day.

Another request, my Lord. Medical students, again I use the term in its largest acceptation, can so rarely hope to have the ear of Government, that the occasion must not be lost. I pray

your Lordship so to influence our fortunes that our footing shall be secured in the State, as a body of intelligent and useful men;—our body is, we grieve to think, plagued with sundry sores and decaying branches; but if we be permitted to sap truth in proportion as we thirst for it, to grow unfettered in the full light of day, we know as one of the truths of our profession,—the sores will heal, and the decayed branches fall off. The progress must be a slow one, all great and good works advance slowly; all we desire is that ours be allowed to advance untrammelled by bad laws: only aided by Parliament, when that august Assembly shall deem us deserving of such aid, in such manner, as really to benefit us as a part of the nation.

In addressing you for students of medicine generally, I have some precedents. I am fairly known to students, they have often honored me with confidence, always have they befriended me: and as I have expressed their thoughts—our common wants—I confide firmly in their support:—they may be relied on. If the principles here struggled for be ever in peril, Joseph Lister and Benjamin W. Richardson, you will defend them;—Capei ed Ercolani per la fè nostra smentirete la mendacia;—oh, disciples de l'Ancienne Académie de Chirurgie, de l'Académie de Lapeyronie, de Louis, de Petit, de cette cohorte d'immortels qui furent une famille, jusqu'á ce que

la guillotine fit taire Lavoisier: vous vengerez tout attentat á la foi commune—la foi du monde scientifique: vous justifierez la malédiction du préjudice, de l'avarice, de l'ignorance. And then —whatever my individual fortunes—the voice of history will be echoed, with ever-deepening accents and sweetening melody, through the infinite vastness of unmeasured time.

May your Lordship long live—a glory to the nation, a benefactor to the human race,—such is the earnest prayer of

Your anxious and devoted Servant,

JOSEPH SAMPSON GAMGEE,

Staff-Surgeon of the First Class.
Principal Medical Officer of the British-Italian Legion during the last War, &c., &c.

16, Upper Woburn Place, Russell Square,
July 4th, 1857.

Vinton & Son, Printers, 6, Cardington Street, Hampstead Road.

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HOSPITAL STATISTICS

AND

HOSPITAL PLANS.

By FLORENCE NIGHTINGALE.

Reprinted from the Transactions of the National Association for the Promotion of Social Science.

LONDON:
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GREAT CORAM STREET, W.C.
1862.

HOSPITAL STATISTICS

AND

HOSPITAL PLANS.

In my paper on the Sanitary Condition of Hospitals, (read before the meeting of this Association at Liverpool, in 1858,) the defective state of hospital statistics was pointed out, as well as the necessity for all hospitals coming to a common agreement on the number and nature of the data to be tabulated for future use. It then occurred to me that the best thing to do to forward the object would be to prepare a set of forms to give effect to these suggestions, and to bring them for discussion before the International Statistical Congress in London last year, the subject being one of interest for all hospitals, foreign and British. To do this, it was necessary to adopt a common nomenclature of diseases, as the foundation. Such a nomenclature had been already adopted at a previous meeting of the Congress at Paris; and was used in substance in the forms I laid before the London meeting.

It was most important to arrive at some common agreement as to classification of diseases, in order to give the requisite facilities for reducing the statistical data and obtaining the results. This matter is confessedly beset with difficulties, not likely to be soon solved. But, as it would never do to leave hospital statistics in the unsatisfactory state they were found in, till everybody had agreed on a classification, that one in use by the Registrar-General of England (and now by a large section of the United States) was adopted.

The paper and forms which I now lay before the Association are those which, after a lengthened discussion, were adopted by the Statistical Congress. I thought it right to bring them before the Dublin meeting, because of an implied engagement to follow up improvements I had myself urged on the Liverpool meeting of the Association, as above said; and also because I have been given to understand that several eminent hospital medical authorities in Dublin (in that spirit of improvement which distinguishes medical

science there) had wished that the subject should be thus introduced.

It is proposed that one and the same form should be used for each statistical element. Seven such elements are required to enable us to tabulate the results of hospital experience ; they are as follow :—

1. *Remaining in hospital* on the first day of the year.
2. *Admitted* during the year.
3. *Recovered or relieved* during the year.
4. *Discharged* incurable, unrelieved, for irregularities, or at their own request.
5. *Died* during the year.
6. *Remaining in hospital* on the last day of the year.
7. *Mean duration of cases* in days and fractions of a day.

These seven elements printed as separate headings and attached to copies of the same form, or written in, would furnish us with the means of tabulating every fact we require. Provision can be made for different sexes in one or two ways :—the column for each age may be subdivided for males and females ; or it might be more convenient to have two sets of forms, one for each sex.

Again, surgical cases and injuries may be included in the same form with medical cases ; or, in large hospitals, a separate set of forms might be devoted to surgical cases.

For small hospitals, one set of seven forms might easily be made to contain the annual statistics of ages, sexes, and diseases (medical and surgical ;) but for very large hospitals, possibly four sets might be required.

The primary object of these Tables is to obtain an uniform record of facts from which to deduce statistical results, among which the following may be mentioned :—

1. The total *sick population, i.e.*, the number of beds constantly occupied during the year by each disease for each age and sex.
2. The *number of cases* of each age, sex, and disease submitted to (medical or surgical) treatment during the year.
3. The *average duration* in days and parts of a day of each disease for each sex and age.
4. The *mortality* from each disease for each sex and age.
5. The annual proportion of *recoveries* to beds occupied and to cases treated for each age, sex, and disease.

In reducing the data to give the annual results, either percentages or per thousands may be used.

The number of beds constantly occupied may be obtained by taking the mean of the numbers remaining at the beginning and end of the year, if the hospital has been fully occupied ; or the mean of the numbers remaining at the beginning and end of each quarter; or oftener, if the hospital be irregularly occupied ; or the total number of days spent in hospital by all the cases during the year might be obtained ; and by dividing the sum by 365, the mean daily sick would be arrived at. [The total daily "*diets*" issued during the year divided by 365 would give the same result.]

A.—HOSPITAL ADMISSION AND DISCHARGE BOOK.

No. of Case.	Date of Admission.	Name.	Age.	Sex, M. or F.	Residence, and Place where taken Ill or Injured.	Trade or Occupation.	Disease or Accident.	Date. Of Attack.	Of Recovery.	Of Death.	Of Discharge (Relieved) or (Unrelieved,) or otherwise.	Of Transfer to other Division of Hospital.	Duration of Case in Hospital, in Days and Quarters.	Remarks. (Previous Diseases of Patients and of Parents.
1					*Example of the Manner of filling up the Return.*									
2	May 17.	John Johnson...	35	M.	263, Strand..... Run over by a cab on London Bridge.	Shoemaker.....	Compound fracture of tibia and fibula. Amputation, May 20.	May 17	Aug. 18	—	Aug. 18	—	94 days	—
3	Aug. 5.	Maria Wood...	29	F.	28, Burrage Road, Plumstead..... Attacked at her residence.	Laundress	Ague.....	Aug. 2	Aug. 28	—	Aug. 28	—	26 days	—
4	Nov. 3.	James Young...	14	M.	Workhouse..... ..... Attacked at workhouse school.	Son of a tailor	Smallpox, 12 days Pneumonia, 3 days. (Not vaccinated.)	Nov. 3	—	Nov. 18	—	—	15 days	—
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														

B.—Proposed Hospital Statistical Form.

Stone (uric Acid, &c.) ..
Gravel (uric Acid, &c.) ..
Hæmaturia .. .. ..
Cystitis

H.—Proposed Hospital Statistical Form.

This Sheet will serve for the Classification of Cases in Hospitals under the following headings:—"Remaining, 1st January"—"Admitted"—"Cured (or Relieved)"—"Dead"—"Discharged incurable, for Irregularities, or at their own Request"—"Remaining, 31st December"—"Duration of Cases in Days."

Write the Name of Hospital, the Sex, the required Heading, and Date with the Pen.

Ages	Under 1 (months) 0	3	6	1	2	3	4	[illegible]	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95 and upwards	Total
CLASS I.—Order I. (Zymotic Diseases.)																											
Small Pox, Measles, Whooping Cough, Croup, Scarlatina, Quinsy, Diphtheria, [illegible] ... OTHERS																											
Order II. [illegible] ... OTHERS																											
Order III. [illegible] ... OTHERS																											
Order IV. [illegible] ... OTHERS																											
CLASS II.—Order I. (Constitutional Diseases.) [illegible] ... OTHERS																											
Order II. [illegible] ... OTHERS																											
CLASS III.—Order I. (Local Diseases.) [illegible] ... OTHERS																											
Order II. [illegible] ... OTHERS																											
Order III. [illegible] ... OTHERS																											
Order IV. [illegible] ... OTHERS																											
Order V. [illegible] ... OTHERS																											
Order VI. [illegible] ... OTHERS																											
Order VII. [illegible] ... OTHERS																											
Order VIII. [illegible] ... OTHER SKIN diseases																											
CLASS IV.—Order I. [illegible] ... OTHERS																											
Order II. [illegible]																											
CLASS V.—[illegible] Order I. [illegible] ... OTHERS																											
Order III. [illegible]																											
Order IV. [illegible] ... OTHERS																											
[illegible]																											
Total																											

Most of the diseases in the following ... [illegible]

CLASS I. [illegible]

CLASS II. [illegible]

CLASS III. [illegible]

CLASS IV. [illegible]

CLASS V. [illegible]

The "*sick treated*" during the year may be obtained by taking the mean of the admissions, and of the discharges from all causes, including deaths.

With fixed data, arrived at on these principles, we can readily obtain the proportionate mortality, not only of the whole hospital, but of every ward of it, and also the proportionate mortality and duration of cases for each age, sex, and disease.

The laws which regulate diseased action would thus become better known, the results of particular methods of treatment, as well as of special operations, would be better ascertained than they are at present. As regards their sanitary condition, hospitals might be compared with hospitals and wards with wards.

The whole question of hospital economics as influenced by diets, medicines, comforts, could be brought under examination and discussion.

The liability of particular ages, sexes, occupations, and classes of the community to particular forms of disease might be ascertained; other data, such as "married" or "single," previous attacks of illness of the same or different kinds, birthplace, &c., might be added for comparison, and hospital experience might thus be made to subserve sanitary improvement.

The data for these latter comparisons would have to be kept separately, as indeed they generally are in all well-regulated hospitals.

A. is a leaf of the hospital "Admission and Discharge" book, proposed by the secretaries to the Statistical Congress, for entering those details required for filling up the annual forms proposed by me and adopted by the Congress; and also for registering the additional particulars regarding the patients, required by the Congress.

B. is one of the annual forms referred to.

Especially I wished to call attention to the additional points of hospital statistics agreed to by the Statistical Congress, and which will be found at the end of my paper. They did not come within the scope of my forms. But they are of great importance, particularly those referring to the sanitary condition of hospital wards, and to the method of recording fresh attacks of disease *in* hospital, in the "Admission and Discharge" book. These data, if properly used, will enable a check to be kept over the sanitary condition of the hospital, at least as regards hospital diseases.

But it must not be forgotten that a hospital is in a bad sanitary state before such diseases can appear. They are evidence of bad constructive arrangements or of culpable sanitary neglect having produced their results, rather than indices of the actual sanitary state of the wards. All careful hospital physicians and surgeons, as well as nurses, can generally tell to what extent a ward is healthy, or otherwise, by the manner in which cases are progressing, before actual hospital disease appears. *This* is the time to prevent the occurrence of hospital diseases, not after they have occurred.

I refer to the point because, since my papers were read, some melancholy instances have occurred of fatal hospital diseases arising

from distinctly preventable causes. In one such case, in a small provincial hospital in one of the healthiest counties in England, twenty-four poor creatures ran the gauntlet of their lives in nine months, from erysipelas, of whom eight died. And this after very trifling accidents, or operations, none of which ought to have produced erysipelas at all—much less to have ended fatally. In this case there were both local causes of disease about the hospital, and there was also defective structure.

Especially am I anxious to recur to this latter point. I have seen several misapplications of the principles of hospital construction (briefly laid down in my former paper) defended because it was said they were adaptations of those principles; also bad principles of construction defended because they had been "already adopted"!

This is not the way to hasten human progress. Defects, the result of want of knowledge, must disappear; improvements, the result of experience, must advance.

I can do no more in the matter but reiterate the appeal (at the end of my former paper) that the real practical object and intention of these principles should be very carefully considered and embodied by those on whom it falls to design, to construct, or to manage buildings for the care of the sick.

Let us look forward to the time when the necessity of providing even for the record of *hospital* diseases, so much insisted upon by the Statistical Congress, will thus cease, and when the stigma of these diseases will be wiped out from hospital records.

EXPLANATION OF THE PLANS.

At the date of my former paper (1858) there was no really good plan of hospital construction in this country to refer to. Since that date, however, several excellent hospitals have been planned, and are now in process of construction. These will, when completed, practically show forth the principles required to give pure air to the sick, and to insure economical and efficient administration.

I beg to submit plans of two of these hospitals. They are both military—I am sorry I cannot give any civil ones as models, for they do not exist. Some, however, will soon exist, and it is fairly to be hoped that in all future hospitals generally, the same principles will be substantially adopted—yes, and improved upon. It need hardly be said that the details in civil must be somewhat different from those in military hospitals.

One of these plans is for an infantry regimental hospital for one hundred and twenty sick. The other is the plan of a General Hospital for the Royal Artillery Garrison, at Woolwich, (six hundred and fifty beds.)

The infantry hospital consists of one double pavilion containing four wards, each of twenty-eight beds, and four small wards of two beds each. The larger wards are open from end to end, so that the attendant in the nurse's room can see every bed in the ward. The small wards have windows on three sides, and are so arranged as to be under constant inspection from the same nurse's room. The

Way.

Comforts.

m.

Bath & Lavatory.

tere.

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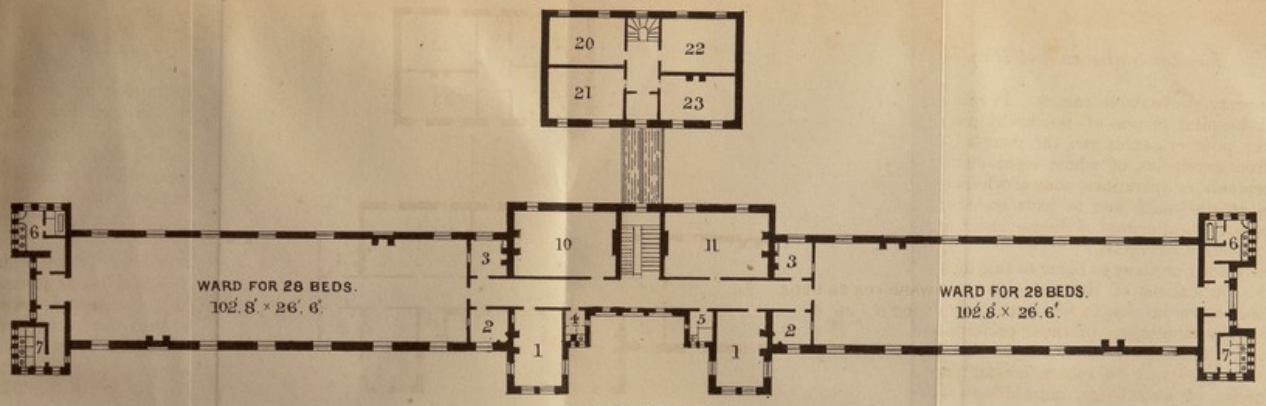
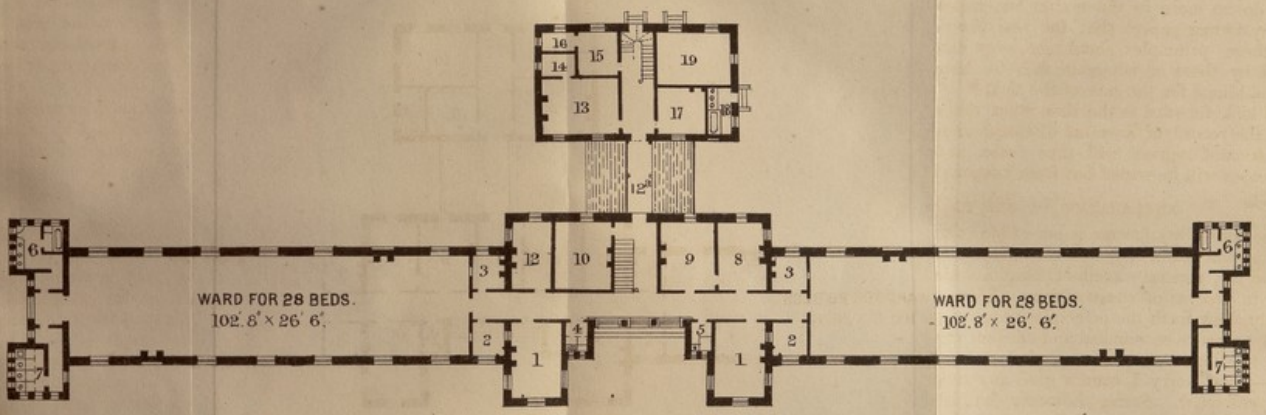
ore.

g

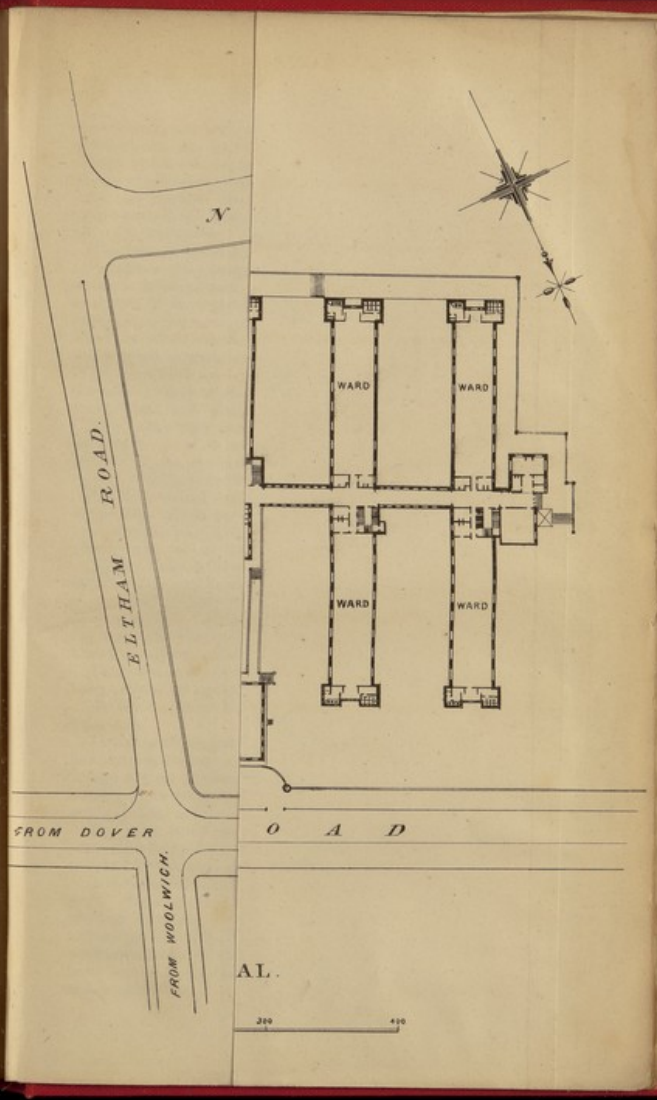


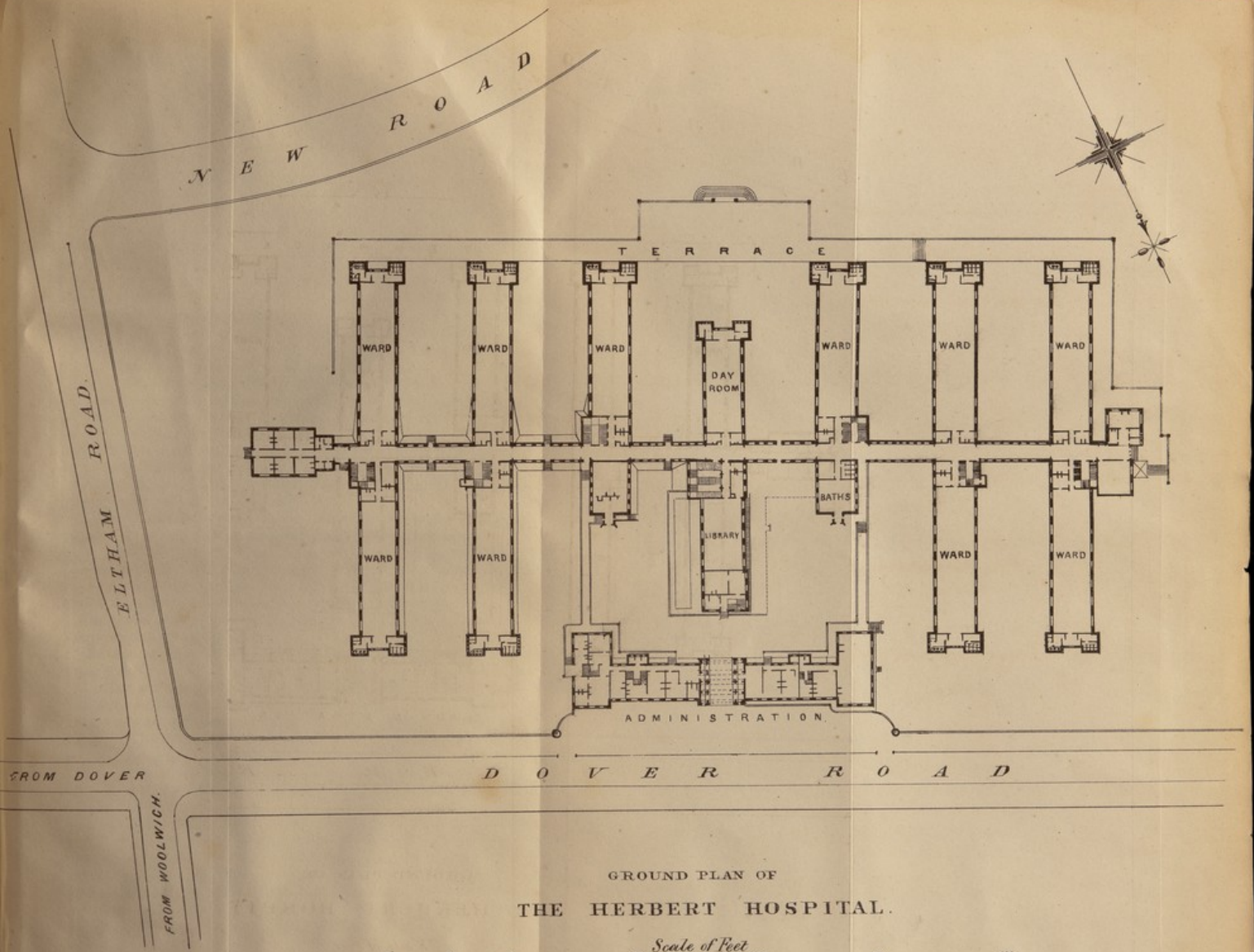
FIRST FLOOR PLAN.



GROUND PLAN.

1111. *2 Bed Wards.*
2.2.2.2. *Ward Orderlies.*
3.3.3.3. *Scullieries.*
4.4. *W.Cs, Sinks & Urinals.*
5.5. *W. Cs & Portable Baths.*
6.6.6.6. *Baths, Lavatories & Urinals.*
7.7.7.7. *W.Cs & Sinks.*
8. *Surgery.*
9 *Waiting Room.*
10.10. *Orderlies.*
11. *Day Room*
12. *Hospital Sergeant.*
12a. *Covered Way.*
13. *Kitchen.*
14. *Scullery.*
15. *Medical Comforts.*
16. *Larder.*
17. *Cook's Room.*
18. *Orderlies' Bath & Lavatory.*
19. *Utensil Store.*
20. *Clean Linen.*
21. *Pack Store.*
22. *Bedding*
23. *N. C. O.*


N
ELTHAM ROAD
WARD
WARD
WARD
WARD
FROM DOVER
FROM WOOLWICH.
O A D
AL.



GROUND PLAN OF

THE HERBERT HOSPITAL.

Scale of Feet

100 50 0 100 200 300 400

water-closets and baths are at the angles of the wards, opposite the entrance, and are entirely cut off from the wards by a method of ventilation which insures any foul air being blown away from the ward. The large end window allows of easy ventilation during the night.

In this hospital the fireplaces are in the walls, with a window over them. Each large ward has a separate scullery ; a matter of necessity, not choice.

The two pavilions are cut off from each other by a large passage and staircase traversing the building. The kitchen and stores are under a separate roof. The hospital sergeant and orderlies are quartered in the centre of the building; and surgery and waiting-room are in the same position, as also a day room for convalescents. Thus the whole administration is concentrated in the middle, and the hospital sergeant can always know at any moment where each of his orderlies is, and where he is not, and what he is doing; and the same of each of his patients. There are no dark corners nor spare rooms, and "skulking" is all but impossible.

This plan, then, combines the greatest facilities for economy in administration, with efficiency of discipline, (which includes the utmost care for the sick and the utmost obedience from the convalescent,) and pure air for all.

The Woolwich Hospital plan is simply an arrangement of a number of these pavilions—each having two floors of wards, connected by a corridor one floor in height—under one general central administration for the whole hospital.

There is one kitchen in a half basement under the library and chapel. It is connected with all the pavilions by a basement corridor, along which all diets, &c., are transported on rails and raised by lifts to each pavilion. There are separate shoots for foul linen and dust, hot and cold water are laid over the whole building, and there is a central bathing establishment besides the ward baths.

There are separate wards for sick prisoners and for lunatics and others requiring segregation.

There is a large library, also a dining and day room for convalescents.

The axes of the pavilions are arranged north and south, so as to have both walls exposed to the sun.

The nearest pavilions are sixty-four feet apart, or double their height. The others are much more. The eight wards in the end pavilions have a free look out to the open country.

The outer walls will be of white brick, to give the building a more cheerful appearance. The inner walls and ceilings are to be of polished Parian cement.

In this hospital there will be two fireplaces in the centre of each ward. They are to be of terra cotta, constructed so as to give the greatest warmth. The flues will be carried under the ward floors, and up the side walls of the pavilions. This leaves the view of the ward open from end to end, and enables the nurse to see every bed from her room window. [There are to be female head nurses in this hospital.]

The principles embodied in this plan are sub-division of sick under a number of separate roofs; separation between the hospital proper and the administration; no more than two floors of wards, opposite windows in each large ward with the beds ranged between them, one window for every two beds; sufficient isolation and free ventilation of the water-closets and baths; one scullery and one nurse's room for each ward, and placed at the entrance end, so that the attendants, while overlooking the patients, can be themselves overlooked; large separate day room for convalescents; building to be placed on high ground in the open country; abundant external ventilation.

The wards of each of these hospitals are 14 feet high. Each bed has from 93 to 97 superficial feet, and from 1,200 to 1,400 cubic feet. The width of the wards between the opposite windows is from 26 feet 6 inches to 26 feet 9 inches.

The cubic space of military hospitals is not so large as that required for civil hospitals, because the great bulk of the patients in military hospitals are what we should call convalescents.

This building is to be called the "HERBERT H[illegible]PITAL," after the great and good statesman whom we have lost, who was himself its founder.

Let Dublin, who knew him so well, join with us, who loved him so well, to give him worthy tears—such a tribute as he would have liked—he, who suffering under a fatal disease—he, who with every possession which God could bestow to make him idly enjoy life—yet ran like a race-horse his noble course, till he fell—and up to the very day fortnight of his death struggled on doing good, not for the love of power or place, (he did not care for it,) but for the love of mankind and of God. His glorious death would be almost too sacred to mention here, but for the sake of calling upon those who loved him—and who did not?—to carry out his purposes. It is five years since he began to carry out his chief purpose to restore the health of the British army; and how well he worked at it all know. But the soldier was not his only care. His cares were national; and one of his cherished principles was the reconstruction of all hospitals according to the latest improvements of the pavilion structure. It is not often that we find a man, born to politics and high position, who would master, for the love of his kind alone, every dry detail of this almost technical subject. Yet he did. His loss is irreparable. Time will only show more and more what we have lost in him. But at least let his purposes and principles outlive him in us.

PAMPHLETS

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