HOSPITALISM:

ITS

INFLUENCE UPON LIMB-AMPUTATIONS IN
THE LONDON HOSPITALS, &c.

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IN Mr. Coote's last communication on Hospitalism, in the JOURNAL of May 22nd, there are some statements to which perhaps I ought long ere this time to have replied. I will allude to them now, and to one or two other correlative points connected with the same subject.

I.—*Mortality after Limb-Amputations in the London Hospitals.*

Mr. Coote thinks that, when I spoke of the mortality following upon the four amputations of the thigh, leg, arm, and forearm, in the metropolitan hospitals, as being, on an average, about 1 in every 3 operated upon, I "make the London death-rate too high". In the June number of the *Edinburgh Medical Journal* I have published at full length the returns of these four major amputations, as performed during the last few years in nine of the principal hospitals in London. The number of cases operated upon amounts to 1,055, and the deaths to 438; or, in other words, 1 in every 2.4 of the patients were lost. Instead, therefore, of making the London death-rate too high when in general terms I stated it as 1 in 3, I made it too low; as, instead of being 1 in 3, it is upwards of 1 in 2½.

II.—*Mortality of Limb-Amputations in the Hospitals of London, Edinburgh, and Glasgow, and in Private Rural Practice.*

In the communication alluded to, in the June number of the *Edinburgh Medical Journal*, are published tables of the results of the four amputations of the limbs, as observed in eleven large and metropolitan hospitals in England and Scotland. The total number of cases thus collected is 2089. Of these patients, 855 died after the operation, or 1 in every 2.4, or 41 in every 100. In the same paper, I have collected 2098 instances of these same amputations performed in private rural or provincial practice. Of these 2098 country patients, only 226 died, or 1 in every 9.2, or 10.8 in every 100. This immense contrast between the results of limb-amputations in hospital practice and in private country practice may, perhaps, be more clearly seen, if the results are stated as follows.

Out of 2089 amputations in hospital practice, 825 died;
Out of 2098 amputations in country practice, 226 died;

Giving a surplus to HOSPITAL practice of 629 deaths.

Hence the mortality in limb-amputations, and in some degree proportionally also, in all probability, in other surgical and medical cases, is much greater in hospital practice, as compared with rural practice; in palatial infirmaries, as compared with rural villages and cottages; and in large wards, as compared with isolated rooms. In limb-amputations, the death-rate among the patients is nearly *four times as great* in the practice of large and metropolitan hospitals, as it is in private country practice, from the same class of operations, and in the same class of patients.

The difference between hospital and country practice is, as I have stated in a former communication in this JOURNAL, even more marked in the minor than in the major amputations and operations. Thus, in the 2098 country amputations collected, 377 were amputations of the forearm; and of these, 2 died. In the 2089 hospital amputations collected, 244 were amputations of the forearm; and of these, 40 died. The contrast may be stated thus:

Out of 377 forearm-amputations in country practice, 1 in 188 died.

Out of 244 forearm-amputations in hospital practice, 1 in 6 died.

In other words, amputation of the forearm—an operation not very severe in itself, seldom or never producing any great shock, and seldom also performed for any injury or disease that has already markedly reduced the constitutional powers—is, as far as these data go, *thirty times as fatal* in large and metropolitan hospitals as it is in private country practice.

III.—*Can the higher Mortality in Hospitals be accounted for by the greater Severity of the Cases treated in Hospitals?*

Mr. Coote, with others, seems still to think so. The few simple facts stated in the preceding paragraph, regarding amputation of the forearm, are surely sufficient to answer and upset this attempted ex-

planation. No one, I believe, can really and rationally argue that the injuries and diseases of the hand and wrist that are sent into city hospitals for amputation are more severe injuries and diseases than those for which the simple operation of amputation of the forearm is performed in the country. And yet how enormous is the difference between the mortality of forearm-amputations in hospital and in country practice!

Nor are the "worst and most hopeless" forms of injury and disease, demanding still more dangerous amputations than those of the forearm, relatively so much more rife in city hospitals as Mr. Coote seems to conceive.

Of all amputations in the continuity of the limb, confessedly by far the "worst and most hopeless" is primary or traumatic amputation of the thigh. Mr. Coote must excuse me not holding with him that such cases of amputation of the thigh requiring amputation for injury should occur rarely in a rural population compared with (to use his own words) "manufacturing London, with its four million of inhabitants." On the contrary, not being a Londoner, I think that it would be easy to point out various individual counties in England and Scotland that have at work within their bounds infinitely more powerful machinery and more extensive manufactures than the metropolis, and where severe injuries of the limbs are consequently very common,—not unfrequently requiring, among other amputations, primary amputation of the thigh.

Among the 2,089 amputations of the limbs collated from the practice of large and metropolitan hospitals, there are 304 cases of amputation of the thigh for injury or its results. Among the 2,098 amputations of the limbs which I have collated, on the contrary, from private country practice, there are 313 cases of amputation of the thigh for injury or its results—the number and proportion, therefore, of these primary amputations being, in fact, slightly greater in rural than in city hospital practice. The results, however, were very different in the two classes. Of the 304 hospital cases, 196 died, or 1 in 1.5; of the 313 rural cases, 80 died, or 1 in 4 nearly. The mortality, in other words, in this operation is more than *twice and a half* as high in city hospital practice as it is in country practice.

Mr. Coote believes that country practitioners around London send their worst cases to the London hospitals. It may be so. No doubt many practitioners, in many places, not caring for the trouble and anxieties of severe operations, and perhaps unaccustomed altogether to use the amputating-knife, send all their poorer patients to city hospitals. But no doubt, also, in various localities, such hospitals are totally out of reach, especially for cases of severe injury demanding immediate amputation; and for patients too sunk and debilitated to sustain a long journey. And no doubt again others, impressed with the strong conviction that the cases of amputation and other such operations recover far more certainly at their own poor habitations than in the wards of a city hospital, send few or none away from home. There are not many hospitals, for example, in Great Britain better conducted in all respects, or with an abler surgical staff, than the Royal Infirmary of Glasgow. Yet from the villages and towns near it, and within its circuit, I have had sent me reports of two or three hundred limb-amputations performed at their own houses upon such classes as fill the London hospitals; and generally with wonderful success. Thus Dr. Lawrence of Cumnock has performed 20 amputations of the limbs without a death; Dr. Cullen of Airdrie, 59 amputations with 2 deaths; Dr. Brown of Strathaven, 16 amputations with 1 death; Dr. Stewart of Kirkintulloch, 25 amputations with 1 death, etc.; a great majority of these amputations being traumatic. Writing from this district, Dr. Loudon of Hamilton states to me in some annotations to his returned schedule of amputations that, knowing the greater risk the diseased and injured run in hospitals, he studies "to keep patients in their own homes when their means admitted of it, and has only sent those cases to hospital when parties refuse to admit them, as in the case of lodgers." "My experience" (observes Dr. Thomson of Motherwell) "is against sending any case to hospital that can be treated at home. I have only" (he adds) "sent for years past lodgers, or those having no home accommodation."

IV.—*Are more cases of Injury and Disease of the Limbs cured, without Amputation, in Hospital Practice or in Country Practice?*

Mr. Coote suggests, as far as I understand him, as one reason for the far greater success of limb-amputations in the country than in city hospitals, that in the country limbs are amputated which in hospitals would be saved; the rural hospital returns being thus rendered more favourable.

I believe the very reverse of this to be true, and that limbs are amputated of necessity in hospitals, a considerable proportion of which might be preserved and restored if the mutilated patients had the benefit of country air and isolation, instead of being shut up in the wards of a large hospital.

The common form of limb-injury leading to amputation is compound

fracture. Various very strong testimonies have been sent to me of the higher success attending upon compound fractures treated at home than in city hospitals. "In compound fractures" (observes a gentleman of great surgical experience in country practice in a mining district—Dr. Redwood of Rhymney), "where there is tissue left that will continue the circulation below the seat of injury, we save the limb. Assistants" (he adds) "*fresh from the hospitals* are often astonished at what is attempted and effected in this way." Dr. Guppy, of Falmouth—who has seen "many compound fractures" among sailors and dock-labourers—deems the mortality from such grave injuries and operations "*much less in private and country practice than in hospitals.*" Mr. Garman of Wednesbury remarks: "Compound fractures and other formidable surgical lesions appear to do better in the squalid homes of the patients than under hospital care." Dr. Steele of Montrose, when formerly medical attendant at extensive coal-works near Edinburgh, and where "compound fractures of the limbs were of very frequent occurrence", was much impressed with the fact of the "more favourable progress of his cases treated in the uncomfortable houses of the colliers under many disadvantages, when compared with those I saw in the Infirmary of Edinburgh, and this notwithstanding their having the benefit of the best surgical skill, of superior surgical appliances, and attentions and comforts to which my patients were strangers." "I have had" (states Dr. Munro of Moffat) "six cases of very severe compound comminuted fractures. Most of them, I am quite sure, would have been cases of amputation in hospitals, as it would have been impossible to have treated these cases in Hospital without great risk of pyæmia." In a similar spirit Dr. Adam of Coatbridge, near Glasgow, observes: "I have had a very large number of compound fractures of the leg and arm which, I can remember—when I was a student—very frequently proved fatal in the Hospital, but of which, in my private practice, only one proved fatal, and that was from tetanus." "As far as my observation extends", remarks Mr. Smith of Huntley, "the poor generally recover very well from severe operations and injuries, such as compound fractures, notwithstanding their very insufficient house accommodation." "I have seen" (Mr. Haydon of Bovey writes) "bad cases of compound fracture, involving joints, recover in private country practice that, not long since, would in Hospitals have gone to the knife."

The great mass of amputations for disease is the result of scrofulous affections of the joints and bones. It is, I believe, unnecessary to waste time in shewing that tubercular diseases of the bones and joints, as of other parts of the body, recover in a far larger proportion in country villages and cottages than when the subjects of them are immured in the wards of a city hospital. Hence altogether there can exist, I sincerely believe, little or no doubt that, both in traumatic and in pathological cases, amputation is not unfrequently avoided and averted in the country, in instances in which it would become, sooner or later, a matter of preference and necessity if the subjects were the inmates of large hospitals.

V.—*Is the Statistical Method of Inquiring into the Relative Safety of Amputations and Operations in Country and in City Hospital Practice to be depended upon as a Proper Means of Investigation?*

I have found some members of the medical profession entertaining apparently serious doubts as to whether statistics were a proper method of examining such questions as the present. Yet, upon the truth and certainty of similar statistical inquiries in relation to the chances of life, disease, survival, and death, are thousands and millions of money unhesitatingly staked in our Assurance and Annuity Companies. Some of the doubters have their own lives insured because—without seemingly knowing the fact—they implicitly rely upon the soundness of such inquiries and deductions in vital statistics. Others of them, as assurance medical officers, are daily abetting the propriety of their own patients and of the population at large, placing unbounded confidence on the evidence and certainty of statistics when applied to calculations in regard to the duration of human life in different ages, sexes, professions, classes, climates, etc. "The possibility of the application of statistics to medicine" (long ago remarked M. Dezeimeris) "is a truth as perfectly demonstrated as the reality of the circulation of the blood."

Mr. Coote does not assuredly profess to take any such opposition views as to the application of statistics to surgical inquiries. But, in his reasoning on his own cases, he loses sight of some of the chief and primary elements in any surgical or other statistical inquiry, as if he repudiated the system. For he argues against the mortality in limb-amputation in the London Hospitals being so high as 1 in 3, because, in one year (1864), at St. Bartholomew's Hospital, he himself, out of 18 severe operations—ten of which were amputations—lost only two patients; and seven of the ten were amputations of the arm, in all of which seven arm-amputations the patients recovered. This cheering run of suc-

cess, however, affords no statistical proof whatsoever against the deduction of arm-amputations, for example, in the London Hospitals being fatal in the proportion of about 1 in every 3, or, more correctly, 1 in every 2.8 operated on; 51 having died in nine London hospitals out of 145 submitted to this operation. (See *Edinburgh Journal of Medicine* for June, p. 1113). In the year alluded to by Mr. Coote, viz. 1864, eleven amputations of the arm occurred in St. Bartholomew's Hospital (See *Ibid.*, p. 1108). Mr. Coote himself performed seven of these arm-amputations in 1864 without losing a patient; then, the remaining four arm-amputations of that year were performed by one or more of his colleagues, with the result of three dying out of the four operated upon. If we looked at these last four cases only—in the same way as Mr. Coote wishes us to look at his seven—then it might be argued, but argued of course most erroneously, that the mortality from arm-amputations was 75 per cent. in Bartholomew's, or twice higher than I made it, viz., 35 per cent. in nine London hospitals. To get at accurate statistical results, we must first include, as factors in our calculations, all cases, whether good or bad, successful or unsuccessful; and, secondly, we must have a sufficiently extended series of cases as a basis to rest our deductions upon. For the great and leading principle upon which all statistical inquiry is grounded, consists in the fact that, in unities or entities of a doubtful chance, while the result or event in individual instances, or small individual groups of instances, is ever variable and uncertain, the result or event, when calculated upon sufficient masses of instances, becomes comparatively certain and invariable.

VI.—*Forms of City Hospitals.*

For many years past I have ventured to advocate that our surgical, medical, and obstetric hospitals should, in order to abate and avert the high mortality occurring among their inmates, and to obtain the necessary degree of air and isolation, be changed from palaces into villages and cottages, and, probably, from wards into rooms. We have seen in a previous section that, in limb-amputations alone, out of 2,100 amputations there is an excess—and, as I believe it, an unnecessary excess—of 600 deaths in hospitals, as compared with country practice; a frightful waste of human life, and one inferring misery and ruin in many instances to the families of the dead, and great expense to the community at large. If by any novel surgical contrivance, as by some "new method" of operating in amputation, I could suggest a measure which would thus save 20 or 30 out of every 100 operated upon, and reduce their death-rate from 1 in 3 to 1 in 9, would not Mr. Coote and others be bound, on every principle of humanity, to adopt this "new method?" But, is a new method for effecting a saving of human life less deserving of investigation and adoption because it consists not in altering any circumstances connected with the manual part of the operation itself, but in altering the circumstances and surroundings in which those operated upon were placed?

Mr. Coote thinks large palatial city hospitals like St. Bartholomew's still a matter of necessity. But he appears to believe that the establishment of "convalescent hospitals will meet the emergency." In the case, however, of operations like amputations, of what use will convalescent hospitals be in restraining the terrible attendant death-rate? Has not the patient, in nine cases out of ten, sunk and perished before the usual time for taking advantage of a convalescent hospital has arrived?

It appears that Mr. Coote holds the construction of some of the large London hospitals to be comparatively perfect. Why, then, is the mortality among their amputation cases so appalling, and the mortality among similar amputations in country habitations and dwellings relatively so slight, being nearly four times less? It seems to me, on the contrary, that, in several London and other hospitals, our forefathers have committed hygienic blunders of the gravest and most disastrous kind. In many hospitals in Britain and on the Continent, there are placed four rows of patients betwixt the side-walls of each ward, with or without a spinal division running down the middle. At this time of day, would not even a stable, containing between its side-walls four rows of healthy horses, be denounced as an utter outrage against every hygienic principle? Yet the lives of men are surely more valuable than the lives of horses.

In a previous communication in this JOURNAL (January 10th), I suggested that, if hospitals were still to be built on a large palatial scale, their separate rooms, tenements, or wards, might be provided each with a separate and independent ventilation and isolation, by constructing them (like the blocks of houses for artisans now built in various cities) with a platform on each landing, an open balcony, and, above all, an open staircase. Would not the free and full opening up of the staircases in many of our large London and other hospitals—an alteration requiring little or no expense—change favourably their salubrity and death-rate, and prevent the needless commixture in them, and diffusion from

them of the contaminated air of every ward, and so far of every patient in every ward which communicates with these staircases and corridors?

VII.—*City Hospitals in the form of Cottages and Villages.*

According to Mr. Coote, there is not room for such hospitals in London, though they may be "possible in America." They would be indubitably greatly cheaper in building and administration than palatial edifices. Nor would they occupy so much space as many seem to suppose. For, in constructing separate blocks—whether of one, or two, or three, or four storeys—the buildings, according to architectural rules, I am told, require to be placed at a distance from each other measuring once and a half, at least, the perpendicular height of their side walls. Hence many more structures of one storey in height could be placed upon the same piece of ground than structures of two, three, or more storeys. At the worst, the additional sum, be it £10,000 or £50,000, required to convert an hospital structure into an elaborated palace, would merely be in part required to purchase some additional ground. It would be expended in buying extent of site, instead of being expended upon architecture and extent of height in the buildings.

But are hospital villages and cottages—though "possible in America", as Mr. Coote allows—not possible in Europe, or even in London? In the grounds around many of the large hospitals in Germany, as I have already stated in these pages (see JOURNAL for January 30) they have lately erected cottage, barrack, or tent hospitals—because they have found them to be healthier—as at Frankfurt, Leipsic, Dresden, etc. Twenty years ago, I tried to point out that such hospitals might be made of iron,* as one material. In the grounds of a large London hospital, not much above a mile or two from the gates of St. Bartholomew's, Mr. Coote will find in use at present a cottage iron hospital—but perhaps not on the very best construction. On lately coming upon it unexpectedly, and inquiring for what cases it was specially employed, I was informed that it was used for ovariectomy, pyæmia, and other such dangerous operations and diseases. But if such cottage hospitals are deemed more safe for such great operations as ovariectomy; would they not be also more safe for amputations? And, if safer for amputations, would they not be safer for all surgical operations? And, if safer for all surgical cases, would they not, on the same principle, be safer likewise for all medical cases?

THERAPEUTICAL MEMORANDA.

[Under this head, we shall publish from time to time, as materials accumulate, short records of remarkable cases in practice which are sufficiently rare, interesting, or instructive, to deserve record, but do not call for lengthened statement or comment. Brevity and point should be the valuable characteristics of cases forwarded for this column.]

ON THE USE OF CARBOLISED OIL IN THE OPERATION OF PARACENTESIS THORACIS.

By HENRY BANKS SPENCER, M.D., Oxford.

I HAVE been able to meet with but one or two recorded cases of the use of carbolic acid to prevent decomposition of the fluid in the pleura after paracentesis. Having recently had a case under my care in which it was of the greatest service, I have ventured to send a very short account of it. The patient was a little girl nine years old, and the whole left pleura was full of some fluid—pus, as I believed. Having seen the case in conjunction with Dr. Tuckwell, and determined upon operating, I made an exploratory puncture with a grooved needle dipped in carbolised oil (one part of acid to four of oil), on August 30th, 1868. This having demonstrated the presence of pus, a hydrocele trocar, dipped in carbolised oil, was thrust into the side of the chest between the fifth and sixth ribs. About a pint of pus escaped under a large fold of lint also steeped in the carbolised oil. The cannula was, for a few hours, left in; and the wound was carefully covered by the carbolised lint, which latter the friends of the patient were desired to keep well soaked with the carbolised oil without ever removing it. The cannula was soon the cause of considerable discomfort and was removed, the lint being still carefully kept over the wound. The discharge ceased in a few hours, and pus soon began to accumulate within; so much so, that it was necessary to operate again on September 1st. This time, a scalpel, dipped in the carbolised oil, was used, and the operation was done under the protection of the carbolic curtain, a pint and a half of pus flowing at once from the wound. A piece of flexible catheter, also of course carbolised, was now, at Dr. Tuckwell's suggestion, tied in and through it; the pus flowed for about a fortnight, when the catheter was removed. The wound was then simply protected with the oiled lint,

under which pus continued to flow more or less till about the middle of October. During the whole of this time there was not the slightest fetidity of the pus—it being on the last day of discharge as inodorous as on the first; and all the trouble and annoyance to the child of repeated antiseptic injections were spared. No case of the kind could have proceeded better; as, from the date of the second operation, the child, without a bad symptom of any kind, steadily progressed towards recovery, and is now (March 6th) in her usual good health.

TREATMENT OF TYPHUS BY CARBOLIC ACID.

By J. WALLACE, M.D. Edin., Liverpool.

THE report in the BRITISH MEDICAL JOURNAL, February 13th, on the Internal Use of Carbolic Acid in the London Hospitals, may well be followed up by the results of private practice. That it does not cut short the course of typhus, the following brief outlines of three typical cases will demonstrate.

CASE I.—Miss —, aged 20. Dorsal decubitus was constant, and deafness nearly complete. Pulse 120; tongue persistently dry. At first nitro-hydrochloric acid was given, till griping necessitated its suspension. Nutrients and stimulants, such as strong coffee, tea, wine, etc., were given. On the eleventh day, carbolic acid was ordered in the following form. R Glycerini acidi carbolicci ʒiii; spir. chloroformi ʒiiss; tincturæ cardamom comp. ʒvi; aquæ q. s. ad ʒviii. M. A table spoonful to be taken every four hours. The tongue immediately became moist; and on the seventeenth day convalescence was established.

CASE II.—Mrs. —, aged 50, was treated at first by an emetic and by nitro-hydrochloric acid. On the sixth day, the pulse was 120-130, weak; the countenance flushed; the pupils contracted to the size of a pin-hole; the respiration was rapid; the tongue furred, hard, and tremulous. In short, she had a severe attack, with a bad prognosis. I ordered carbolic acid mixture. She became worse and seemed sinking, and on the tenth day I stopped the carbolic acid and ordered brandy, in addition to wine and nutrients. After a few half-ounce doses of brandy, she turned on her side and went to sleep. Dr. Bruce saw her on the eleventh day, and verified the facts stated in this case; as he did also in cases I and III. On the twelfth day, her breathing was laborious, and chiefly abdominal; there was bronchial irritation. She was ordered to have half an ounce of brandy every hour, and one tablespoonful of the following mixture every two hours. R Glycerini acidi carbolicci, spirit. terebinthinæ, ā ʒii; æther. chlorici ʒiiss; mucilaginis acaciæ q. s. ad ʒix. This relieved the breathing. She seemed more intelligent; but the pin-hole pupil continued, and her hearing was very acute. The ears were plugged. Muttering delirium supervened. She was ordered to have twenty ounces of brandy daily. On the twenty-first day consciousness returned; and she made a good recovery, though with a sloughing bed-sore.

CASE III. Miss —, aged 50. This case, like the preceding one, was of doubtful prognosis from the beginning. The treatment was the same, but the carbolic acid had to be stopped, as it produced coldness of the whole body. The respiratory centres were also affected. Dorsal decubitus was constant; but there was no pin-hole pupil. There was partial consciousness throughout. She had bubonul abscesses; one on the left cheek, two in the neck, where vesication had been applied along the course of the pneumogastrics. On the twenty-second day, a scarlet rash covered the body. The pulse for the first time rose above 100 to 130. The tongue continued black and dry. The teeth were covered with sordes. The evacuations from nearly the beginning continued to be passed involuntarily; and on the twenty-seventh day she died, having taken a quart of brandy daily for nearly a week. She was semi-conscious to the end.

REMARKS.—Case I would have recovered without any other than restorative treatment. In Case II, carbolic acid seemed to aid the reputed action of the turpentine in bronchial complications in typhus in a marked degree; but it had no other apparent effect. In Case III, it was positively dangerous; for the deadly coldness was produced again and again by intermitting the medicine and then beginning it anew. In Case III, were there internal abscesses? Was the scarlatinal rash specific of scarlet-fever complication, or from blood-poisoning. The first question cannot be answered, as no *post mortem* examination was allowed. Yet rapid decomposition set in after death. The second was from blood-poisoning; and hence the disease was continued beyond the prescribed periodicity of typhus. Some weeks previously I saw a case, with my friend Dr. Johnstone, of Russell Street, of typhus complicated with gangrene of one leg arising from an old-standing indolent ulcer; and before death the same scarlet rash, almost of a brilliant pink hue at certain parts, appeared. Carbolic acid does not prevent septic poisoning or the irritative fever subsequent to typhus.

* See *Edinburgh Monthly Journal of Medical Science* for 1848, p. 328.