REMARKS ON CREMATION OR BURIAL? *

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THERE are, no doubt, many members of the British Medical Association who have not thought very much about the evils of the present mode of burying the dead in this and many other parts of the world. There are many more who have not heard at all, or have thought very little, of recent proposals to reform the present system, or to substitute for it one which can be proved to be far better. It is scarcely forty years since the causes of the high rate of mortality, and the means of preventing disease, attracted much attention in our profession; and the necessity for sanitary regulations was impressed upon public opinion. The influence of light and air, of a supply of pure water, of good drainage, ventilation, and cleanliness, as means of preventing disease and prolonging life in large towns, populous districts, and the country generally; the influence of employments upon health; the habits of different classes of the people; the condition of their dwellings; the injurious effects of many nuisances, and the inadequacy of power for preventing them, are all subjects of recent study, and do not yet form a sufficiently defined part of medical education.

It is quite unnecessary here to remind you of the beneficial influence upon the public health and the longevity of the nation, exercised by our profession during the last forty years; but it does appear to me to be necessary to call for the earnest attention of the Association to one source of danger which is increasing every year—the burial of the dead. It is about forty years since a member of our body, Mr. Walker, wrote the remarkable work on graveyards which led to the special inquiry into the practice of interment in towns, and the admirable report of Mr. Edwin Chadwick, which was presented to Parliament in 1843. The evidence he adduced as to the propagation of disease from decaying or putrefying human bodies, was amply sufficient to prove the dangerous tendency of all interments in churches or in towns; and led to the removal of many burial-places from towns or crowded districts into suburban cemeteries. The effects have been admirable. But, with a rapid increase of population, we are now beginning to suffer from the evils which Mr. Chadwick foretold, namely, “shifting the evil from the centre of the populous districts to the suburbs, and deteriorating them”; “increasing the duration and sum of the existing evils”. Many of our suburban cemeteries are now very much in the condition of town graveyards forty years ago; and the attention of thoughtful men outside the bounds of our profession has already been directed to a growing evil. Only last year, at the opening of the Social Science Congress at Manchester, the respected and beloved bishop of the diocese, in opening the congress, thus referred to the recent consecration of a new cemetery. “Here”, he said, “is another hundred acres of land withdrawn from the food-producing area of the country for ever.” And he added, “I feel convinced that, before long, we shall have to face this problem: How to bury our dead out of our sight, more practically and more seriously than we have hitherto done. In the same sense in which the ‘Sabbath was made for man, and not man for the Sabbath’, I hold that the earth was made, not for the dead, but for the living. No intelligent faith can suppose that any Christian doctrine is affected by the manner in which, or the time in which, this mortal body of ours crumbles into dust and sees corruption.” And he concludes: “This is a subject that will have to be seriously considered before long. Cemeteries are becoming not only a difficulty, an expense, and an inconvenience, but an actual danger.”

In the debate on the Burials Bill in the House of Lords on June 24th, the Earl of Beaconsfield said that what is called “God’s acre” is “really not adapted to the country which we inhabit, the times in which we live, and the spirit of the age. What I should like to see would be a settlement of this question by the shutting up of all God’s acres throughout the country. I think the churchyard of the ordained minister, and the graveyard of the dissenting minister, alike, are institutions which are very prejudicial to the health of the people of this

country; and their health ought to be, if not the first, at any rate one of the first considerations of a statesman. Now we have been moving gradually in the direction of these views, and there has been for some years a notion, soon about to amount, I believe, to a conviction, that the institution of churchyards is one which is highly prejudicial to the public health. I think it would be a much wiser step if we were to say that the time has arrived, seeing the vast increase of population in this country and the increase which we may contemplate, when we should close all these churchyards, and when we should take steps for furnishing every community with a capacious and ample cemetery, placed in a situation in which, while it would meet all the requirements of the society for which it was intended, would exercise no prejudicial influence on the public health.” And he concluded his speech in these terms: I think the direction in which we ought to have moved would have been to shut all these churchyards and graveyards, and to have assisted the Government in some adequate proposal which would have furnished the country with cemeteries in which none of these painful controversies could have occurred, and which would have conduced to the preservation of the health and welfare of the country.”

The impressive exhortation of the Bishop of Manchester, from which I have just quoted, was the result, as he tells us, of the perusal of two very able papers written by one of the most distinguished members of our own body, Sir H. Thompson, and published in the *Contemporary Review* in 1874. The first paper, on the Treatment of the Body after Death, led to a reply from Mr. Holland, then medical inspector of burials in England, which contains a summary of all that can be said in defence of cemeteries. But the rejoinder of Sir H. Thompson is a masterly exposition of the evils of our present mode of interment, with an answer to many of the objections to cremation as a substitute for burial, and some account of modern improved apparatus for burning dead bodies at a moderate expense, without any nuisance, and with due regard to the sentiments of surviving relatives. I trust that Sir Henry may be induced to reprint his papers in a form easily accessible to the people. One of the first effects of the perusal of Sir H. Thompson’s papers was the association together of a small number of men, and the formation of the Cremation Society of England, numbering, among members of this Association, notably Mr. Ernest Hart and Mr. Lord. I have here the first part of the *Transactions* of this Society. It forms a pamphlet of only sixty-six pages, but it contains a great deal of information as to cremation at home and abroad, up to the date of the sixth anniversary of the Society last January. It may surprise many to learn that cremation is already legalised in parts of Germany and in Italy; that crematoria have been erected and used in Gotha and in Milan and Lodi, and a society established in Rome. A phrase in the sanitary laws of Switzerland which forbade cremation has been removed, and a piece of ground in the new cemetery at Zürich has been set apart for the erection of a crematorium.

On June 16th last, Professor Polli (whose researches on the antiseptic action of the sulphites and hyposulphites I brought before the Association in this town sixteen years ago, in an address on the causes of excessive mortality after surgical operations) who, in late years, had been one of the most ardent supporters of cremation, who had himself proposed a method which was the first tried in Italy, had his body, by his own express desire, cremated, and his ashes were consigned to their resting-place with all due solemnity, in the presence of mourning relatives. This cremation was the sixty-eighth which has taken place in Milan since January 1876.

Several large cremation societies have been formed in Switzerland. One large society in Holland has several branches. In France, the Paris Municipality has called for designs for the best form of furnace. In Belgium, one society in Brussels has more than four hundred members, and M. Creteur has been thanked by the Government for the successful cremation of the bodies of soldiers killed near Sedan. In America, cremation has already been practised at Washington, and several societies have been formed; and the Brazilian Government are about to erect a crematorium at Rio de Janeiro.

While all this has been going on in the European continent and in America, the Cremation Society of England has been working on quietly but earnestly; has purchased an acre of freehold land near Woking, and has erected a crematorium on the model of the *Garini* furnace, which is the most approved in Italy; and has experimentally proved that the body of an animal may be reduced to a clean innocuous ash, weighing about a twentieth of the unburnt body, at a very small cost, and without any appreciable odour or visible smoke.

The Society has obtained the very highest legal authority, and the admission of the late Home Secretary, that cremation is not illegal, provided it be practised without nuisance, or leading to a breach of the peace. But Sir R. Cross obtained from the Council a promise that, be-

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fore burning a human body, they would endeavour to carry a short Bill through Parliament, or to obtain the insertion of a clause in some Burial Bill, affirming that cremation might be legally practised, and under proper regulations. Hitherto, the Council have been unable to obtain this Parliamentary sanction, and it remains to be seen how far Sir William Harcourt will consider the Council bound to the present Government by their promise to his predecessor in the Home Office. After any discussion which may follow this paper, I trust many of you will sign an address to him, which I will read after I have asked you whether the time has not arrived when cremation should be supported by the British Medical Association, collectively, and by each of its Branches. The sanitary advantages over burial in coffins, or in wicker baskets, are undeniable and very great. Most of them are so well known to you all, that I may pass them by without further mention; but I must allude to one most remarkable argument in favour of cremation which has just been advanced by Pasteur, after his examination of the soil of fields where cattle had been buried, whose death had been caused by that fatal disease known as "charbon", or splenic fever. The observations of our own Darwin "on the formation of mould", made more than forty years ago, when he was a young man, are curiously confirmatory of the recent conclusions of Pasteur. In Darwin's paper, read at the Geological Society of London in 1837, he proved that, in old pasture-land, every particle of the superficial layer of earth, overlying different kinds of subsoil, has passed through the intestines of earth-worms. The worms swallow earthy matter, and, after separating the digestible or serviceable portion, they eject the remainder in little coils or heaps at the mouth of their burrows. In dry weather, the worm descends to a considerable depth, and brings up to the surface the particles which it ejects. This agency of earth-worms is not so trivial as it might appear. By observation in different fields, Mr. Darwin proved, in one case, that a depth of more than three inches of this worm-mould had been accumulated in fifteen years; and in another, that the earth-worms had covered a bed of marl with their mould, in eighty years, to an average depth of thirteen inches.

Pasteur's recent researches on the etiology of "charbon" show that this earth-mould positively contains the specific germs which propagate the disease; and that the same specific germs are found within the intestines of the worms. The parasitic organism, or *bacteridium*, which, inoculated from a diseased to a healthy animal, propagates the specific disease, may be destroyed by putrefaction after burial. But, before this process has been completed, germs or spores may have been formed which will resist the putrefactive process for many years, and lie in a condition of latent life, like a grain of corn or any flower-seed, ready to germinate, and communicate the specific disease. In a field in the Jura, where a diseased cow had been buried two years before, at a depth of nearly seven feet, the surface (art) not having been disturbed in the interval, Pasteur found that the mould contained germs which, introduced by inoculation into a guinea-pig, produced charbon and death. And, further, if a worm be taken from an infected spot, the earth in the alimentary canal of the worm contains these spores or germs of charbon, which, inoculated, propagate the disease. And the mould deposited on the surface by the worms, when dried into dust, is blown over the grass and plants on which the cattle feed, and may thus spread the disease. After various farming operations of tilling and harvest, Pasteur has found the germs just over the graves of the diseased cattle, but not to any great distance. After rains, or morning dews, the germs of charbon, with a quantity of other germs, were found about the neighbouring plants; and Pasteur suggests that, in cemeteries, it is very possible that germs capable of propagating specific diseases of different kinds, quite harmless to the earth-worm, may be carried to the surface of the soil ready to cause disease in the proper animals. The practical inferences in favour of cremation are so strong that, in Pasteur's words, they "need not be enforced".

And now a word as to the sentimental objections to cremation. The Bishop of Manchester, in the address to which I before alluded, admits that his sentiments are "somewhat revolted by the idea of cremation"; but he adds, "they are, perhaps, illogical and unreasonable sentiments". We all know how difficult it is to convince illogical and unreasonable people; they must be left to the influence of time and example. But it is of importance to show to all that reason and true sentiment, and good feeling of reverence for the dead, of affectionate regard for their memory, are more logically and reasonably associated with a purifying fire than with decay, putrefaction, and danger to the living; and, on this important part of the subject, I am glad to bring before you the book of my friend Mr. Robinson, who has done so much of late years to improve our gardens, parks, and open spaces, and who is one of the Council of the Cremation Society. He calls this book *God's Acre Beautiful, or the Cemeteries of the Future*. He argues that the resting-places of the dead should be "permanent, unpolluted,

inviolable"; that permanent beautiful cemeteries could be easily maintained if urn-burial were practised; that existing graveyards and cemeteries can only be of temporary use; that their monuments and memorial stones soon decay or crumble away; and that urn-burial might lead in the future, as it has done in the past, to more noble and enduring monuments. Let me read to you a page from Mr. Robinson's book.

"By the adoption of urn-burial, all that relates to the artistic embellishment of a cemetery would be at once placed on a very different footing. One of the larger burial-grounds now closed, perforce, in a less time than that of an ordinary life, would accommodate a like number of burials on an improved system for many ages. The neglect and desecration of the resting-places of the dead, inherent to the present system, would give place to unremitting and loving care, for the simple reason that each living generation would be as much interested in the preservation of the cemetery as those that had gone before were at any previous time in its history. We should at once have what is so much to be desired from artistic and other points of view—a permanent resting-place for our dead. With this would come the certainty that any memorials erected to their memory would be carefully preserved in the coming years, and free from the sacrilege and neglect so often seen. Hence an incentive to art which might be not unworthy of such places. The knowledge that our cemeteries would be sacred—would be sacred to all, and jealously preserved by all, through the coming generations—would effect much in this new field for artistic effort. In days when careful attention is bestowed upon the designs of trifling details of our houses, it is to be hoped that we shall soon be ashamed of the present state of what should be the beautiful and unpolluted rest-garden of all that remains of those whom we have known, or loved, or honoured in life, or heard of in death as having lived not unworthy of their kind. Such a revolution in our burial arrangements will not come suddenly; but perhaps a little reflection may serve to convince those who have feelings of repulsion to urn-burial that, as a matter of fact, less dishonour is done to the remains of those whom one loves in subjecting them to a fire which reduces them to ashes which can be carefully preserved, than in allowing them to become the subjects of the loathsome process of corruption first, and then subjecting them to the chance of being ultimately carted away to make room for some metropolitan or local improvement." The preservation of inscriptions and memorials, whether in or around churches and public buildings, the erection of beautiful tombs with urns as family burying-places, would be worthy objects for the best efforts of artistic design.

As to the ceremony of burial and performance of any religious service, distinguished members of the clergy of the Church of England have shown that scarcely any alteration would be called for in our burial service; and it is felt that, as urn-burial might be practised to any extent and for any length of time in or around churches and public buildings, in towns as well as in distant cemeteries, and without the expensive transport and ugly expensive forms of our present system of burial, men might again, as of old, rest in death near the scene of their work in life; and the restoration of the family tomb to the chapel or crypt would renew and add to the tie between the family and the church. Our places of worship and the spaces which surround them, if urn-burial became general, would be amply sufficient for the preservation of the remains of our dead for generations to come, and would enable us to convert existing cemeteries, which are rapidly becoming sources of danger to the public health, into permanently beautiful gardens. Instead of filling up large spaces with decaying dead bodies, we should have natural gardens, open lawns, pure air, fine trees, lovely flowers, and receptacles for vases, which, as well as the cinerary urns and chests themselves, might be made important helps in the culture of art. In country houses, urn-burial would lead to family burial places within the grounds, and encourage monumental work of high artistic merit; and, in the country church, the ashes of the people might repose in the place where they worshipped, instead of polluting the earth of the surrounding churchyard and the water drunk by the surviving population, or being carried to a distant cemetery, which overcrowding must in time make only a very temporary resting-place.

The "earth to earth" system, as it is called, so ably advocated by my friend Mr. Haden—the burial in porous wicker baskets, instead of wooden or leaden coffins—has some advantages. It is somewhat cheaper, and decay is more rapid; but the ground is for a long time occupied by what pollutes earth, air, and water. Mr. Haden's argument that, as a body, after coffinless burial, decays away in about six years, we may "bury again in the same ground with no other effect than to increase its substance and to raise its surface", surely strikes at the root of all sentiment of reverence or affection for the dead—and with what hazard to the living, the recent researches of Pasteur are amply sufficient to prove. In addition to the dangers from simple putrefaction polluting earth, air, and water, we have to consider

the dissemination of the germs of specific contagious diseases. Liquid animal matter oozing from putrefying corpses in a churchyard may possibly be so purified by the oxidising power of a few feet of earth as to be bright, clear, and inoffensive to any of our senses; but water which is neither cloudy nor stinking, but rather enticing and popular, like the water of the Broad Street pump in 1874, has carried cholera to those who drank it. How often typhoid fever has been caused in the same manner, who can tell?

But I must not detain you longer. Here is the address to the Home Secretary, and I hope it may be signed by many who are convinced that the present custom of burying the dead is associated with evils which ought to be remedied.

"We, the undersigned members of the British Medical Association assembled at Cambridge, disapprove the present custom of burying the dead; and desire to substitute some mode which shall rapidly resolve the body into its component elements by a process which cannot offend the living, and may render the remains absolutely innocuous. Until some better mode is devised, we desire to promote that usually known as cremation. As this process can now be carried out without anything approaching to nuisance, and as it is not illegal, we trust the Government will not oppose the practice when convinced that proper regulations are observed, and that ampler guarantees of death having occurred from natural causes are obtained than are now required for burial."

In conclusion, let me ask you to think on the following propositions. Decomposing human remains so pollute earth, air, and water, as to diminish the general health and average duration of the life of our people.

Existing churchyards and cemeteries are not well fitted as safe, secure, permanent, innocuous places of repose for the remains of our dead.

The expense of funerals and interment in graves presses unduly upon the means of the middle and labouring classes.

The present system of registration of death is so imperfect that common causes of preventable disease are not detected; and life is also rendered insecure by the omission of efficient arrangements for the due verification of the fact and causes of death.

These evils might be mitigated or prevented — (1) if national cemeteries were provided and maintained, under the direction of duly qualified officers of public health, and not left, as now, to be sources of private gain to commercial companies; (2) if no interment were allowed without a certificate of the fact and the cause of death by an officer of public health.

All this should be urged by those who are content to improve on our present mode of burial. Those who would go further, who will assist in the attempt to arrest the evils inseparable from even the very best mode of burial, who would add to our reverence for the remains of the dead, ensure an impressive religious service, and at a reduced expenditure provide for permanent monuments in beautiful open public spaces, may assert and prove the influence which our Association can exert, and ought to exert, upon the health and morals of the nation.

ON THE CAUSE OF THE BAD ODOUR SOMETIMES ASSOCIATED WITH EXCESSIVE SWEATING OF THE FEET, WITH DIRECTIONS FOR TREATMENT.

By GEORGE THIN, M.D.

THERE are few persons of experience, medical or lay, who have not had the misfortune to discover that certain individuals smell so offensively, that it is almost impossible to approach them. In many instances, the evil smell is connected with the feet, although there is reason to believe that this source is only suspected for the most part by those who have learned to recognise the odour, and who know that it is associated with perspiring feet. In some cases, the smell is so strong and penetrating, that it pervades a room long after the person from whom it emanates (and who may have remained in it only a few minutes) has left it. The entry of such an individual into the compartment of a railway carriage or an omnibus immediately fills it with a sickening effluvia, which, to the initiated, is unmistakable. These unhappy persons, if they belong to the wealthier classes, become exiled to a great extent from society; if they belong to the poorer classes, they may find it difficult to follow the calling by which they earn their living. Female domestic servants, from a cause to be presently explained, frequently suffer from this evil, and cannot in consequence find a household in which their presence is long tolerated.

It is difficult to describe a smell, and I will not attempt to describe

this one, but it is of interest to remark that there is something in it suggestive of putrefying cheese. Some friends of mine found a country farmhouse which they had taken for a short period, almost uninhabitable, on account of a peculiar disagreeable odour which pervaded every part of it. The odour was at first attributed to a supposed want of cleanliness in the dairy, or to the presence of new cheeses which were being dried in one of the rooms of the house; but it was soon found that the smell proceeded from a young woman who had been engaged to do temporary service.

I have several times met with extreme instances of this kind, and, until recently, have not been able to give the sufferers much permanent relief. Hebra's treatment, which consists in keeping the skin of the soles enveloped in diachylon ointment, and necessitates the recumbent posture for eight to twelve days, I have not tried. Professor Hebra writes confidently of its success, but there are evident practical objections to its use in many cases.

The odour regarding which I am writing is so distinctive, that I have long thought it probable that it was associated with a special ferment; and a well marked instance of it having recently come under my notice, I have taken advantage of means placed at my disposal by the Scientific Grants Committee of the British Medical Association to investigate its nature. Before giving an account of the case, and what I have learned from it, a few preliminary remarks will be useful.

Profuse sweating of the palms and soles is not uncommon, but, in order to produce the specific odour to which I refer, something more than mere profuse sweating is required. The excessive perspiration, when confined by stockings and boots, macerates the epidermis, and, if the person stand or walk much, the skin of the heels becomes tender. This tenderness is accompanied by redness, slight blistering, or more decided localised eczema. In damp, relaxing weather, perspiration is increased; and we have thus two causes of aggravation, each potent, but both together very powerful—moist warm weather and prolonged pressure by walking or standing.

It has been pointed out by Hebra that the evil smell is not in the sweat itself, but in the coverings of the feet; a fact which it is easy to verify.

The patient who has afforded me the opportunity of investigating the cause of the smell is a young woman, aged 22, who has suffered from evil-smelling feet, with soreness of the heels, for several years. Her hands are usually moist, or even wet, but are always odourless. The smell from the feet is not constant, disappearing in dry bracing weather, and reappearing when the weather is moist and depressing.

The first experiment I made was to subject the soles of the stockings and boots to the action of an antiseptic solution. The success was complete, the odour being entirely banished. The antiseptic precautions having been soon neglected, the smell returned, and I took the opportunity of investigating its cause more minutely.

The sole of the stocking, a few hours after it was put on, was found to be quite wet; and a stocking, if worn for a whole day, was so extremely offensive that, when held close to the nostrils, its overpowering fetor was comparable to that of putrid blood. The inside of the boot was equally wet and offensive; but, at the very time that the stocking and boot smelt so strongly, the heel itself, exuding moisture profusely, had no disagreeable odour. The sole of the heel was reddened and tender, and macerated around the edge, like a washerwoman's palm.

The reaction of the moisture in the stocking and in the sole of the boot was alkaline, that of the moisture exuding from the skin of the sole of the heel faintly alkaline, whilst that of the perspiration of other parts of the body was acid.

The fluid from the sole of the heel was thus shown to be not pure sweat, the faintly alkaline reaction being doubtless due to the serous discharge accompanying the eczema set up by the local hyperidrosis.

The fluid in the sole of the stocking was found to be teeming with bacteria forms, the nature and development of which I have carefully investigated. These investigations have produced results of some scientific interest, which I have communicated to the Royal Society.* The rapid development of bacteria in the fluid which exudes from the soles is doubtless favoured by the alkaline reaction produced by the mixture of serous exudation with the sweat.

The treatment instituted in this case is as simple as it has been effective. The stockings are changed twice daily, and the stocking-feet are placed for some hours in a jar containing a saturated solution of boracic acid. They are then dried, and are fit for wear again if it be desired. The boracic acid effectually destroys the smell. But to kill the bacteria in the stocking is not enough. The leather in the bottom of the boot is wet and sodden, and smells as vilely as the

* On *Bacterium fatidum*: an organism associated with profuse sweating from the soles of the feet. (*Proceedings of the Royal Society*, No. 205, 1880.)