Among the causes of insanity in women, heredity, intemperance, and the vicissitudes of female life are said to be the most frequent; and it has long occurred to me, as I know it has to others, that in regard to the latter element as a cause, much good might result if every case in which there was the least doubt were thoroughly overhauled and investigated by an experienced gynecologist.

Every one knows that occasionally, although rarely, a case of insanity has been cured by the application of a properly adjusted pessary to a displaced uterus. Then, in regard to the influence upon the mental state which is produced by the presence or the absence of the ovaries, little is known. Observation on this point has not been sufficiently extended or pursued.

We do know that sometimes the operation for the removal of both ovaries is followed by mental derangement; but we cannot, at present, say why it is so. In my own practice I find that, excluding cases of supravaginal hysterectomy, I have performed the operation, for various abnormal conditions, of removal of the appendages on both sides in 500 cases; and that the operation has been followed by insanity in four instances. Of these, three recovered, and one committed suicide. I have never seen insanity follow the removal of one ovary alone, or any other pelvic operation.

The insanity of the climacteric period, and of the puerperal period, may or may not be dependent on some occult influence seated in the ovaries, the exact nature of which, if, or when, it exists, has yet to be investigated.

Then, the mental and hysterical state of many unmarried women, of 30 years of age and upwards, is one which may well engage the careful attention of gynecologists, especially of those who have access to fields where such cases may be seen and studied in numbers and variety.

I am aware that the above remarks are of the crudest character, and have been jotted down in the form rather of asking questions than of dogmatic statements, and also that, in my position as President, I cannot be at once replied to or argued with; but I trust that they may be regarded as thrown out for future discussion and fruition.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF PUBLIC MEDICINE.

*At the Annual Meeting of the British Medical Association,
held in Birmingham, July, 1890.*

By ALFRED HILL, M.D., F.I.C.,
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THE PROGRESS OF SANITARY REFORM.

In view of the large number of important sanitary subjects set down for consideration and discussion in this Section, I shall purposely avoid trespassing upon your time to any great extent, but at the same time shall avail myself of the opportunity, in conformity with time-honoured custom, to address to you a few general remarks introductory to the more special business of the Public Medicine Section.

The active revival of sanitary work may be regarded as taking place about 1873, and a glance at the death-rates of either the country generally, or of the aggregate of the twenty largest English towns, or of the few principal towns individually, proves that in the seventeen years (to 1889) there has been a great improvement in every instance in the public health as marked by the decline in the death-rate. In the whole of England and Wales the diminution is from 21.2 to 17.9 per 1,000 of the population, in the twenty largest towns the fall is from 24.4 to 19.0 per 1,000, while, taking certain individual communities, we find that in London the death-rate has fallen from 22.5 to 17.4, in Liverpool from 25.9 to 21.6, in Birmingham from 24.8 to 18.4, in Manchester from 30.1 to 26.7, in Salford from 29.3 to 20.5, in Leeds from 27.6 to 22.1, in Bristol from 23.1 to 17.6, in Norwich from 21.5 to 18.4, and in Maidstone in the same time it has declined from 22.8 to 13.7. The ratios of these amounts of diminution in the death-rate are very various as indeed might be anticipated from a knowledge of the original sanitary and other conditions existing, even supposing that similar sanitary efforts have been made by each town. Cal-

culated to percentages, the diminution of general mortality for England and Wales is 15.6 per cent., for the twenty large towns it is 22.1 per cent., for London 22.6 per cent., for Liverpool 16.6 per cent., for Birmingham 25.8 per cent., for Manchester 11.3 per cent., Leeds 20 per cent., Sheffield 19 per cent., Salford 30 per cent., Newcastle-upon-Tyne 16.3 per cent., Norwich 14.4 per cent., Bristol 23.8 per cent. For Maidstone the diminution in the death-rate has attained the extraordinary figure of 40 per cent. It would be interesting to know why the three towns, Manchester, Salford and Newcastle, having in 1873 death-rates very nearly the same, should differ so much in the results of their sanitary operations, that while Salford has effected a reduction of 20 per cent., Newcastle should have benefited to the extent of only 16.3 per cent., and Manchester of only 11.3 per cent., particularly as it is notorious that the last-named town has displayed most marked sanitary activity during the whole period in question. I am inclined to think that the differences must be due to the circumstance that the sanitary defects of the one community are of a nature to admit more easily of correction than those of the others, and that in course of time the improvements in all of them will become more equal. It is interesting to observe that Bristol and Birmingham, with similar death-rates in 1873, have reduced them by amounts much more on a par with each other, namely, 23.8 per cent., and 25.8 per cent. respectively.

These results are most encouraging to sanitarians, inasmuch as they clearly demonstrate an enormous saving of life and health and money already, while they point to still greater achievements in the future, clearly refute the unfavourable opinions and predictions of those who opposed active sanitary measures as unnecessary because they considered the then existing inspectors of nuisances all-sufficient in the interests of public health, and more than justify the professional advice and Governmental action which have resulted in the sanitary organisation of the present time. It must be clear to everyone now how wise and far-seeing were the early sanitarians such as Chadwick, Southwood Smith, and others, who did so much to effect a renaissance of sanitary action about fifty years ago.

It will be observed that the improved sanitary condition of the twenty large towns results in a diminution in the death-rate 6.5 per cent. greater than that in the whole of England and Wales, a result probably due to two circumstances—first, the existence of a greater number of sanitary defects in the large towns than in the country generally, and secondly, the greater sanitary activity in the towns. But whatever may have been the difference in the proportion or rate of improvement in different areas in the country or in different sections of the population, it is quite certain that it has been very pronounced generally, and considering the short time in which the change has been brought about, it is highly satisfactory with regard to the past, and equally encouraging as to the future.

But, notwithstanding the great fall in death-rates generally, most of the large towns have death-rates which ought not to satisfy health authorities or health officers. While the death-rates of individual towns compared with similar death-rates years back show great progress, a comparison of one town with another is by no means so satisfactory. To take an example, the corrected death-rates of Leicester and Preston in 1889 are respectively 17.73 and 32.61, the former having only a little more than half the mortality of the latter. As it is hardly to be supposed that such serious difference is due to geographical, geodesic, or social conditions, one is forced to the conclusion that it is due to the difference of the sanitary state of the two towns. In Derby and Norwich we find a death-rate less than that of England and Wales, while in Brighton it is 2.2 per 1,000 below it. It would be unreasonable to expect manufacturing towns to vie with Brighton, but I cannot think it unreasonable to aim in any such town at a condition of health equal to that obtaining at present in Derby and Leicester.

Two hundred years ago, if anyone had predicted that the then death-rate of 80 per 1,000 in London would be reduced to 20, his statement would have only excited ridicule. If so late as 1873 the prognostication had been made that the sanitary activity then commencing would result, in the comparatively short period of seventeen years, in a reduction of the death-rate in the twenty large English towns to the extent of 22 per cent., and of that of Salford to the extent of 30 per cent., or of Maidstone by 40 per cent., such a forecast would have been regarded as visionary; yet these magnificent results are now accomplished facts. But it cannot be supposed that the limit of improvement is reached, that

the resources of preventive medicine are exhausted; on the contrary, there is good reason to believe that almost or quite as much remains to be done as has already been accomplished.

If plague and the other epidemics of the Middle Ages are vanquished, if small-pox, ague, typhus, and cholera, and perhaps hydrophobia, have been rendered amenable to preventive measures, there yet remain the less alarming because familiar but no less fatal diseases, measles, scarlet fever, whooping-cough, summer diarrhoea, fever, and diphtheria—a formidable array of preventable, but as yet unprevented, diseases—to occupy the attention and the energies of investigators and sanitary officers for some time to come.

The diminution of fever has been not only very marked, but continuous, since 1861, and it is customary and no doubt correct to regard the diminution in this triple group of diseases as a measure of the beneficial influence of sanitary work. The annual deaths per million from fever in England and Wales in the decennium 1861-70 were 885, in the decennium 1871-80 they were only 484, or little more than half, resulting in the saving of 401 lives per million persons living from fever alone, while in the nine years ending 1889 the annual deaths had dwindled to 239 per million, or a little over one-fourth of the first number.

Great success has thus attended the endeavour to prevent this preventable disease, and there seems every probability of its some day becoming extinct, like some others. We know how readily it is spread through the stools of a patient, by means of water and sometimes by air, and occasionally by milk—and water. It is fortunate that the source and modes of conveyance of the poison of this disease are largely understood and can be provided against. It is unfortunate that a disease, supposed to have a similar origin—diphtheria—should not have proved itself as yet in the same degree amenable to sanitary measures. Probably this want of success is due to our ignorance of the etiology of the disease, of its origin, and of the media by which it is transmitted. A bacillus is said to have been found in connection with the membrane characteristic of this disease, and though much doubt hangs over the causes of the disease it does not appear to be propagated through drinking water.

The fact that diphtheria is, unlike typhoid fever, increasing instead of diminishing in the large towns is very remarkable, and at present inexplicable; for although there is good reason to believe it is dependent on emanations of an impure character, to some extent from sewers and drains, but more especially from soil charged with organic matter in a state of putrefactive change; and although it is observed to be very generally, if not invariably, associated with dampness of the dwelling and soil, either with or without concomitant fungoid growths, its causes are not made out with any certainty or definiteness. Its conveyance through the medium of milk is a feature interesting in itself, though not peculiar to this disease, and its suggested connection with the diseases of certain domestic and domesticated animals is a question of equal interest and importance, offering a wide field of investigation. The former principal incidence of the disease upon country districts and its recent increase in towns is a point of much interest. With regard to this incidence upon town populations during recent years, I may point out a very remarkable exception which this city affords, where, since 1873, the diphtheria mortality has gradually fallen from 0.31 to 0.11 per 1,000, or to about one-third, while in twenty large towns during the same period it has as gradually risen from 0.09 to 0.27, or three times as many. This exceptional position of Birmingham may possibly be owing to geological and geodesic conditions, though it is difficult to believe that this is the only explanation.

In summer diarrhoea, we have a disease which is productive of a very large mortality, but one the conditions of whose production are largely understood, and which is amenable, therefore, to control either in the form of prevention or mitigation. Dr. Ballard's comprehensive investigation of this disease serves to confirm the view that solar heat is the primary cause, while impure surrounding conditions, with or without errors in diet, are the secondary and predisposing circumstances. It is satisfactory to know that, with recent sanitary improvements, the mortality from this disease has, like that from fever, become considerably diminished, namely, from 0.93 per 1,000 per annum between 1871-80 to 0.67 for the nine years 1881-89. It thus appears that there is a reasonable prospect of successfully contending against this very fatal scourge, especially of infant life.

In whooping-cough, measles, and scarlet fever we have to contend with exceptional difficulties. This trio of exanthemata pos-

sesses many features in common: their causes are not understood, and from the difficulty of controlling them they may be called the *opprobria* of preventive medicine. The difficulties of control arise principally from the fact that they are regarded by the ignorant as only children's diseases and inevitable, therefore they are neglected, and as a result, being excessively infectious, they become common, being common they become familiar, and so are allowed to prevail very nearly unchecked. What is the result? It is that 390,712 lives were sacrificed to these diseases in England and Wales during the decennium 1871-80, while during the same period small-pox destroyed only 57,046, and cholera only 6,104, and yet there is more dread of these two diseases than of all the other zymotics together.

Whooping-cough especially is regarded without apprehension, though so fatal from the complications occurring in neglected cases. Measles is exceedingly difficult to suppress under the best management for the reasons given, and for the additional reason that it is intensely infectious, even before the eruption has appeared to reveal its true nature. The result is that in the last nineteen years these diseases have not varied much in the mortality they occasion. Measles has varied but not improved; whooping-cough, however, shows some considerable improvement. I think that much might be done to diminish the death-roll of these diseases if they were managed in an intelligent manner, and with a genuine desire to cope with them. Perhaps this desideratum will not be accomplished until the education of the masses enables them to estimate the actual danger attending the diseases. The opinion that something could be done in the way of prevention of the great mortality from these two diseases is justified by the success which has attended the measures taken with regard to the third member of the group, scarlet fever. In consequence of these the annual death-rate (which in England and Wales in the decennium 1871-80 was 0.72 per 1,000) has been reduced in the eight years 1881-88 to 0.36 per 1,000, or exactly one-half.

The history of the treatment of scarlet fever of late years in Birmingham is highly instructive. In order to illustrate it I will describe it from the year 1875 to the year 1889 inclusive. During that period of fifteen years there were three waves of the disease, namely, one of four years' duration, another of five years', and another of six years'. The number of deaths during the first was 1,701, during the second 1,175, and during the third only 434. What is particularly worthy of notice is that the shortest period was marked with by far the highest mortality, the period of intermediate length with a much lower one, and the longest of the three with by far the lowest mortality, the ratio of annual average deaths in the three periods being respectively 425, 235, and 72, so that the effect of the measures taken is not only to extend or lengthen the epidemic wave, but also to enormously diminish the mortality. The question naturally suggests itself, what is the cause of this diminution of fatality in this particular zymotic. The answer, I have no doubt, is furnished by the facts of notification of the cases and provision of hospital accommodation.

At first the notification was voluntary and very incomplete, and the hospital accommodation was not made much use of by the public, subsequently notification became much more general though still voluntary, and the hospital grew in popularity; for instance, in 1875 the number of cases admitted was 20, in the year of culmination of the epidemic in the first period mentioned—1878—it rose to 424, in the last year of the second period—1883—the number was 638, while in 1889 it had reached 1,801; or taking each complete period, in the first epidemic the total number received and treated was 525, in the second 1,952, while in the third, ending 1889, it had attained the high figure of 3,759. It is thus seen that the mitigation of the disease was coincident with the knowledge obtained of the occurrence of the cases, and with the extent to which the public availed themselves of the advantages of the hospital. The prejudice against removal to hospital, which was general at first, has mostly disappeared, and so we see the advantage to health and life of an institution which enables patients to be removed from unhealthy rooms and other bad conditions with the substitution of more and better air, suitable and sufficient food, superior medical treatment, careful nursing, and all those appliances which a hospital affords, but which are wanting in the home. The mortality of the disease in the hospital was at first under 5 per cent., subsequently rising to 6.1 per cent.

Looking at the great success which has attended the public action in regard of scarlet fever, is there not good reason to hope and think that a similar course pursued in reference to measles

and whooping-cough would be followed by similar if not equal success?

At the beginning of the present year the compulsory Infectious Disease (Notification) Act has been adopted here as in most other places, resulting in a more complete knowledge of cases and increase of power for good in dealing with them. I am pleased to bear testimony to the general smoothness with which the Act works, owing to the nearly unexceptional loyalty with which the medical profession so honourably assists in carrying it out, and being for years a strenuous advocate of the measure, I am gratified to find that the social and professional objections to the Act, which always appeared to me to be of the weakest possible kind—unworthy of either the professional spirit or the intelligence of medical men—are proved to have had no foundation whatever. The distrust and friction between the practitioner and the medical officer of health, which were predicted, do not appear. The concealment of disease, which was to have happened, is equally absent, and on the contrary many more cases now are reported than before. The sacred confidence between patient and doctor, which was to have been destroyed with most disastrous results, remains inviolate, and so every theoretical objection which timidity, selfishness, or inexperience could find or invent has been refuted by practical experience.

One of the objections put forward, and which deserves special remark, was that notification would be useless in the absence of isolation hospitals. Without stopping to refute this assertion, which, however, would not be difficult, I may remark that notification to an authority of cases of infectious disease which ought to be isolated constitutes one of the strongest inducements to make provision of such hospitals. They follow as a natural consequence. The Birmingham infectious disease hospital has over 380 beds, and I think it is fair to conclude that every town should make similar provision in the proportion of at least one bed to every thousand of its population.

If asked what have been the principal agencies by which the past triumphs of preventive medicine have been achieved, there would be little hesitation in answering that the majority of the scourges which have afflicted mankind and been overcome have yielded to cleanliness. Ague and small-pox—possibly hydrophobia may soon be added to the list—have yielded to different and special influences, but the plague and the mediæval and early epidemics were banished by cleanliness. Typhus, thanks to the labours of Howard, was influenced by cleanliness as if by magic. Cholera, so fatal in its first visitations before its favouring conditions were understood, wrought terrible havoc where filth conditions prevailed. I am just old enough to remember the cholera epidemic of 1831-2 as it existed in the neighbouring town of Bilston more particularly, where it horrified and paralysed the population and surrounding towns by the alarming suddenness and extent of its devastations. From the different parts of the kingdom no fewer than 52,000 deaths were reported; they were not registered; for until 1837 there were no civil registration and vital statistics, so that the number of deaths stated was probably only an approximation to the truth. In the next visitation of cholera in 1849, over 52,000 deaths by cholera were registered, probably less than in the first visitation. The first public work I ever undertook was to attend during my studentship the victims of this particular epidemic in Birmingham; they were very few in number, and consisted mostly of imported cases; for in Birmingham cholera has never been able to establish itself. The next visitation was in 1854, when, with a purer state of towns, the number of deaths in England and Wales amounted to only about 20,000, for it had become known that filth of air and water and soil was the great promoter of this disease; and Dr. Snow had previously shown that sewage-polluted water, whether of rivers or wells, was one of the principal agents of its dissemination; and yet there are people living in this present year who object to the closure of wells whose water is proved to be polluted by sewage, more particularly when the wells are their own.

In the year 1866, the fourth visitation caused the smaller number of 14,378 deaths. Since then there have been several slight visitations, which were unable to make any permanent settlement in the country, or to cause any serious destruction of life. Greater cleanliness, that is, purer water, purer soil, purer air, appear to have changed the conditions which are necessary to constitute a *habitat* for the disease.

To a less extent, the occurrence of typhoid has become generally less common, and, though it does not appear that filth conditions give rise to the poisons of measles, whooping-cough, and scarlet

fever, there can be no doubt that they seriously aggravate their severity. And yet the old lesson of thousands of years ago is still unlearned. The sanitarian has still to go forth and try to teach that, without cleanliness, health is impossible, and that though much has been done in this direction, very much indeed still remains to be done. In order to effect the required amelioration, we must in the first place secure, as far as possible, cleanliness and purity of air, water, soil, and food. This is the object to which human effort has been directed more or less from the earliest historic times. The Jewish code of laws clearly provides for such conditions with a precision and detail which strike the modern mind as over-elaborate, while the Romans had a system of sanitation which, as regards its baths, its aqueducts, and its gymnasia, magnificent evidences of which, after more than 2,000 years, remain to bear witness of it, excites wonder and admiration. The fact that cleanliness and purity, so much inculcated and practised thousands of years ago, should have been almost entirely neglected in modern times, is not only incredible but for the indisputable proof of it, but is absolutely humiliating. After the fall of the Roman Empire, Europe lapsed into social conditions of filth which became habitual, and some religious orders actually inculcated it as a virtue. Not only have individuals to be taught, but sanitary authorities also require educating on this point. Much remains to be done in the direction of pure water supplies and the preservation of rivers from pollution; the air is still rendered filthy and injurious by overcrowding, want of ventilation, intra- or juxta-mural burial grounds, offensive trades, badly constructed or improperly managed sewers and drains, the keeping of animals near to dwellings, and conservancy systems of refuse disposal which, by retaining in the midst of the living what Nature distinctly tells us should be instantly removed, violate in the most direct and in the most offensive manner one of her greatest and most legible laws, with the inevitable result of exacting the payment of a frightful penalty for the infraction. The surface of the earth has to be rid of cesspools and surface filth of every kind, whether specific or non-specific, and the highest standard of purity aimed at with never-failing persistency. It is difficult to over-estimate the ultimate advantages of such a policy, but we are assured already by past experience that they must be very great to humanity, and will prove the truth of the old dictum that "cleanliness is next to Godliness."

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF ANATOMY AND PHYSIOLOGY.

At the Annual Meeting of the British Medical Association, held in Birmingham, July, 1890.

By D. J. CUNNINGHAM, M.D., F.R.C.S.I.,

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ON CEREBRAL ANATOMY.

Ontogeny and Phylogeny.—The Relation of Convolution to Body Weight.—Homogenetic and Homoplastic Agreements.—The Early Development of the Primate Brain.—The Brain of the Ape and of Man.—Annectant Gyri.—The Development of the Principle Fissures.—The Influences which Produce the Fissures and Convolutions.—The Blood Vessel Theory.—The Influence of "Pulsatory Concussions."—The Influence of the Form of the Head.—The Influence of Varying Rates of Growth.—Jelgersma's Theory.

BEFORE entering upon the subject-matter of my address, I think that it would be only right to congratulate Professor Windle and Professor Allen on having organised a Section of Anatomy and Physiology in connection with this meeting of the British Medical Association in Birmingham. The last few years have been unquestionably a time of marked activity in the domain of both of these subjects. Prior to the foundation of the Anatomical Society, a certain amount of lethargy had crept over anatomists. Individual work and good work was no doubt done, but there was no cohesion—no combined effort.

The Section which we now open I regard as an expression of