ing in proof, and no investigation worthy of the name, that I am aware of, has ever established that the monsoon, or the atmosphere, conveyed cholera to a locality where it had not existed previously.

On the contrary, the local investigations which have been made by Sanitary Commissioners and others have demonstrated the fact that cholera has been conveyed from locality to locality by infected persons or infected things, and has spread in the locality where it has been imported chiefly by contaminated water, contaminated milk, contaminated food, bad drainage, or some cause not ascertained, but not by the winds.

The transportability of cholera by human intercourse in India has been demonstrated over and over again. It was even illustrated in the Hurdwar Khumb of 1879, notwithstanding Surgeon-Colonel Hamilton's diagram, for the vast majority of the pilgrims came from the Himalayas and from the North, North-West and West, and very few indeed from Bengal. In the Hurdwar Khumb of 1891, at which I was present, I don't think more than 500, or at most 1,000, out of nearly a million pilgrims, came from Bengal. Last year I was present at the Ardhodoya Jog in Calcutta, which takes place only once in 27 to 30 years. Cholera broke out in a virulent form, spread in the locality of the festival, and raised the cholera mortality in the city of Calcutta at a season of the year when it is not usual for cholera to appear in an epidemic form. The pilgrims were traced to their homes, and it was found that in several districts they had set up widespread epidemics.

While, however, believing that cholera is communicable in the sense of being carried from place to place by infected persons or things and not by epidemic or pandemic aërial waves, I am not forgetful of the influence of season which undoubtedly is an important factor; and when we come to its local manifestations I am far from thinking that any exclusive doctrine of propagation of the germ in the soil and local infection of the air, as held by Pettenkoffer, or propagation by water as held by others, will explain every local outburst. For instance, epidemics on board crowded emigrant ships, where no layer of soil, wet or dry, or varying in its degree of moisture exists for the elaboration of the poison, tend to show that local causes appertaining to the soil are not essential for the production of cholera. On the other hand I have seen in Calcutta in huts in which there has been an absence of light and air small explosions of cholera which have reminded me more of my experience of typhus fever in Scotland or of diphtheria in England, and which by no manner of means could be traced to contaminated water. Two years ago there was an outbreak in Calcutta which appeared to be directly traceable to sewer emanations. It seems to me, moreover, that exclusive theories regarding the propagation of epidemic diseases is not in consonance with our knowledge of bacteriology, though some media may be much more important than others on account of the different liability to contamination. There can be no doubt, for example, that even in the East the evidence is overwhelmingly in favour of liquids used by man for drink being the most frequent media for the cholera organism, and that the air is not a suitable vehicle unless under special conditions of moisture as may exist in low-lying land near a marsh or river, or under special conditions of air and light as in dark and unventilated rooms or huts or in the forced emanations from contaminated sewers.

It is by reason of the peculiar treatment which water receives in India, especially in Bengal, that the disease continues to break out yearly in an epidemic form. Calcutta is not the only town that has had its cholera decrease more than half by a pure water-supply. Lahore, Delhi, Nagpore and Bombay are in the same position. I have travelled a good deal in the East, and everywhere have taken the opportunity of enquiring into the cholera history of the locality visited, and everywhere I have found the water-supply to constitute the most important factor in the decrease of cholera. Such is the case in Batavia and Pondicherry, which now enjoy comparative immunity by reason of their artesian wells, and similarly in Rangoon, Colombo, Kandy, Singapore and others towns of the East.

My experience leads me to the opinion that widespread local epidemics are mainly due to contaminated water. I acquired an early lesson to this effect in 1883, when I visited Damietta in Egypt to inquire into the cause of the outbreak there, which was the first town affected in Egypt. Damietta is situated on the Nile, which forms a peculiar cup-shaped basin in front of the town during the period at which the river is low. The river at this time was particularly low, so as to form almost a stagnant pool which supplied the inhabitants with their drinking water and at the same time served as the cess-pool for the town. A large fair was held, at which 15,000 persons were present, some of whom came from suspected districts. Cholera broke out and raged with virulence, until suddenly the Nile rose and swept out the polluted basin, and cholera disappeared at once.

REGISTRATION OF STILL-BORN CHILDREN.*

By ROBERT REID RENTOUL, M.D.

BEFORE speaking of the evils arising from the absence of a law providing for the registra-

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tion of still-born children, I shall first refer to those Acts which regulate the present system of registration of births and deaths. I do so because the Act refers to the burial of still-born children; because registration should be carried out by the present registrars; and because a study of the Act may prevent us from perpetuating some of its recognised flaws.

As regards the registration of births and deaths, we see that the legislation regulating it has been built up piece by piece, no effort having been made to deal comprehensively with it. Previous to 1836, registration was carried out by the clergy, who kept parish registers. After the 6th and 7th William IV. was passed, and by it the offices of Registrar-General and district registrars were formed. By this Act registration was voluntary. To rectify this the Act of 1874 was passed, and by it registration was made compulsory, penalties for neglecting to register being provided. Referring to the registration of births, the law enacts that notice must be given to the registrar within fourteen days, by any of the following persons: (*a*) the father and mother; (*b*) the occupier of the house in which to his or her knowledge the birth occurred; (*c*) the person present at the birth; (*d*) or the person having charge of the infant. The informant signs the register and pays a fee of threepence for a copy of the certificate. The penalty for neglecting to register is £2. Attention is called to this because I shall, later on, show that a declaration made by any of the above is all that is required when a supposed still-born child is to be interred.

Regarding the registration of deaths, anyone of the following must notify the fact of death: (*a*) the relative of the deceased present at the death, or in attendance during the last illness; (*b*) the nearest relative resident in the sub-district; (*c*) any person present at the death; (*d*) the occupier of the house in which the death occurred; (*e*) the person causing the body to be buried; or (*f*) the coroner by order, when an inquest has been held. Notice of death must be given within five days next following the death, the informant signing the register. The informant generally takes a certificate of the cause of death, signed by a registered practitioner, which the registrar retains, giving a certificate of registry to the informant, who finally, or through the undertaker, delivers it to the person who buries the body, or performs any funeral service over the body.

From the above it appears the law is more concerned in having the fact of death registered than the cause. Thus, according to the fifty-third annual report of the Registrar-General, 562,248 deaths were registered; but of this total the cause of death was certified by registered practitioners in 514,720 cases; 31,587 were certified by coroners after holding inquests, while 15,947 were not certified; 25,883 deaths were entered under the ambiguous heading "ill-defined and unspecified causes." The figures show that the cause of death is not certified medically in a large proportion of cases. For instance, take the cases certified after a coroner's inquest. Here the fact is not mentioned whether a *post-mortem* has been made, or if medical evidence was called. And remembering some of the findings of coroners' juries—such as "found dead," "death from natural causes," or "death from visitation of God," we can form an idea of the value of a coroner's certificate of the cause of death. Again, take the cases over which the coroner is given power, by section 3 (1) of the Coroners Act 1887, to order the registrar to register a death when no inquest has been held. This includes all "reported to the coroner independently of the registrar." To explain: a child is found dead, and the fact is reported to the police. No medical certificate of the cause of death is obtained, because previous to death the child was not under medical treatment. Here the police constable steps in, asks a few questions, sends off his report to the coroner; and the latter, on receipt of this report, sends a certificate to the registrar, stating that he "does not consider it necessary to hold an inquest respecting such death." A special form of certificate is provided by the registrar-general. Again, notice those deaths referred to the registrar, and where no medical certificate of the cause of death is obtained. Here the registrar asks some questions of the informant, and if satisfied, registers the death, adding that it is "not medically certified." If the registrar is not willing to accept the risk, he refers the case to the coroner, who orders his official to make inquiries. If this officer is satisfied, so generally is the coroner, therefore no inquest is held. Such systems are open to the greatest abuse. The abuse springs partly from the facts that the coroner does not wish to increase the costs of his office, and because the police do not care to interfere unless they are certain of obtaining a conviction if a prosecution is instituted. They are aided by some coroners who seem to think their whole duty is to detect crime, and not to find the cause of death.

These defects would be removed if (*a*) the office of registrar of births and deaths were held by medical practitioners, as is the case in Ireland; (*b*) if the medical certificate of the cause of death were sent by practitioners *direct to the registrar* and not to the relatives, and that it would be illegal for the practitioner to use any form of certificate of the cause of death other than that provided by the Registrar-General; (*c*) if no body could be buried until the death had been registered; (*d*) if the informant's signature to the fact of death had to be witnessed by two witnesses; (*e*) if the law provided for

the payment for the certificate of the cause of death, and (*f*) if the medical certificate of the cause of death were so altered that the practitioner be called upon to certify of his own knowledge that the person of whom he has given a certificate of the cause of death is actually dead, instead of stating he is "informed" the person is dead. I think our present certificate could be so altered, because section 44 of the Act of 1874 provides that it shall be lawful for the Local Government Board, by order, to alter, from time to time, all or any of the forms contained in the schedules of the Acts from 1837 to 1874, or to prescribe new forms, or to revoke and alter any regulations.

It would be much better if a medical inspector were appointed to examine the dead body when no medical certificate of the cause of death is obtainable, instead of sending a police constable or a coroner's beadle to do this. In France, Germany, Brussels, Vienna, Switzerland, and other continental countries, the law enacts that every dead body, without exception, must be examined by a medical inspector, while no body can be interred until this has been done.

In Paris the mayor appoints a medical officer for each district, and when a death occurs it is reported to the civil authorities. These communicate with the medical inspector and await his reply. In this country the bodies of still-born children should be visited and reported upon; also, at least, all deaths registered under "ill-defined and unspecified causes." It would be best if the medical officers of health were appointed to act as medical inspectors. In Denmark, by the Inspection of the Dead Act 1878, all dead bodies, still-born included, are inspected by legally qualified medical practitioners.

The only part of the Births and Deaths Act which refers to the burial—not the registration—of still-born children is section 18. After enacting that a person shall not wilfully bury, or cause to be buried, the body of any deceased child as if it were still-born, it goes to enact that "a person who has control, or ordinarily buries in any burial ground, shall not permit to be buried, or bury in such burial ground, any still-born child before there is delivered to him either a written certificate, signed by a registered medical practitioner, that he was in attendance at the birth of the child, or that he has examined the body." If such a certificate cannot be obtained, then a declaration, provided for in the Act, must be made and signed by some person who would, had the child been born alive, have been called upon to certify—that is, the father and mother, or the occupier of the house, or the person present at the birth, or the person in charge of the child, or an order of the coroner when he has held an inquest. Any person contravening this section may be fined £10.

A "Book of Forms of Medical Certificates of Still-births" was issued by the Registrar-General's Office to registrars of births and deaths as late as March 1891. This book is free to medical practitioners. Each certificate consists of two parts—one to be filled up when the practitioner was present at the birth, and the other when he has examined the body but was not present at the birth. Both require him to certify that the child was not born alive, and that the woman named was delivered of a child—two difficult questions to answer, as will be seen when we consider the signs of still-birth. The certificate is handed to the person having control over the burial ground, and not to the registrar of births and deaths.

When no medical certificate is obtained, the person bringing the body for interment must sign a declaration, stating that the body is the child of so and so, that no practitioner was present at the birth, that no practitioner has examined the body, and that the child was not born alive. This is signed by the informant and is retained by the sexton.

These regulations for the burial of children supposed to be still-born are very imperfect. The burial—if burial there be—takes place without the intervention of the registrar of births and deaths, and frequently without a medical certificate. Who controls the burial? The Act refers to the person "who has control over, or ordinarily buries, babies." When this person is the superintendent of the burial board cemetery a certain supervision is provided; but when the gravedigger or parish sexton is the official, how can there be any feeling of security? Supposing this person is shown a certificate, said to be signed by a registered practitioner, does he know whether it is, or is not, a proper certificate? The person legally permitted to sign the declaration is "any person present at the birth, or the person in charge of the child." Suppose it is signed by some old woman, or unqualified assistant, I ask, what protection such a declaration gives to the public that many children born living are not interred as still-born, and that they have not been subjected to some malpraxis during or soon after birth? Thus, any person can prevent a child which is being born from breathing, put it in a soap box, take it to the parish sexton, make a declaration that the child has not lived, give the sexton a few coppers, and the *murder* is completed. At present very few prosecutions take place. In 1890 only nineteen prosecutions under the Birth and Deaths Acts were instituted by the Registrar-General, and only one for permitting a child to be buried as still-born without a certificate that such was the case. One prosecution!

I shall next try to answer the question, How many still-born children are interred each year in England? When in 1890 a Midwives' Regis-

tration Bill was introduced in the Commons, to enable women to practise midwifery, without their having either a medical or surgical qualification and therefore placing them on a different footing to other midwifery practitioners, it occurred to me that this strange proposal should be opposed until at least provision had been made for the efficient registration of still-born children. In order to arrive at some finding as to the number interred, I wrote to some 100 burial boards, asking each what number of still-born children had been interred? I found that in seventy-one burial board cemeteries, 6,321 still-born children had been interred in burial board cemeteries in England and Wales. In 1890, Dr. Cameron called attention to this statement in the House of Commons, and moved for a return showing the number interred in burial board cemeteries in England. This return was issued in July 1891, and we must thank Dr. Cameron and the Hon. C. T. Ritchie, President of the Local Government Board, for it. From it we learn that in 1,133 burial board cemeteries, 17,335 children, *supposed* to be still-born, were interred during twelve months, and that 4,569 of these were buried without a medical certificate. This return is very incomplete, as it does not include Ireland or Scotland. Neither does it give us any account of those interred in the parish or other burial grounds. And in connection with this I have been told that the parish churchyards are the commonest receptacles for still-born children. According to the "Official Year-Book of the Church of England," there are 13,988 benefices in England; and if only half of these benefices, not to mention those in Scotland and Ireland, have church-yards attached, we see what an enormous quantity of still-born children must be interred in them.

It is impossible to give any idea of the number thrown into ashpits, or sewers, or buried in gardens, or burned (see Return). A painful feature brought about is that the number of interments in certain large towns is very great. Thus in Lancashire: Blackburn had 298 such interments; Bolton, 262; Burnley, 197; Preston, 150; Rochdale, 130; Warrington, 113; Oldham, 285; Walsall, 154; Hanley, 148; Liverpool, 1,383; Salford, 294; Manchester, 299. Newcastle had 267; and London, 2,121. These figures do not include all interred, as there are burial grounds in Manchester other than burial board cemeteries. Of all burials in the above, one in every 13·8 buried was a still-born child. The above figures give us but a glimpse as to the number interred. Farr, when giving evidence before the Committee on th eprotection of infant life, in 1871, estimated that there were from 30,000 to 40,000 still-births in England each year. With our present population, the number cannot be less than 60,000. Had the ages of the still-births been given in the Return, I venture to say it would have shown that almost all interred had reached the full term of nine months.

If children under the seventh month of pregnancy and abortions were included, then at least 178,164 must be added to the total; that is, supposing as I have tried to show in my work on "The Causes and Treatment of Abortion," the number of abortions to the total births is one in five.

An instructive addition to this Return would have been statements showing what proportion of illegitimate children had been still-born. It is well-known the illegitimate child, from its very conception onward, has to run the gauntlet of many attempts upon its life which the legitimate child has not to encounter. Statistics prove that the number of still-births among the illegitimate births is much greater than among the legitimate. In the *British and Foreign Medical Review*, No. 7, it is stated that the proportion of still-births among legitimate children, basing the calculation upon 8,000,000 of births, is one in eighteen or one in twenty; while among the illegitimate and immature it is one in eight to one in ten. Bortillon states that the chance of an illegitimate child being still-born, when compared with the legitimate, is as 193 to 100. In "Denmark: Its Medical Organizations and Hygiene," it is stated that of 100 legitimate births 2·6 per cent. are still-born, and of the illegitimate 4·1 are still-born.

It may also be stated that in first labours one in eleven are still-born, and in other labours one in thirty-two, and more males than females in proportion of fifty-six to forty-four. I have mentioned these facts because any certificate of still-births would state the age and sex of the child, and whether its mother was single or married.

Referring next to the number of still-births, I may say that in

Country.	Year.	Still-born.	Total Births.	Proportion to Population.
Prussia ...	1889 ...	42,084 ...	1,094,668 ...	1 in 26·01
France ...	1875 ...	43,834 ...	880,597 ...	1 in 20 08
Netherlands	1890 ...	7,374 ...	150,529 ...	1 in 20·4
Switzerland	1890 ...	3,072 ...	78,548 ...	1 in 22·2
Sweden ...	1890 ...	3,557 ...	132,069 ...	1 in 37·4
Denmark ...	1889 ...	1,933 ...	66,239 ...	1 in 34·2

It will be readily seen the total number of still-births must vary in each country according to the *legal* definition of "still-birth," as if one country enacts that all still-births over six months be registered, while another fixes the age at seven months, or at eight months, a great difference will be shown in the figures. It is to be remembered that in France, all children live-born, and *others* who die before being registered, are entered as "still-born." The custom in Denmark, until 1860, was that all those dying within twenty-four hours after birth, were registered as still-born.

(*To be continued.*)