

maleoli. Mr. Marsden did not think it advisable to interfere with the articular surface of the tibia, as is generally done. The hæmorrhage was very trifling, only one vessel requiring tying. For several days after the operation, there was a copious discharge of an unhealthy character, with an almost gangrenous appearance of the stump. Free incisions were made for the escape of pus, and a strong spirit lotion constantly applied. Under this treatment, combined with good living, her health daily improved. Healthy granulations were thrown out, the wound rapidly filled up, and she was, on Sept. 20th, able to leave the hospital, the stump having healed, and being of a good shape. On examining the foot after its removal, the whole tarsus was found in a softened and spongy condition, especially the os calcis and astragalus, which were nearly destroyed, and apparently infiltrated with a fluid of an oily nature. Subsequently to her discharge from hospital, the stump appeared healthy and firm, and permitted the weight of the entire body upon it without any uneasiness.

## Medical Societies.

### ROYAL MEDICAL & CHIRURGICAL SOCIETY.

TUESDAY, NOVEMBER 9TH, 1858.

DR. J. A. WILSON, V.P., IN THE CHAIR.

#### A STATISTICAL INQUIRY INTO THE CAUSES OF EPIDEMICS OF SCARLATINA, MEASLES, SMALL-POX, AND FEVER.

BY R. HALL BAKEWELL, M.D.

THE author was led to frame the calculations on which this communication was based, in attempting the solution of such questions as these:—Why, in any given year, certain places were visited, while others escaped? Why those which escape one year are visited subsequently? And, why the average mortality from any one of these diseases, during a period of years, is so much larger in one district than in another? He went on to state, that the materials he has used are the published Returns of the Registrar-General, which, since the year 1848, have given the number of deaths from each disease, in each registration county; and also a large mass of unpublished documents relating to town districts, which were placed at his disposal by Dr. Farr. He selected twenty-three of these, comprising sea-port, manufacturing, hardware, and county towns, as representing, on the whole, pretty fairly the town districts of England. The period over which the calculations extend includes the seven years ending 1854; and the deaths from the selected diseases are calculated with reference both to the whole mortality and also to the population as obtained at the census of 1851.

With reference to small-pox, the inquiry was not carried far because of the impossibility of ascertaining how far the individuals were protected by vaccination. Ignorance, especially on the part of the mother, being probably the most constant obstacle to the practice of vaccination, it was interesting to observe that, taking the ability to write as the test of education in the eleven best-educated counties, where only thirty or forty per cent. of the females signed the marriage register by mark, the average mortality from small-pox was 13·5; while, in the nine worst-educated counties, where from sixty to seventy females in a hundred signed the marriage register by mark, the average mortality from small-pox was 22·4. The deaths throughout England had fallen from 7320 in 1852, to 2808 in 1854.

The visitations of measles are liable to very great variations; and, in this respect, it presents a true epidemic character, the annual deaths varying, in some instances, as much as from 1 to 134 in county districts, and from 2 to 301 in towns. The mean mortality of all England from this disease, during the seven years, was 27 per 10,000; in the registration counties, it ranges from 5 to 55—Rutland being the lowest, and Staffordshire the highest. In towns the averages are higher, ranging from Canterbury, 18, to Wolverhampton, 76. From an analysis of the weekly mortality from measles in London, during ten years, and the meteorology of the same and the previous weeks, the author is led to believe that changes in weather have considerable influence over the fatality of measles,

and he concludes generally that local causes have but little to do with the mortality from this disease.

Scarlatina he also regards as a true epidemic. Its main mortality was as high as 66 per 10,000 inhabitants during the seven years; while of measles it was only 27, and fever did not exceed 70; the latter being a disease which attacks all ages, while scarlatina is very much confined to childhood. Like measles, scarlatina is pre-eminently fatal in towns, and, while this is partly due to over-crowding, the author thinks that another circumstance is even more influential. His attention was first called to the subject by a remark of Mr. Balding, Registrar of Middlesex Hospital, that the worst cases of scarlatina often occurred amongst the middle classes. Taking the number of persons receiving parish relief as a measure of the wealth of any district, he has found that the mortality from scarlatina was always in an inverse ratio to the pauperism. In eight counties, with a ratio of deaths from scarlatina of 31·5 per 10,000 inhabitants, the pauperism is 45·5 per cent.; in eight counties, with a death-rate of 73·8, the per centage of paupers is only 27·3. Again, in five counties, with a pauperism of only 20·6, the mortality is 71·2; while in five, with a pauperism of 54·6, it is only 37·8. Density of population and geographical position each exercise a very decided influence over the mortality of scarlatina. In the western counties it is highest, and in the southern lowest. No influence could be traced to meteorological changes; the epidemic commencing at very varying periods of the year, extending over several months, and being followed by periods of comparative quiescence, it was extremely improbable that any constant conditions of atmosphere should accompany their progress.

Under the general name of fever, he embraces all the varieties of this disease described by authors. As thus understood, he asserts that it is not an epidemic disease. It is endemic in every county and in every district; the number of deaths from year to year do not vary more remarkably than those of phthisis or hydrocephalus, while it differs most strikingly from measles and scarlatina in the absence of those abrupt variations in the annual deaths. The causes of the disease must, therefore, be such as are in constant operation in every locality. The result of the Irish famine leads him to the conclusion that food deficient in quantity and quality, especially as associated with filth and foul air, is one of the circumstances most powerful in giving rise to the disease. With this view he has analyzed with much care the ratio of the fever mortality in the different registration counties with reference to the following circumstances—1st, the density of the population; 2nd, the probable amount of ventilation, as shown by the average number of inhabitants in each house; and 3rd, the poverty of the population, as shown by the per centage of paupers. He concludes that the last has a far greater influence than either of the former. The mortality from fever is somewhat influenced by season, the autumn and winter quarters being the most unfavourable. In the northern counties the deaths are very much fewer in proportion than throughout the remainder of England, and the largest mortality occurs in the west-coast counties. With reference to age, while none is exempt, the lowest range is found between the ages of 10 and 15; from this period it steadily increases with advancing years.

The paper is illustrated by very elaborate tables and diagrams.

DR. WILSON, in referring to one of the statements in the paper, that scarlet fever was less fatal amongst the poorer than the richer classes, said the question would naturally arise how far the diminished mortality amongst the higher orders was due to such patients having more physic than the poorer patients. (Hear, and laughter.)

DR. WEBSTER corroborated the statement of the author respecting the prevalence of small-pox in Devonshire—a fact demonstrated by the immense number of blind people who had lost their sight by that disease. It was well known that a prejudice existed against vaccination in that county, and that consequently small pox was exceedingly prevalent and destructive. His opinion, as regarded the mortality of scarlet fever amongst the lower orders, was opposed to that of the author of the paper. He had found that disease very fatal amongst the poor; it was often epidemic in manufacturing districts, where the people were badly fed and badly housed, and in which there was bad ventilation. No doubt, the over-feeding of children amongst the higher orders might be attended by a greater mortality amongst them when they were attacked with scarlet fever.

DR. COPLAND said that the points advanced in the paper required further investigation. The author failed in one very important element in the inquiry: he had neglected to

mention, in his estimation of the mortality from disease, the number of attacks to which persons in different ages of life were subjected. Measles and scarlet fever were diseases usually of early life, but it had been shown that when measles attacked adult persons it was comparatively more fatal than in earlier periods of existence. An epidemic of measles occurred at the Cape of Good Hope some time since, the disease not having appeared in that colony for nearly twenty-five years previously. The adult persons who were attacked suffered most severely from the disease, and one-third of them fell victims to it. The same rule held good with regard to scarlet fever. That disease was no doubt, as a rule, more fatal and malignant in fat and well-fed than in thin, spare children. He agreed with the statement of the author, that fever was more prevalent in agricultural districts than in towns; but this arose from the labourers generally living in huts with mud floors, the exhalations from which would be most prejudicial to health. The agricultural labourer also experienced the great disadvantage of an inadequate supply of pure water, which was obtained generally from neighbouring rills or small rivers, which contained the exuviae of the inhabitants.

Dr. MURCHISON said that the author of the paper had lost sight in his calculation of a most important fact: he had not given the relative mortality in comparison to the prevalence of disease. The fatality had often no reference whatever to the number of attacks. The mortality compared with the prevalence of disease was different at different times in different epidemics, even in the same year, and in different places, consequently no just conclusions could be drawn from the statistics advanced in the paper. Under the head of fever, various diseases were classed together in the Registrar-General's reports, and, as Dr. Farr well knew, no conclusions could be drawn from these documents. Under the head of typhus very distinct forms of disease were classed together, and hence arose a most dangerous fallacy as to the amount of mortality from this malady. He denied that typhus was to be classed as an endemic disease. Typhoid fever, no doubt, was endemic, whilst typhus, on the contrary, was essentially epidemic. True typhus fever had been almost absent from London for the last six months. No case of typhus fever had been admitted during that period into the Fever Hospital, and in the other hospitals the cases of fever were of the typhoid kind. He referred to a paper which he had read during the last session of the Society, "On Typhus and Typhoid Fevers." He would therefore not enter more fully into the discussion of these maladies, inasmuch as in the forthcoming volume of the "Transactions" his views would be open to the investigation of the fellows, and they would there learn the conclusions at which he had arrived.

Dr. A. P. STEWART said that the author of the paper was of opinion that fevers were all of the same type, but in this he was certainly wrong. Typhus fever was epidemic; typhoid fever was endemic. He had been struck with the gravity and mortality of scarlet fever amongst the higher orders, whilst amongst the poor its gravity and mortality were very much less. With respect to the prevalence of small-pox in Devonshire, this was explained by the general practice of inoculation, which created an artificial epidemic, and a consequent mortality.

Dr. BURROWS agreed with Drs. Copland and Murchison respecting the deficiency in the paper of the comparative mortality taken with reference to the frequency of the attacks of the disease at different ages. He differed with the author of the paper respecting the conclusions he had drawn regarding the mortality of fevers. The author had confounded several diseases together, and hence the conclusions at which he had arrived were not to be relied upon. He (Dr. Burrows) corroborated the statement of Dr. Murchison, as to the infrequency of continued fever in London during the first nine months of the present year. In St. Bartholomew's Hospital, from Christmas last to the 1st of September, not more than one or two cases of typhus fever had been admitted into that institution in the course of a single month. Since that time the wards had been full of cases of fever, but they were of the typhoid kind. He did not wish to use any harsh expression, but he must say that, if the conclusions of the author were to be received, they would establish error, and not support truth.

Dr. WILSON remarked that the statements which had been made that evening offered a striking commentary on the panic which had seized upon all classes of persons in the metropolis respecting the state of the public health during the greater portion of the year. It was proved incontestably that, notwithstanding the state of the Thames, the diseases to which its pollution was assumed to give rise were never less prevalent than during the period of its worst condition. (Hear, hear.)

## MEDICAL SOCIETY OF LONDON.

MONDAY, NOV. 15TH, 1858.

DR. WILLSHIRE, PRESIDENT, IN THE CHAIR.

MR. BAKER BROWN related the two following cases:—

L. P.—, aged twenty, married two years; no children. Soon after marriage she noticed an increase of abdomen, which went on until March, 1858, when she had an attack of peritonitis. This was subdued, but she soon relapsed. After various remedies, she was admitted into the "London Home" on October 12th. Multilocular ovarian dropsy, with adhesions on the anterior and lower part, was diagnosed. On October 20th, Mr. Baker Brown proceeded to operate. He made an incision from the navel to the pubes, and removed a cyst weighing about fourteen pounds. The adhesions were numerous, but were easily broken down. The pedicle was secured by a clamp fixed externally. The wound healed by first intention as far as the pedicle, and the patient up to the present time has not had a single bad symptom.

A. P.—, single, aged twenty-six, perceived a swelling low down in the right side, which at first increased rapidly, but afterwards more slowly. After various remedies, she was placed under Mr. Jackson, of Sheffield, who discovered ovarian dropsy, and recommended her to Mr. Brown's care. He discovered multilocular ovarian dropsy without adhesions. After proper preparations, Mr. Brown proceeded to operate, and made an incision from the navel to the pubes, and removed a cyst weighing upwards of 22 lbs. On puncturing, a large quantity of fluid escaped, and the walls of the tumour were so rotten as to be broken down with very slight pressure. The pedicle was secured by a clamp fixed externally. As in the previous case, the wound healed by first intention as far as the pedicle, and up to the present time the patient has not had a single bad symptom.

Mr. BAKER BROWN also showed a new instrument invented by his colleague, Mr. Philip H. Harper, for securing the pedicle in ovariectomy. It consists of two flat blades, three inches and a half long, without the handles, and united by an easily-moving joint at one end. Each blade is half an inch in breadth, and a quarter in thickness. The inner surface of one is concave, and of the other convex. The convexity is so worked as to fit into the concavity of the former. At a distance of two inches and a half from the joint is fixed a slightly-curved bar, with saw teeth on the external side; this bar passes through an opening made in the opposite blade, worked into a rack-catch, so that the teeth of the bar lock into it. On the external edge of this opening is fixed a steel spring, which, when the bar is passed through, presses it upon the rack, so that it cannot slip or move without being pressed back. The handles, which are removable at pleasure, are strong, and about five inches long. The action is very simple. The blades being opened wide, and the pedicle pressed in between them and the cross bar, are then closed, and brought tightly together. The pedicle is thus bruised without being cut, and all chance of hæmorrhage prevented. The handles are then removed, and the clamp itself left on. It can be easily taken off whenever it may be considered advisable.

Mr. HUTCHINSON remarked that he thought we could scarcely lay too great stress on the importance of bringing the extremity of the divided pedicle out of the wound. This was the grand improvement in ovariectomy. He believed that it might, by proper measures, be accomplished in almost all cases, and that if it were, we might, without unfairness, throw aside all statistical calculations of the mortality of the operation on the old plan. Without doubt, the easiest and quickest mode of securing the pedicle was by means of the steel clamp, which he had himself been the first to use, and of which he was glad to hear that Mr. Brown so highly approved. There were cases, however, in which, from the shortness of the pedicle, its use would be inconvenient. In each he would advise the operator to put on a single whipcord ligature, and then cut into the tumour itself so as to leave a considerable portion by which to prevent the end from slipping off. It would not then be necessary that the ligature should be brought to a level with the skin, as the purpose would be gained if it were only kept above that of the peritoneum. He adverted also to other manœuvres by which a short pedicle might be yet brought out externally. To prevent hæmorrhage from adhesions he would advise, in the first place, that no cutting instrument should be employed in the separation of the latter; and, secondly, that any bleeding vessels should be compressed by means of peculiar forceps contrived by Mr. Webber for that