AN ADDRESS

ON

THE WORK OF A MEDICAL OFFICER OF HEALTH, AND HOW TO DO IT.*

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I AM induced to lay before you the following remarks, from the fact of my having received lately very many inquiries from my brother associates, as to what the duties of a Medical Officer of Health were, and how they were to be done. I will hope that it will not be considered presumptuous on my part to thus lay my views before you, when I tell you that, for the last twenty-four years, I have been a watchful student of the causes deteriorating the Public Health, and for the last seven years have held the medical officership of health in my native town, Merthyr Tydfil.

The Duties of a Health Officer.—These have been briefly, yet comprehensively, stated in the minute adopted by the Local Board of Health of Merthyr, in January, 1866.

"1. To ascertain what local causes prejudicially affect the public health in this district, to inform the Board of these discovered causes, and to suggest such means for their removal as medical science can advise.

"2. To seek information of the occurrence of cases of epidemic, endemic, or contagious diseases, and when informed to visit the localities, ascertain the extent of the malady, the local causes likely to conduce to the diffusion thereof, and give such warning as may induce the persons affected to have recourse to medical treatment. In case of an outbreak of small-pox, to inquire into the history thereof, and as to the practice of vaccination in the neighbourhood.

"3. To inspect any meat exposed for sale for human food, whenever required so to do by an officer of this Board, or any police officer, and to give his opinion as to the fitness or otherwise of such meat being used for human food, whenever required by a Justice of the Peace.

"4. Upon any complaint received by him of the emission of any noxious or offensive smell from any process of trade carried on in any manufactory, yard, house, or premises, or of atmospheric pollution from any drains or sewers, to inquire into the causes, and report upon the means for the prevention thereof.

"5. To perform any duties imposed by any Act of Parliament on the Officer of Health, or Sanitary Inspector.

"6. To attend the meetings of the Local Board when necessary.

"7. To report quarterly the nature and amount of sickness and death, the number of births, and of persons vaccinated; and to present annually a report and tabular return of the ascertained sickness and mortality of the district."

The foregoing being a summary of the duties, let me tell you how I have endeavoured to carry them into practical working. Under the seventh heading, it will be observed that quarterly and annual reports had to be prepared and presented to the local authority. After consulting the admirable reports of Dr. George Buchanan, formerly Medical Officer of Health of St. Giles, and Dr. Henry Littlejohn, Health Officer of the City of Edinburgh, I adopted a form of report (a copy of which I lay before you), which I have continued to use and to present to my Board each year. By passing in review the several chapters and sections into which this report is divided, I shall be able, I trust, to convey to you some idea of the subjects with which a Medical Officer of Health will have to become acquainted, and to inform you of the sources from which the desired knowledge may be obtained.

A report on the sanitary condition of a town or district should, in the first place, show the numbers of the people, their ages, occupations, characteristics of their dwellings, geological formation of the soil on which those dwellings are placed, the watershed of lands, the aspect of those lands and of the habitations of the people, and the varying meteorological conditions, such as rainfall, exposure to particular winds, variations of temperature, etc., to which the population are exposed.

In the second place, statistical information should be given of the marriages, births (legitimate or illegitimate), vaccinations, and deaths.

Under a third head should be included all those external circumstances which affect the health of man, such as the quality, sufficiency, and price of food, and the means of earning such sufficiency; the quality

and quantity of the water-supply; and the mode of disposing of refuse.

Lastly, the sanitary works that are in progress, or are desirable, the legislative powers which have been given or are wanted, the practical working of the statutes giving those powers, and the imperfections observed in their application; these all require elucidation, and should be plainly set before the governing authority.

Let me now proceed to point out, how the work summarised in the foregoing paragraphs is to be done.

Population.—This will be ascertained from the returns of the last Census, and the most ready sources of information are: 1. The Quarterly Returns of the Registrar-General. These are published at a very small cost; the numbers to be ordered for this year, would be Nos. 93, 94, 95, and 96, which last will be issued on February 1st, 1873. 2. The Annual Reports of the Registrar-General. The last published is for the year 1869, and is numbered 32. For details of population, inquiry should be made of the Superintendent-Registrar of the district; this officer can readily give the numbers of houses in each hamlet or tything or subdivision, the number of separate families, and the totals of these in each subregistration district. Most unions publish half-yearly, "Abstracts of Poor-law Relief," and generally much useful statistical information is printed therein.

Ages and Occupations of the People.—For these, for the present, the census-returns of 1861 must be sought out. I fear that many of these valuable documents will have passed to the butter-merchant; at least, I have wholly failed to obtain copies of certain numbers. These returns are published in *volumes*, and in *tables*; "Volume 3, General Report" and Tables 1, "Areas, houses and population," and 2, "Ages, civil condition, occupation, and birthplaces of the people," are the portions the study of which is essential to the full knowledge of the proclivities of the population to diseases by reason of their residences, ages, or occupations. These tables are published in "Divisions," which correspond in number with those used in the Quarterly Returns already referred to; thus all the details relating to the south-western counties would be found in "Division 5," while those of Monmouthshire and South Wales are contained in "Division 11."

Geological Formation of the Lands.—This would be learned from the coloured Ordnance maps, and from the special sections published by the Surveyor-General. Local inquiries would quickly bring to light any peculiar formation or deposit, such as clay-bands preventing the downward passage of water, or the hard "pans" of certain districts in Surrey and elsewhere.

The Watershed of the surface lands should be carefully ascertained, especially of those areas on which tenements have been built; the aspect of the various subdivisions into which the district may, by natural boundaries, be separated, and of the lines of streets in these subdivisions, should be carefully noted, so that their exposure to particular winds, and hence the liability of the inhabitants to particular acute diseases, may be borne in mind. The elevation of these various subdivisions above the sea-level would also need to be ascertained.

The Meteorological Conditions of the district, such as the atmospheric pressure, prevalence and force of winds, degree of humidity, daily temperature and rainfall, all should be accurately observed and recorded. The books published by Mr. G. J. Symons will be the safest guides as to the modes of observing and recording, while Buchan's *Handy Book of Meteorology* will afford the fullest information.

The Water-Supply of the district should next engage the Health-Officer's most earnest attention. Diligent personal inquiry will be needed to collect all the information attainable as to the sources whence the waters are drawn, the quantities obtainable, and the purity of the supply. The works of reference to which he should have recourse for guidance, are Parkes on *Practical Hygiene*, Bowman's *Practical Chemistry*, and (with especial reference to the polluting presence of ammonia), Wanklyn's *Treatise on Water-Analysis*.

Habitations of the People.—The sanitary condition of each house in the district should be carefully inquired into. This inquiry could not economically be done by the Health-Officer himself, but can be efficiently arrived at, by entrusting the house-to-house inspection to competent observers, appointed and paid by the local authority, and directed by the medical officer. Such an inquiry was made in Merthyr in the autumn of 1866; nearly 10,000 houses were examined and reported on by four intelligent persons; five weeks were occupied in the examination and report, the cost to the local board being £25. This inquiry embraced the following:—The name of the street, number of each house, names of occupier and of owner, number of family and of lodgers; the ventilation, how it was secured, whether by back doors, or by windows whose upper sashes could be fully let down; the number of privies or of water-closets, and the state of these; the water-supply, whence derived, and the state of any back premises, noticing particularly whether any animals or poultry

* Read before the South Wales and Monmouthshire Branch.

were kept there. When these returns were completed, they were tabulated by the medical officer, for each street in each district, and the results summed up. The usefulness of these returns has been continuous. They now afford standpoints of reference whence to mark the improvements made, and to note the dark spots that call for amendment; by referring to this "Dictionary of Habitations," the state of each house is at once apparent, and upon the occurrence therein of any case of disease, such as, *e. g.*, enteric fever or phthisis, the exciting cause, whether excrementitious exhalations, or dampness of foundations, may be found.

Drains and Sewers.—The Town Surveyor would be the person from whom all details, connected with the drainage and sewerage of the district, may be learned. The lines of these, their formation, the kinds of gully-traps and closet-pans used, the connections between the sewers and cesspools (if any), the condition of these polluting collections, their contiguity to wells or springs, or dwellings; these matters each need, and should have the most careful consideration.

Having thus obtained a full knowledge of the factors of diseases which surround man in his dwelling, and in his journeyings, the Health-Officer should next proceed to seek for statistical information as to the marriages, births, vaccinations, and deaths which have been recorded in the district assigned to his supervision. The sources of information on all these matters are, in each registration district or subdistrict, the Superintendent-Registrar, or the District Registrar of births, marriages, and deaths.

Marriages, Births, &c.—The numbers of births should be ascertained weekly by returns from the District Registrar, and should be classified for male and female, and legitimate or illegitimate. The number of marriages would be given quarterly, on application to the Superintendent Registrar, who can also supply a return of the numbers of children, etc., successfully vaccinated. The ages, under one year and above one year, would also be given; by comparing the number under one year of age vaccinated in each quarter with the number of children born in the previous quarter, the Health-Officer would be able to form an opinion as to whether the practice of vaccination was or was not sufficiently carried out. The death-roll should also be obtained weekly from the District Registrar. The return should state the date of death, the residence, names, age, sex, and occupation of the deceased, the cause or causes of death, and whether such cause had been certified by a registered medical practitioner, or by a coroner, when an inquest had been held. I lay before you a blank form of the return which I use. The cost of the weekly returns of births and deaths is £8 per annum; the mean number of births being 2000, and of deaths 1400, out of a population of 50,000. To obtain these returns, application should be made to the Registrar-General by the local authority; the consent being obtained, the District Registrar would weekly fill in and forward the returns, the Local Board remunerating him for his labour, and of course providing him with the forms in blank.

Having obtained these returns, and learned by careful perusal the diseases which have proved fatal, the Health-Officer should make note of every case of *presumed preventable disease*, and inquiry be at once instituted into all cases of epidemic contagious fevers. Indeed, a diligent and constant study of these death-rolls will quickly direct the attention of the Health-Officer to the plague-spots of his district; and, when his attention has been once drawn to them, he will not cease to seek for the causes of disease, and, when they are discovered, he will continuously endeavour to get them removed.

The Tabulation of the Mortality Returns, according to districts and streets, etc., will occupy very much of the time of the Health-Officer; but it is absolutely necessary that this should be done, as without such a sorting of the causes of death, and setting down to each locality its due share of the gross mortality, no man can fully perceive the close connection between insalubrious houses, or courts, or alleys, and the death-rate in such places. My habit has been to set down under each division of the district the details of the mortality of each week; thus: Week ending —, male or female, age, cause of death, age at death. Summing up these each quarter, I obtain the numbers of males and females, the numbers under and over five years, the causes of deaths, and the total of years lived by the whole number. This total, divided by the whole number, yields the average age at death. From this district ledger (as it were), I post all cases of death into the several headings of the general mortality table, placing opposite the name of each disease, under one of the several ages, the score of the particular death of the male or female. The sum of the deaths from each cause, the sums of the deaths from each class of disease, and the total of deaths would be brought out in the columns on the extreme right; while the base line of each column would show the mortality at each age. The table at the end of my second annual report will illustrate my description.

A glance at tables so constructed would point out the excess or

diminution of deaths from all causes, and from particular causes. Thus the facts that particular diseases had increased, or diminished, would be plainly displayed. The books which would guide a medical officer in preparing such abstracts of mortality, are: 1, the Nomenclature of Diseases, as published by the Royal College of Physicians; and 2, the Annual and Quarterly Reports of the Registrar-General, already referred to.

Passing on to the *third* heading, the *Food of Man* should occupy the earnest attention of the Health-Officer; the quality of the main articles of food by which human life is supported—flour, oatmeal, potatoes, meat, etc.—should be inquired into. In Dr. Parkes's work already named, all the needful instructions for ascertaining the purity or otherwise of these may be obtained. In addition to ascertaining the quality of the food, the Health-Officer would also inquire into the *quantity* of food supplied; this will largely depend upon the *prices* of food. These may be learned by personal inquiry of the dealers, and also from the Clerk to the Guardians; this officer would give copies of the prices paid for articles of food obtained by the Guardians. These prices may be taken as a fair average of what is paid in the district for the food consumed by its inhabitants. The *means* whereby man obtains his food should next be inquired into; what may be the *rate of wages* earned by the working men in the several branches of trade or commerce carried on in the district would call for much personal inquiry on the part of the Health-Officer. The replies obtained would enable him to form a fair comparison of the rate of wages with the price of food; the conclusion which he may deduce therefrom should be fully set forth. Under this heading should also be considered the *numbers of the paupers* permanently and casually relieved in the district. These numbers would be a very safe criterion of the prosperity or otherwise of the trade and commerce carried on. The facts required may be learned from the half-yearly abstracts published by the boards of guardians. To the question of the water supplied to a district, I have already alluded.

The concluding subject of inquiry comprises the progress in sanitary works, and the working of the legislative powers given by the statutes.

Having carefully mastered the various details above-named, with much labour and long toil, the Health-Officer would endeavour to form some notion of the executive duties he would have to perform. Here, primarily, he should bear in mind this golden rule: the Health-Officer is the *medical adviser* to his Board, and should not, in any instance, proceed to any *action* until so directed by order of his Board. It is not, therefore, necessary that he should seek for nuisances, or interfere in any way in the duties apportioned by the Board to the Surveyor, or to the Inspector of Nuisances; but, as it is necessary that he should be kept thoroughly informed upon every matter relating to the health of the inhabitants, it is absolutely requisite that one (or more, according to the size of the district) Inspector of Nuisances should be placed under his control. The duties of this official would be to inquire into and discover all nuisances, inspect houses let in lodgings and common lodging-houses, diligently seek information of houses overcrowded, visit the localities in which fevers may be prevalent, see to the removal of the fever-stricken to hospitals, inspect slaughter-houses and market-places; in fact, he should be the ever-ready assistant of the medical officer in seeking for the causes which prejudicially affect the public health. The salary of the Inspector, who is subordinate to the Health-Officer at Merthyr, is twenty-seven shillings per week; he is supplied with one suit of clothing annually, and, for additional services during epidemic outbreaks, has received donations of money.

In order that the Medical Officer of Health may know what are nuisances, what are the obligations of landlords and tenants, and what are the modes of procedure by which the former may be removed and the latter fulfilled, it is necessary that he should have a clear apprehension of the laws relating to Public Health and Local Government. In Glen's work on this subject, a most complete, accurate, and understandable digest of these laws will be found. A promise has been made by the head of the Local Government Board that a synopsis of these laws shall shortly be published; when the promise is fulfilled, doubtless much of the uncertainty which now attends the practical application of the statutes will cease.

Having thus sketched out—I trust not too tediously—the various duties of the Health-Officer, I will, in conclusion, add but two or three remarks.

First, as to the amount of time and labour that a medical man would have to devote to the proper carrying out of the work I have described. Taking my own sphere of labour as the basis, I would say that a district such as Merthyr Tydfil is—of 18,000 acres in area, 3000 acres being occupied by houses and gardens, with a population of 50,000, living in 10,000 separate tenements—the time occupied to do the work

efficiently would not be less than one hundred days, allowing ten hours of labour each day.

The costs of the work in Merthyr are £8 a-year paid to the Registrars of Births and Deaths, an allowance not exceeding £10 a year to the medical officer for the purchase of books, instruments, chemicals, stationery, and for the printing of the annual report, and the medical officer's salary of £100 a year; giving a total of £118. You will understand that the medical officer's services are not remunerated at their commercial value.

Secondly, as to the nature of the work which will be required of the Health-Officers of the future. As yet, this has not been officially defined, and, therefore, I would earnestly press upon my medical brethren generally not to be too hasty in tying themselves to undertake labours of which they do not know the extent and character.

The Local Government Board have announced that rules and regulations to be observed by local authorities (desiring pecuniary aid in payment of the salaries of Health-Officers and Nuisance Inspectors) are being prepared: it would, therefore, be prudent if both authorities and medical men would wait until those rules shall have been made public. This is more especially necessary, since the Inspectors appointed by the Central Board will have large means granted them to enforce the efficient carrying out of the sanitary laws.

All these are subjects of congratulation to those who have the well-being of their fellow countrymen at heart; and it is to be hoped that the responsible chief of the department, in selecting those divisional officers, whose duty it will be to advise, assist, instruct, gently press, or cogently reason with district authorities, will not be tempted humbly to initiate a practice which is said to have prevailed in the Grand Duchy of "Nebel-und-Regenstein"; where "*it had long been admitted, that the necessity for knowing anything about the functions one might be called upon to discharge, was an exploded fallacy.*"

Outline of Report upon the Sanitary Condition of ———, during the year ———, by ———, Health-Officer.

Duties of medical officer as defined by local authority.

Chap. I.—Numbers, etc., of the Population, Geology, Watershed, and Aspect of the District; Natural Divisions thereof; Habitations of the People; Rainfall, Temperature, etc.

Sect. 1.—Population; area of district.

Sect. 2.—Ages and civil conditions of people.

Sect. 3.—Sanitary topography of whole district, and of divisions, etc.

Sect. 4.—Habitations of the people, characteristics as to site, structure, dampness, ventilation, drainage, etc.

Sect. 5.—Common lodging-houses, houses let in lodgings, slaughter-houses, markets, etc.

Sect. 6.—The weather, rainfall, temperature.

Chap. II.—Water-supply, Food, Wages, Pauperism.

Sect. 1.—Water-supply; quality and quantity, etc.

Sect. 2.—Prices of chief articles of human food, and adulterations thereof.

Sect. 3.—Wages of labouring population, in each of the particular classes of labour in district.

Sect. 4.—Number of paupers relieved.

Chap. III.—Statistics of Marriages, Births, Vaccination, and Deaths.

Sect. 1.—Marriages.

Sect. 2.—Births, legitimate and illegitimate.

Sect. 3.—Vaccinations.

Sect. 4.—Deaths from all causes in whole district.

Sect. 5.—Ditto, ditto, in each division of district.

Sect. 6.—Ditto from each class of disease in whole district, and in each division of district.

Sect. 7.—Ditto from epidemic contagious disease in each division of district.

Sect. 8.—Ditto from tubercular diseases in each division.

Sect. 9.—Ditto from lung diseases, etc.

Sect. 10.—Ditto from accidents.

Sect. 11.—Ditto of illegitimate children.

Sect. 12.—Ditto in union workhouse, gaol, or hospital.

Chap. IV.—Sanitary Improvements, etc.

Sect. 1.—Sanitary works during year.

Sect. 2.—Sanitary works needed.

Sect. 3.—Practical working of sanitary laws.

Sect. 4.—Amendments desirable.

Summary.—Comparisons of rate of Increase or Decrease of Numbers of People; Increase or Decrease of Rate of Marriages, Births, Deaths, Causes of Increased Mortality (if any); Remedial Measures necessary for Removal of Causes, etc.

Appendix.—Table showing Causes of and Ages at Death from each Class and Order of Disease.

Form of Weekly Return to be made by Subdistrict Registrars.

District of Merthyr Tydfil. Subdistrict of ———. Return of Number of Births and Deaths during the week ending Saturday, the ——— day of ———, 18—. Births: Legitimate, M., —, F., —, =—; Illegitimate, M., —, F., —, =—; total, ——. Deaths: Male, —, Female, —, =—; total ——. (The Medical Officer will be glad to have this return every Monday.)

Particulars of Deaths Registered in the week: Register No.; when died; residence; names; sex; age; occupation; causes of death (1, 2); duration of diseases (1, 2); certified or not, or inquest.

RESEARCHES

ON

THE MECHANICAL DILATATION OF THE CERVIX UTERI, AND THE APPLIANCES USED FOR THE PURPOSE.*

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PRACTICAL REFLECTIONS.

THE first point to which I would call attention, that arises out of the preceding investigation, is the question, What force is required to dilate the cervix uteri in gynaecological and obstetrical practice? Now, in order to answer this question, it is necessary to point out that, in order to reach a measurement by experiment, we must exclude the element of time as much as possible, because lapse of time permits the introduction of other influences besides force—influences which we may meantime designate vital, and which show themselves by producing spasm and tightness, or relaxation and yielding. Spasm and tightness may be left out of consideration, because they do not mar the mechanical view of the subject; it being a fair object of experiment to find what mechanical force is required to overcome the spasm or tightness, however produced. Relaxation and yielding, however, cannot be left out of consideration, for they may take place through vital actions, and without any application of distending force; and, indeed, I shall easily show that this is the case.

In gynaecological practice, the only good example that I can give of the force exerted in producing dilatation is that required, at a sitting, for the passing of a bougie; for here the shortness of the time used excludes vital relaxation or yielding, or nearly excludes it. Now in practice I have found that the dilatation of the external os uteri and of the cervical canal to the extent of 1.50th or 1.25th inch in diameter requires very little force—so little, that, considering the rough methods of measuring that can be applied, I think it best not to attempt exactness.

Dilatation of the cervix uteri is generally resorted to in practice with a view to relieve or cure spasmodic dysmenorrhœa, or to remove sterility. For these purposes, dilatation of the external os and of the canal of the cervix is probably of no value. The practitioner may think it worth while to try the dilatation of the internal os uteri. If he do this by a conical pointed bougie, he will find distinct resistance, often powerful resistance, to overcome; sometimes resistance invincible at the time, by any force which he feels himself justified in using. I am satisfied that in cases of great resistance, spasm of muscular fibre is added to natural or mere mechanical rigidity; for the practitioner may find himself able on another day, in the same case, to take the part as it were at unawares, and pass the bougie before the spasm is excited. I have no doubt—indeed, I know from my own experience—that frequently when the resistance is great, the practitioner is deluded into supposing he touches the fundus uteri with the point of the probe or bougie when it has only reached the tight internal os, and has not passed through this part; and this delusion gets some support from the cervix, in these circumstances, undergoing elongation, so that the instrument passes the external os two and a half inches, a length of bougie sufficient under ordinary circumstances to reach the fundus.

The force required to dilate the internal os of the cervix varies greatly in different cases, and in the same case at different sittings; this latter variation in the same case being, I believe, the result of spasm. In a healthy woman, the dilatation by bougie is comparatively easy, and

* Continued from page 516 of last number.