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ON THE

REGISTRATION OF CAUSES OF DEATH

IN

PUBLIC INSTITUTIONS AND IN PRIVATE PRACTICE.

BY

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(Read to the Medico-Chirurgical Society of Edinburgh, January 7, 1852.)

THE subject of the registration of deaths is one confessedly of great importance, and of no inconsiderable complexity. I need not inform the Society, that it has engaged the attention of many of the most respected members of our profession, and, in particular, that the system fixed by the authority of the Registrar-General upon England, has been met in Edinburgh by a free criticism, which, though unsuccessful in its immediate object, will undoubtedly engage the most serious consideration of future legislators. I shall not need, therefore, in the remarks which I have to make upon the subject, to apologise at any length for suggesting innovations upon an established method; though these might, under other circumstances, seem to be inexpedient, or even presumptuous, when brought forward as the result of individual experience. Neither shall I think it necessary to trouble the Society with any detailed observations as to the system necessary to be pursued, in the event of an act being obtained from the legislature for the registration of deaths in Scotland, but shall confine myself to the suggestion of reforms within a much more limited circle, though not, I think, on this ground, less calculated than a public measure to advance the great aims of medical and pathological science. My object in the present paper, is to call the attention of medical men to the advantages to be derived from the systematic registration of causes of death in private prac-

tice and in public institutions, whether by the agency of individuals, or of voluntary associations, like the Medico-Chirurgical Society of Edinburgh; and to suggest means by which the co-operative labour and resources of the members of this Society, and of others like it, may be directed to purposes of incalculable public usefulness, without the excessive centralisation and the (necessarily, perhaps) somewhat despotic interference of state machinery.

I shall best explain the end which I have in view, and at the same time justify the proposition I am about to submit to the Society, by a reference to the mode of registration pursued in the Royal Infirmary, and the modifications which the most careful consideration of this subject has induced me to carry out with regard to a certain proportion of the deaths in that institution,—viz., those falling within my own department as superintendent of morbid anatomy.

Since the year 1841, the managers of the Royal Infirmary have published, in the form of an appendix to the reports of that institution, a series of statistical tables, exhibiting, in a condensed and systematic form, the results of a general register, in which the cases admitted, their age, sex, occupation, &c., are inscribed, together with the disease for which they were treated, and its result in cure, relief, or death. The labour attendant on the first attempt at a correct analysis of the three or four thousand miscellaneous cases that annually fill the beds of the Royal Infirmary, was necessarily of no ordinary character; and it is only one additional proof of the late Dr John Reid's devotion to medical science, and of the eminently conscientious character of all his labours in its behalf, that, while holding the office of superintendent of the Infirmary, he voluntarily undertook a task so full of drudgery, and so certain to be ill-requited by fame. Nor was the promptness with which this voluntary labour was undertaken less remarkable than the complete and business-like manner in which it was executed; a study of the report by Dr Reid of the two years from 1839 to 1841 proves that amid his arduous scientific labours, and notwithstanding the efficient performance of the ordinary duties of the united offices of superintendent and pathologist of the Royal Infirmary, he found time to maintain an unwearied watchfulness over the details of the register, the accuracy of which, so far as accuracy could be attained under the system pursued, may be considered as having been checked at every point by the vigilance and pathological experience of the superintendent.

The statistical tables of the Royal Infirmary, as originally published by Dr Reid, contained a classified analysis of the entire general register (chiefly according to an anatomical arrangement of diseases), indicating in regard to each disease in the register, the number of cases admitted, the results of treatment, the mortality per cent., the average residence in the hospital; and separating, in regard to these details, the male from the female patients. To this

were added other tables, in which particularly important diseases, classes of disease, or operations, were arranged with special reference to the age of those affected, the number admitted at different seasons of the year, &c. There was no distinct or systematic registration of the cause of death in the fatal cases; and, from the notes added by Dr Reid to the various tables, we may infer that the cause of death not unfrequently differed from the primary disease; in which case either the primary disease was registered, and the disease causing death was omitted, or (probably in the greater number of cases) the latter was alone registered, and the primary disease was suppressed. To the consequences of this imperfection I shall presently advert.

Dr Peacock, who succeeded Dr J. Reid as superintendent and pathologist of the Infirmary, pursued, during the years 1841-2 and 1842-3, nearly the same general plan of registration as his predecessor. He, however, introduced what may be considered as the rudiment of a separate system of registration for causes of death. In the tables for 1842 there is one embodying the diseases presumed to have caused death in 219 cases, in which a post-mortem examination took place. This table, however, appears not to have been considered by Dr Peacock satisfactory, for in the returns of 1843 it does not appear, and in place of it there is a return of all the deaths from 1841-3, arranged on the system of the Registrar-General for England. It is not positively stated whence the information as to the cause of death, embodied in this return, is derived; an examination of the return itself shows that it is merely an adaptation of the general register.—[Since this paper was read to the Society, Dr Peacock has informed me that the reason which induced him to relinquish the special table of the causes of death in cases submitted to post-mortem examination, was “the impression, that the adoption of a common system of registration (throughout the kingdom), even though that system was not the very best that might be designed, is preferable to using different plans.”]

The returns of the Royal Infirmary, from 1843 to 1847, which were compiled under the direction of my immediate predecessor, Dr Bennett, present no important modification of the plan of Dr John Reid. The general register is analysed and classified in a number of tables, and notes are added here and there, explanatory of some unusual complication or cause of death, chiefly where the disease registered appears inadequate to account for the fatal event, or where a cure is registered under some disease not usually considered curable. Dr Bennett has already on former occasions, in this Society, expressed most emphatically his want of faith in such medical statistics as those of the Registrar-General and of the Royal Infirmary; and therefore, perhaps, I need scarcely say, that in the tables published by him there is no attempt to extend the system of his predecessors by the introduction of additional details, or by a separate and independent register of causes of death.

In 1848, the office of pathologist, previously always united with that of statist, was separated from the latter, and the preparation of the statistical tables devolved on the present treasurer and superintendent of the Infirmary, Mr Alexander M'Dougall; while the pathological department was placed in my hands by the managers. Mr M'Dougall has published two series of reports, and is at present engaged upon a third, in which, while adhering to the general principles of Dr J. Reid's system, he has carried out many most important and satisfactory improvements in detail. Indeed, I believe it may be said, that in the series of tables about to be published (for the year 1849-50) the original system of registration of the Royal Infirmary has been carried to the greatest amount of perfection which it is capable of attaining; and undoubtedly the student of hospital statistics will find in those of the Edinburgh Infirmary, especially in this last series, a far more highly elaborated series of medical facts than is presented by the returns of any other hospital in this kingdom, or probably in the world. If these returns, therefore, have hitherto been found not so useful as might be expected in the study of the laws of disease, it is either on account of the remissness of statistical students, or from some inherent defect of construction in these tables, which no attention to details can remedy.

In 1850 I was requested by Mr M'Dougall to add to his statistical return for the year 1848-9 (then about to be published) some account of the numerical results of my own department. I at first thought of doing so in the form of a register of causes of death; but perceiving that this could not be adequately effected without a previously concerted machinery, different from that of the general register, and yet embodying more than the results of post-mortem examination, I desisted from the attempt, and contributed to the statistics for that year simply a classified catalogue of the morbid appearances found in 250 examinations, illustrated by notes, but registered without reference to their nosological importance. A statement of this kind has never, so far as I know, been published in the records of any hospital or private practice; and the one in question contains, as I am well aware, numerous imperfections, unavoidable in a first, and probably not to be adequately avoided even in some subsequent, attempts. But, considered merely in the light of a full index, open to the public eye, bearing on a series of careful records of the anatomy of disease, I believe that the value of this table justified its publication; the more so as it has led to changes in the mode of arranging the voluminous manuscript records of the pathological department, which will render them more accessible for future investigations than any others of equal extent with which I am acquainted.

During the last year, my attention was again turned to medical registration, and to the improvements of which it is susceptible, by the formation of a committee of managers and medical officers of

the Royal Infirmary, for the review, with a view to improvement, of the system there pursued since 1841. Finding that this committee (of which Dr Alison is convener) was fully impressed with the deficiencies of the present system, and prepared for extensive changes in it, I determined to commence in the pathological department an experimental registration of causes of death, which, if found to be as manageable and useful as I anticipated, could afterwards be connected with, or incorporated into, a more general plan. The system which I determined to adopt was only matured after many experiments and much consideration of the facts with which I had to deal, as well as of all the documents published in relation to the system of the Registrar-General; and although it differs in some respects from any plan yet submitted to the profession, I am induced to think it not unworthy of the consideration of the members of the Society, from the fact, that it has now been in full operation since October, during which time I have been able to satisfy myself both of the ease and simplicity of its working, and of the important purposes which it is fitted to carry out when employed on a somewhat larger scale than at present. And it is chiefly with a view to obtain the co-operation of the members of the Society for this purpose that I have thought it right to trouble them with this communication.

I shall now explain very shortly the general principles which I have thought it right to follow out in the registration of causes of death in the Royal Infirmary. The same remarks will, with few exceptions, apply to any system of registration of *diseases treated* in public institutions or in private practice; only that the latter will necessarily require the introduction of numerous details of disease not admissible into the former.

The first and most important observation which occurs to me on this subject is, that the practitioner should not be subjected to any limitation in regard to the number of facts he may think it important to register. Disease is usually a very complex phenomenon; and the causes of death in disease, though not usually so numerous as the entire morbid phenomena, are often sufficiently so to form a curiously-linked chain, which the rational observer will justly desire to preserve in its integrity, and not to weaken and mutilate by the arbitrary separation of one or two of its elements. Thus, to take a very common case—a patient long affected with Bright's disease, and its most common complication—dropsy, may be carried off by hydrothorax, pleurisy, pneumonia, pericarditis, diarrhoea, or coma, or perhaps by such a combination among these disorders as shall render it difficult for the medical attendant to say with certainty which of the complications was the direct cause of the fatal event. And, supposing that pericarditis and pleurisy have been the actual direct causes of death, it is obviously opening up a wide field for error to register these to the exclusion of Bright's disease, or *vice-versa*. According to the Registrar-General's system, the medical

attendant is permitted to state several causes of death; but, in the general statistical returns, only one of these can be inserted, and must of course be selected arbitrarily by the registrar. The same is the case in the Royal Infirmary, where the physician may give a primary and one or more secondary diseases, while only one of these can find its way into the classified returns, unless in the awkward and useless position of a note. I may add, that I am not aware of any general system of registration proceeding on a less exclusive principle.

In the system which I have adopted, the statement of causes of death is *left entirely unrestricted*; and the practitioner is even invited to enter his case under a plurality of headings, in the confidence that each of these will be independently dealt with in the register. It is thus expected that, under Bright's disease, pleurisy, pericarditis, phthisis, &c., we shall secure *all the cases* in which these affections were distinctly understood by the medical attendant to be directly or indirectly causes of death; whereas, according to any other mode of registry, it is evident that only a fractional number, and what is worse, an *arbitrarily selected* number, of these cases can be found under its own proper heading. The only objections which, as it appears to me, can be made to this very important improvement, are the multiplication of details, and the sacrifice of the convenient numerical correspondence between the deaths and the causes of death, which exist in the Registrar-General's tables, and in the other registers mentioned. To these objections I think it may be satisfactorily answered, that, while this multiplication of details and sacrifice of convenience is absolutely indispensable to secure even moderate freedom from error, it is not in reality found to complicate seriously the labour of a well-arranged register.

The second remark which I would make, as to the true principle of registration of deaths or disease, is, that the nosological classification employed should be such as to adapt itself at once to the most vague and the most precise information. It is obviously impossible that all cases of disease should be observed with equal precision, even by medical men. A long or a short attendance; full or deficient information from the patient or the relatives; different degrees of professional knowledge; absolute difficulties and uncertainties of diagnosis; the performance of a post-mortem examination, and the care employed in this duty,—are all so many circumstances tending to introduce variation into the results, which can only be in a measure met by having a *variety of headings, even for the same disease*. Thus a single case of disease of the circulation might, according to the information received, be very differently registered under the following heads (to take an example):—

Disease of Circulation.
 Angina Pectoris ; Syncope ; Dropsy.
 Disease of Heart.
 Do. Rheumatic.
 Valvular disease of Heart.
 Do. with Degeneration of Muscular Tissue.
 Do. with Hypertrophy and Dilatation.
 Aortic Regurgitation, &c. &c.

Or a case of tubercular disease might be registered as follows:—

Disease of Respiration.
 Disease of Lungs and Intestines.
 Do. Tubercular or Scrofulous.
 Tubercular Ulceration of Lungs.
 Hæmoptysis.
 Hectic Fever ; Exhaustion.
 Tubercular Ulceration of Intestines.
 Diarrhœa.
 Emaciation ; Phthisis Pulmonalis.
 Peritonitis, by Perforation.

If any or all of these facts are clearly ascertained in any given case, as bearing on the fatal event, it is obviously an error to exclude them from the register ; if, on the contrary, any of them are reasonably considered to be uncertain, it would be equally an error to hold out inducements for their insertion. The system which I propose will leave the practitioner at perfect liberty in this respect, and will assimilate and arrange whatever information he can conscientiously give, without vitiating the more detailed returns, by omission of facts so important as those above mentioned.

It will perhaps appear to some persons, that a registration conducted on the principles which I have mentioned will contain a large mass of superfluities, which will not repay the trouble of collection. Moreover, it will be said, that some of the circumstances which I propose to register are not independent diseases, but merely symptoms ; such, for instance, as syncope, dropsy, emaciation, hæmoptysis. To the latter objection I would reply, that no ideas in pathology are more vague and unsettled than those of the mutual dependence of diseases and symptoms. The *independent diseases* of one age become the *symptoms* of the next ; ascites is displaced by cirrhosis of the liver ; anasa. by disease of the kidney and heart ; hæmoptysis by tubercle of the lung ; hectic fever by a multitude of organic diseases, &c. &c., according as the more intimate study of pathological phenomena reveals new relations among facts previously to appearance unconnected with each other.

In registration, however, a little consideration will show that we may easily be too precipitate in following the march of improvement ; and that it will often be a grave error, on the ground of an apparent superfluity of names, to remove from the nosology, or even

to omit in particular cases, symptoms so important as dropsy or hemorrhage. In a registration of deaths, indeed, it appears to me clear that no fact which can, under any circumstances, be clearly construed as a cause of death ought to be omitted in the register; and if not omitted altogether, it is equally plain that, to avoid error, it should be registered with uniformity in all cases where it is ascertained to be present, and to be a cause of the fatal event.

It would be easy to show that the omission of these apparently superfluous details from the Registrar-General's system has led to many gross fallacies, and in a great degree diminished the usefulness of the statistical results attained under it. Let me take one very clear and sufficient instance of this, in regard to the symptom or disease *dropsy*, to which I have already alluded. According to the Registrar-General, this is sometimes to be treated as a symptom, and sometimes as an independent disease,—a mode of proceeding which it is impossible to avoid, so long as one disease only can be admitted into the statistical tables as the cause of death in each case. But observe the effect of this partial registration. Within the last twelve years (as appears by consulting the annual summary of the Registrar-General) the number of dropsies registered has diminished by nearly two-thirds; while the number of heart, liver, and kidney diseases has very greatly increased. It is obvious, that, in the earlier years, numerous cases of dropsy were registered at the expense of the organic diseases; while, in the later, the organic affections have, to a still greater extent, robbed the column of dropsy of cases which were in reality fatal from that cause. An inference might be drawn from these returns by an unpractised statist, that, while organic diseases of the heart and other viscera had greatly increased of late years, some of the ordinary concomitants of these diseases had actually diminished,—a conclusion which would not only be absurd and self-contradictory, but probably untrue in both the propositions on which it is founded, as it is nearly certain that the apparent increase of organic affections is not the result of any more formidable cause than the improvement of medical diagnosis. The same remark will apply to the increase of organic affections of the brain at the expense of *convulsions*; and the probable substitution of many different diseases for the deaths by *old age* in the Registrar-General's return.

To all of these instances the following remark will apply; and it is one developing a most important principle in registration. Had the Registrar-General's system admitted of the registration of numerous diseases or morbid phenomena; had it invited the practitioner to state all the apparent causes of death, whether primary or secondary, whether symptoms or independent diseases, *the comparatively small variations in the numbers of certain causes of death would have been the best security against fallacious inferences from the fluctuations of others.* It would scarcely have been a tenable proposi-

tion, that heart and kidney diseases had increased in fatality, could it have been shown satisfactorily that the prevalence of dropsy had not been subject to corresponding variations; or that organic diseases of the brain had increased, if convulsions and coma had been in no degree more fatal. The system of the Registrar-General, as well as that of almost all hospitals and public institutions, presents, in this respect, no mode of checking its own unavoidable inaccuracies; and, as in all registers representing the facts of an advancing science, fluctuations must be encountered, depending not on changes in nature, but on improvements in art, I conceive that the omission of palpable and important symptoms, or even their subjection to what may be conceived to be primary diseases, is a practical error, leading almost necessarily to innumerable fallacies, and destroying the value of a large amount of statistical information.

By registering with regularity and uniformity, then, all the more important nosological conditions, all the familiar and easily-recognisable causes of death, it is intended not only to give a large number of additional and valuable pathological details, but to present to the statist a series of *fixed elements*, as it were, from the skilful use of which he will be able, as in an algebraical formula, to eliminate the actual value of those fluctuating, and as yet *unknown quantities*, which modern pathology daily furnishes to the inquirer. By giving free scope to the most detailed and scientific statements of facts, and retaining at the same time the more general and obvious peculiarities of each case, I believe that all which can be done by registration for the advancement of pathological science may be readily accomplished, without any undue complexity of system. The only sacrifice of convenience which is required, is that of the correspondence between the total number of deaths and the number of causes of death,—a sacrifice required not less by the principles which I have endeavoured to illustrate, than by the ordinary laws of nature; since every one practically engaged in the study of disease is aware that the restricted formulæ of the ordinary registers are not at all adapted to the mysterious and complex arrangements of morbid phenomena witnessed in nine out of every ten fatal cases.

Guided by these principles, and holding in view also the systems of registration, to which I have already so frequently alluded, as well as the criticisms of the Edinburgh Committee of the College of Physicians on the Registrar-General's system, I have been led to construct a table of diseases, injuries, &c., which contains, in an arrangement in some respects new, most of the elements necessary or desirable to be registered in relation to causes of death. This table I now submit to the Society, in the hope of obtaining its co-operation, in originating a system of registration among those members who may be disposed to join in furnishing data for that purpose.

*Supplement to the preceding Paper, comprising a Nosological Table,
with Remarks.*

TABLE OF DISEASES, INJURIES, &c., FOR THE REGISTRATION
OF CAUSES OF DEATH.

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| <p>I.—<i>Cause of Death Unknown, or Imperfectly Understood</i> (sudden death, &c. &c.)</p> <hr style="width: 10%; margin: 10px auto;"/> <p>II.—<i>Injury, Privation, Neglect, Accident, &c.</i></p> <ol style="list-style-type: none"> 1. Mechanical violence (external). 2. Do. (internal) (foreign bodies). 3. Chemical agencies (external). 4. Poison (V. ; VI. ; VII. ; VIII.) 5. Excessive heat (V-2 ; XII 9). 6. Excessive cold (V-2 ; XII-8). 7. Electricity (lightning) (V-2 ; VI-1?). 8. Intemperance (V-2, 7). 9. Starvation (IV-12, 13). 10. Neglect or mismanagement producing disease. <hr style="width: 10%; margin: 10px auto;"/> <p>III.—<i>Surgical Operations.</i></p> <hr style="width: 10%; margin: 10px auto;"/> <p>IV.—<i>Constitutional or General Disease.</i></p> <ol style="list-style-type: none"> 1. Small-pox (modified or unmodified?) (XII-11). 2. Measles (VII-11). 3. Scarlatina (VIII-8). 4. Typhus fever (abdominal typhus, VIII-14); (IV-12 ; V-2, 8). 5. Relapsing fever. 6. Continued fever. 7. Intermittent fever (ague) (VIII-28). 8. Puerperal fever (X-7, 12). 9. Purulent infection (phlebitis, &c.) (VI-10). 10. Glanders. 11. Hectic fever (IX-19). 12. Exhaustion or debility (asthenia). 13. Atrophy or emaciation. 14. Corpulence (?) 15. Anæmia (chlorosis). 16. Plethora. 17. Gout. 18. Rheumatism. | <ol style="list-style-type: none"> 19. Dropsy with anasarca (general dropsy) (V-19? VI-4, 5, 6; VII-19; VIII-25; IX-9). 20. Scurvy. 21. Purpura. 22. Diabetes. 23. Syphilis. 24. Inflammation. 25. Scrofula. 26. Tubercular disease. 27. Cancer. 28. Hemorrhage. 29. Ulceration. 30. Gangrene. 31. Entozoa. 32. Premature birth (IV-12, 13; VII-1). <hr style="width: 10%; margin: 10px auto;"/> <p>V.—<i>Disease, &c., of Nervous System.</i></p> <ol style="list-style-type: none"> a. Inflammatory (IV-24). b. Scrofulous (IV-25). c. Tubercular (IV-26). d. Cancerous (IV-27). e. Rheumatic (IV-18). f. Gouty (IV-17). g. Syphilitic (IV-23). h. Parasitic (IV-31). i. Of any other specific type. <ol style="list-style-type: none"> 1. Concussion, or shock (II-1; V-17, 20). 2. Coma (II-4, 5, 6, 8; IV-4; V. passim; IX-1, 5, 8, 9, &c.) 3. Palsy (V. passim). 4. Convulsion, or spasm (V. passim). 5. Epilepsy (V-4). 6. Apoplexy (IV-28; V-2, 3, 4, 16, 17, 18). 7. Delirium tremens (II-8.) 8. Typhoid delirium (IV-4, &c.) 9. Maniacal delirium. 10. Monomania. 11. Dementia, or fatuity. 12. Tetanus (II-1; III.) 13. Neuralgia, and local irritation. 14. Hydrophobia. |
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15. Meningitis (V-a, b, c, e, 2, 3, 4, 8, 9).
16. Softening of brain, or spinal cord (V-a, f, 2, 3, 4, 6).
17. Hemorrhage (IV-28; V-1, 2, 3, 4, 6).
traumatic.
spontaneous.
18. Abscess (V-a, b, c, 2, 3, 4, 6, 8, 9).
19. Hydrocephalus (IV-19?; V-a, b, c, 2, 4, 8, 15).
20. External injury, with laceration (II-1; V-a, 1, 2, 3, 4, 17).
21. Mechanical irritation, or compression (II-1; V-1, 2, 3, 4, 5, 13).
22. Malformation of nervous system (IV-12; V-2, 3, 4).

VI.—*Disease, &c., of Circulation.*

a, b, c, d, &c., as in V.

1. Syncope (IV-28; &c.)
(Sudden death from unknown cause, see I.)
2. Angina pectoris (VI-1, 3, 5, 6, 7).
3. Pericarditis (VI-a, e; 1, 2).
4. Hydropericardium (IV-19; VI-1).
5. Valvular disease of heart (VI-a, e; 1, 2).
6. Muscular disease of heart (VI-a, e; 1, 2).
7. Obstruction of coronary arteries (V-1, 2).
8. Aneurism (IV-28).
9. Varix (IV-28; VI-10; XII-12).
10. Phlebitis (IV-9).
11. Rupture or perforation of heart or blood-vessel, spontaneous (IV-28; VI-6, 8, 9).
12. Injury or wound of heart or blood-vessel (II-1; III; IV-28).
13. Air in circulation (II-1; III).
14. Malformation of the heart or blood-vessels (IV-12; VI-1; VII-1).

VII.—*Disease, &c., of Respiration.*

(a, b, c, d, &c., as in V.)

1. Asphyxia (II-2; VII. passim).
2. Asthma (VII-11, &c.)

3. Hooping-cough (VII-a; 2, 11, 12, 14, 15, &c).
4. Influenza (IV-11; VII-a; 1, 11, 12, 14, 15, &c.).
5. Spasm of glottis (II-2; V-4, 21; VII-1, 6, 7, 8, 9, 10).
6. Laryngitis (VII-a, g; 1, 5, 7, 8, 10).
7. Croup (VII-a; 1, 5, 6, 8).
8. Diphtheritis (VII-a; 1, 5, 6, 7).
9. Chronic disease of larynx or trachea.
10. Wound, injury, or obstruction of larynx, from mechanical causes (II-1, 2; VII-1, 5).
11. Bronchitis (IV-2; VII-a, 1, 2).
12. Obstruction of bronchi from mechanical cause (II-2).
13. Hæmoptysis (II-1; IV-28; VI-8; VII-a, b, c, d, g, 1, 10, 12, 16, 17, 20).
14. Pneumonia (VII-a, 1, &c.).
15. Pleurisy (VII-a, 1, &c).
16. Phthisis pulmonalis (IV-11, 25, 26, 29; VII-b, c, 1, 9, 13).
17. Gangrene of lung (IV-30; VII-a, b, 1, 11, 13, 14, 15).
18. Œdema of lung (IV-19; VII-1, 2, 11, 12).
19. Hydrothorax (IV-19; VII-i, 1, 15, 18).
20. Emphysema of lung.
21. Malformation of respiratory organs (VII-1).

VIII.—*Disease, &c., of Digestion and Assimilation.*

(a, b, c, d, as in V.)

1. Indigestion (IV-12, 13).
2. Vomiting (II-4; IV-12, 13; VIII-3, 6, 12, 13, 15, 16, 17, 18, 19, 24, 25.)
3. Constipation, intestinal obstruction (Ileus) (VIII-15, 16, 17, 18, 24).
4. Diarrhœa (VII-16; VIII-5, 6, 14).
5. Dysentery (VIII-4).
6. Cholera (VIII-2, 4).
7. Aphthæ (VIII-11).
8. Cynanche maligna (IV-3; VIII-1).
9. Inflammation of tongue (VII-5, 6; VIII-a).
10. Cancerum oris (IV-12).
11. Stricture or obstruction of œsophagus (IV-12, 13; VIII-d, 1).

12. Inflammation of stomach (II-4; VIII-a, 2, &c.)
13. Inflammation of intestines (VIII-a, 3, 4, 5, 14, 15, 16, 17).
14. Chronic disease of stomach (VIII-a, d, 1, 2, 12, 18).
15. Ulceration or chronic disease of intestines (IV-4, 26, 29; VIII-c, d, 4, 5, 20).
16. Strangulation of intestines (VIII-2, 3).
17. Hernia (VIII-2, 3, 15).
18. Intus-susception (VIII-2, 3, 15).
19. Perforation or rupture of alimentary canal (II-1, 2, 4; VIII-14, 20, 21).
20. Hemorrhage into stomach, &c. (Hæmatemesis) (IV-28; VIII-13).
21. Hemorrhage into intestines, &c. (Melæna) (IV-28; VIII-c, d, 14; IX-4).
22. Wound of alimentary canal (VIII-18).
23. Disease of rectum (VIII-d).
24. Hæmorrhoids (IV-27).
25. Peritonitis (VIII-a, b, c, 18).
26. Ascites (IV-19; IX-4, 9; X-10).
27. Mesenteric disease (Tabes mesenterica) (IV-12, 13; VIII-b, c).
28. Disease of spleen.
29. Malformation of alimentary canal (IV-12, 13; VIII-1, 3).

IX.—*Disease, &c., of Secretion or Excretion.*

(a, b, c, d, as in V).

1. Jaundice (?) (V-2; IX-a, d, 2, 3, 4).
2. Biliary calculus (IX-2).
3. Inflammation of liver (IX-a, 1).
4. Chronic disease of liver (VIII-25).
5. Suppression of Urine (Ischuria renalis) (IV-4; V-12; VIII-6; IX-8, 9).
6. Retention of urine (IX-12, 13, 14).
7. Urinary extravasation (IX-12, 14, 15).
8. Inflammation of kidneys (IV-12; V-2; IX-a, 5).
9. Bright's disease (IV-12, 19; V-2; VIII-2; IX-5).
10. Inflammation of bladder (IX-a).
11. Rupture of bladder (II-1; IX-6, 7).

12. Enlarged prostate gland (IX-6).
13. Stricture of urethra (IX-6).
14. Injury or wound of urethra (II-1; IX-6, 7, 14).
15. Urinary calculus (III; V-13; IX-6, 8, 10, 11, 14).
16. Inflammation of pancreas (IX-a).
17. Chronic disease of pancreas.
18. Excessive perspiration (IV-11, &c.)

X.—*Disease, &c., of Generation, Pregnancy, and Childbirth.*

(a, b, c, d, as in V.)

1. Spermatorrhœa (IV-12).
2. Disease of penis, testicles, &c.
3. Menorrhagia (X-4).
4. Uterine hemorrhage (X-3, 6, 8).
5. Leucorrhœa (IV-12; X-a).
6. Inflammation of uterus (metritis) (X-a, 11, 12).
7. Ulceration of uterus (IV-29; X-4, 5, 6, 8).
8. Cancer of uterus (IV-27; X-d, 4, 5, 7).
9. Uterine polypus or tumour (X-4).
10. Ovarian dropsy (VIII-4).
11. Pregnancy (disease depending upon; including *abortion*) (IV-8, &c.)
12. Childbirth and sequelæ (IV-8; X-4, 7).

XI.—*Disease, &c., of Bones and Joints.*

(a, b, c, d, as before).

1. Rickets (IV-12, 13, 25 (?); X-12).
2. Mollities Ossium (IV-12, 13; X-12).
3. Caries (IV-29; XI-a, b, c (?), g).
4. Necrosis (IV-30; XI-a, b, g).
5. Abscess of bone (XI-a).
6. Periostitis (XI-a, g).
7. Tumour or chronic organic disease of bones (XI-d).
8. Inflammation of joints (XI-a, e).
9. Chronic disease of joints (XI-b, e, f, g).
10. Fracture (II-1).
11. Dislocation (II-1).
12. Wound, injury, or operation (II-1; III).

XII. *Disease, &c., of Integuments, &c.*

(a, b, c, d, &c., as in V).

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| <ol style="list-style-type: none"> 1. Abscess or sinus (XII-a). 2. Carbuncle (IV-30 ; XII-a). 3. Erysipelas (XII-a). 4. Hospital gangrene (IV-30; XII-a). 5. Diffuse cellular inflammation (IV-30 ; XII-a). 6. Malignant pustule (IV-29, 30 ; XII-a). 7. Gangræna senilis, or spontaneous gangrene of extremities (IV-30). | <ol style="list-style-type: none"> 8. Frost-bite (II-6; IV-30 ; XII-a). 9. Burn or scald (II-5 ; XII-a). 10. Wound, injury, or operation (II-1 ; III). 11. Cutaneous eruption. 12. Ulcer (IV-29). 13. Bed-sore (IV-29, 30). 14. Glandular swelling (absorbents) (XII-a, b, c, d, g). 15. Bronchocele (VII-1, 5, 10). 16. Enlarged Thymus (?) (VII-1, 5, 10). 17. Tumour, &c. (XII-b, d). (Anasarca, see IV-19). |
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The above table is intended to convey an idea of an arrangement of fatal diseases, severe bodily injuries, and other obvious accidental conditions of death, which has been found to subserve the purposes of registration in the Royal Infirmary, according to the principles of the foregoing paper. It pretends to no great novelty of design, either in the naming or in the classification of individual diseases; in fact, everything which could bear the construction of theoretical innovation has been sedulously avoided; and the nosologies at present most in use have formed, in all essential points, the basis of the one which is here sketched. The adaptations which have been found necessary to meet the requirements of the scheme to which I have alluded, and which mainly distinguish this table from those after which it has been modelled, may be shortly stated as follows:—

1. The names of affections in the different sections of the nosology are followed in many instances by a series of references (within brackets) to other headings, expressive of complications, collateral causes of death, or other conditions frequently demanding registration in connection with the affection first noted. These are to be regarded as so many queries or memoranda for the practitioner in registering the causes of death according to the plan of *multiple entry* recommended in the above paper. Thus, for example, if a case of *apoplexy* has to be registered (V-6), it will also have to be generally registered as death by coma (V-2), often as palsy (V-3), or convulsion (V-4), and (according to its pathological nature) as softening of brain, hemorrhage, or possibly abscess (V-16, 17, 18). In the case of its being from hemorrhage, it will again have to be entered under constitutional conditions (IV-28); in the case of abscess it would be registered as inflammation (IV-24); and likewise as inflammatory disease of nervous system (V-a). These collateral facts, the statement of which, when known, is most important to science, have some chance of being preserved, and accurately noted, by being thus suggested to the practitioner; and it is scarcely necessary to attempt to point out the comparative imperfection of any return, in which the whole of these distinctions

are merged in the general term apoplexy, or in which cases may be arbitrarily and casually placed, some under apoplexy, others under softening, hemorrhage, or convulsion, although all are equally entitled to the first designation.

2. Affections which may be really in a particular case identical, have not unfrequently more than one designation, in order to represent with accuracy different degrees and kinds of information. Thus few terms are in the present day more generally interchangeable than phthisis pulmonalis (VII-16), and tubercle of the lungs, (VII-c); yet there undoubtedly occur cases in which the former could with propriety be registered, although the latter is either not ascertained or not present; and, *vice-versa*, cases of tubercular disease of the lung not unfrequently occur, presenting no symptom or character of pulmonary phthisis. This important nosological distinction is entirely sunk in the Registrar-General's returns, in which phthisis or consumption is returned, not among the pulmonary, but among the tubercular diseases. Again, the terms "pneumonia" (VII-14) and "inflammatory disease of respiration" (VII-a), are in most cases only two names for one fact; but as instances will necessarily occur, in which the latter statement can be made, and not the former, it is desirable to preserve both the more comprehensive and the more definite heading.

3. The different orders of local diseases are placed under an arrangement according to the functions affected. This is regarded as preferable to an arrangement by organs, because it may very well happen that the precise seat of the disease, or the organ affected, may not be known, although the function chiefly involved, and even the type of disease, may have been quite satisfactorily determined. Thus, if a man dies by orthopnoea, there can be no doubt that he dies of a disease of respiration; but it may be doubtful whether the larynx, bronchi, lungs, or pleura was its seat; and if the spasmodic or asthmatic character of the disease be determined, the seat may still remain doubtful, as in some cases of tumour interfering with the respiratory nerves. To the functional arrangement of local affections there is, however, the exception of external diseases, which occupy the last two orders in the table; because in these the arrangement by organs is so convenient, and so free from all possible sources of difficulty and confusion, as to render it unquestionably preferable to the other.

4. The more important specific types of disease are arranged in a series, in connection with the general statement of disease of function. In this manner an opportunity is afforded of registering in such a way as to afford the largest amount of information in diseases the exact name or seat of which is unknown, but whose general characters are sufficiently well understood. Thus the existence of a rheumatic disease of the heart may be ascertained, while it is not known whether it is valvular or pericardial. Such a case, if acute, would be registered—(VI-a, e; IV-18.)

5. Constitutional diseases have been made a distinct order, including a large proportion of the "zymotic diseases" of the Registrar-General, together with the diseases of uncertain seat, the tubercular diseases, and some pathological conditions not included in the nosology used in the English system. On the other hand, the order of zymotic diseases has been suppressed, as tending to remove, often upon doubtful grounds, the names of diseases from their natural associations with others closely allied to them. If, however, the separation of the presumed zymotic diseases should be considered requisite for any theoretical or practical purpose, it is easy to eliminate the elements of which the zymotic order may be considered as composed; and by doubly registering all the diseases included in that order, the object of its separation will be attained, without involving as a consequence the disintegration of others, as in the separation of croup from diseases of the respiratory system, or diarrhoea and dysentery from those of the alimentary canal.

6. The importance of registering fatal surgical operations need scarcely be insisted on; but it is curious that in the Registrar-General's nosology these find a place only accidentally, in the form of notes on the diseases and injuries for which operations may have been performed. In the above table operations form a separate order; and it is intended that all operations involving life, directly or indirectly, should be registered, without, of course, thereby excluding registration either of the diseases for which they were performed, or of the complications which may have rendered them fatal.

I have thought it right to publish the above nosological table, and the remarks upon its peculiarities and mode of use, because, from my own experience, and from the remarks of some of my professional friends, I am induced to think that the registration of private practice, both by individuals and by associations of medical men, might be carried out, with immense advantage to pathological science, far more perfectly than at present. It would encroach very little on the time, even of the busiest practitioner, to keep, in addition to such isolated facts as his note-book or his memory can preserve, a kind of scientific *ledger*, in which the important details of the mortality in his practice may be systematically analysed in the very act of being written down. Such a document includes nothing which any conscientious practitioner can regard as an undue demand upon his powers of observation; and the act of recording is so simple and so short, that the time spent upon it is scarcely greater than that involved in settling mentally the questions connected with the cause of death,—a duty which every man engaged in the responsibilities of medical practice owes in the fullest sense to his patient, to society, to his profession, and to himself. I trust that this paper may be in some degree instrumental in advancing the cultivation of scientific medicine, by giving an impulse to associated and individual effort in this direction, and leading to the preservation of important medical records of a

kind that the practitioner alone can supply, and which have too often been lost to the public from real want of time in some, from indifference in others, but in many simply from the want of a right method. Upon the application of the principles I have advocated to national registration, I abstain from remarking; merely observing, that probably no national system will ever be brought to such a degree of perfection as to supersede the necessity and duty of individual and associated voluntary effort. The very selection of sources of information which the latter permits, and from which its best results are probably to be obtained, is fatal to the object of a national system. This, again, has other and most important ends, in reference to social problems which are inseparable from an advancing civilisation, and which every day assume new forms, and require new solutions. As no private collection of medical materials can accomplish these objects, it is undoubtedly the duty of the state to furnish the means of doing so as perfectly as possible; and while the more limited sphere of private enterprise may be cultivated with a view to its own special objects, it cannot but tend indirectly to the assistance and improvement of a national system, both in its method and its details.