not only are there "cases of artificial tuberculosis in guinea-pigs..... whose lungs contained miliary granulations, due *only and exclusively* to perivascular cords of adenoid tissue"; but that the professor had "seen a case of 'natural' tuberculosis in a guinea-pig, where the spleen and the liver, and likewise the lungs, but not to such an extent as the former organs, were penetrated by numerous very minute miliary granulations. The mesenteric glands were distinctly, the liver, spleen, and bronchial glands* only slightly, enlarged. In the lung, the "miliary granulations were found to be due *entirely* to the presence of perivascular adenoid cords"; that is to say—and I am no longer quoting Professor Klein, to the presence of structures of which probably Rokitsansky (*op. cit.*, i, 326) spoke with his usual correctness: "This tubercle is subject to no metamorphosis." So far as *post mortem* facts go to show it, Rokitsansky's sentence apparently applies to other products, which, as it seems to me, are quite as secondary as these lymphatic, perivascular productions, but seem—if I may be allowed the term—to have had no time to undergo this change. I had hoped at one time to prove, at any rate to my own satisfaction, as others (Deichler, Colberg, Rindfleisch) had professed to demonstrate, that the miliary nodules found in acute tuberculosis, whether in children or adults, were due to perivascular nodules, or, at least, to proliferation of the capillary nuclei; the unique guinea-pig of Dr. Klein was the type I had hunted for. What I had found, at any rate in the acute tuberculosis of children, was certainly perivascular growth, accompanied generally by slight catarrhal, vesicular, products, and lobular collapse. And I had noticed, as any man may notice, that especially at the two ends of life—in the general tuberculosis of childhood, and the bronchitic and emphysematous phthisis of advancing age—there were to be found, not only the true perivascular nodules, not always easy to be defined, but products, often themselves alone—products to all naked-eye appearance resembling the "tubercle" of authors—the "grey granulations" of Bayle, which Andral (*op. cit.*, vol. iv, p. 10) recognises, and rightly, as the results of "vesicular pneumonia", and Buhl describes as "lobular foci of desquamative pneumonia". Thus far, the results found by myself in these cases differ but slightly from the facts stated by Dr. Klein.

[To be continued.]

ON THE NUMERICAL RATIO OF DISEASE IN THE ADULT MALE COMMUNITY,

DEDUCED FROM THE SANITARY STATISTICS OF HER MAJESTY'S CUSTOMS, LONDON, FOR THE YEARS 1857-74.†

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[Concluded from page 443 of last number.]

I purpose now to direct your attention to the numerical ratio of the various classes of disease that have occurred in the period, and their percentage of recovery, death, and superannuation. The tables on which they are founded extend back for eighteen years. They may be, therefore, assumed to give proportionally a fairly accurate idea of the sanitary statistics of 20,000 men for one year. The nosological arrangement which has been in use since 1862 was based on that then extant in the Royal Navy, and differed but little from that afterwards promulgated by the London College of Physicians in 1863, and which was at once introduced into this and other public departments as a convenient standard of nomenclature and classification. To the simple tabulation of cases a column was added for the number of days each case was under treatment, which was obviously necessary in order to obtain a correct estimate of the relative prevalence and importance of each disease. A considerable discrepancy is sometimes found betwixt the proportion of cases and of time under treatment.

Following that classification, we find that, of the general diseases, the febrile class, including exanthems (A), show a ratio of 6 per cent. of the total number of cases, 6.1 per cent. of the whole time lost by sickness, 7 per cent. of the entire mortality, but no superannuation. The constitutional class (B) yield a ratio of 18 per cent. on the number of cases, 26 per cent. on the time lost by sickness, 40 per cent. on the whole mortality, and 49 per cent. of the superannuation.

Of the diseases brought together under this class, the most important are rheumatism and gout and phthisis. Rheumatism and gout together constitute 13.5 per cent. of the number of cases, and 14 per cent. of the time lost by sickness. They show directly an infinitesimal propor-

tion of mortality, less (0.4) than 1 per cent., but no less than 32.7 per cent. of the whole amount of superannuation.

TABLE II.—Numerical Ratio of Classes of Disease in Her Majesty's Customs.

Classes of Disease.	On No. of Cases.	On Time lost.	On No. of Deaths.	On No. of Superannuation.
1. General Diseases:	Per cent.	Per cent.	Per cent.	Per cent.
A. Febrile and Zymotic..	6	6	7	0
{ Rheumatism & Gout..	13.5	14	0.4	32.7
B. { Phthisis	1.4	8	31	9
Other diseases	2.7	4	7.5	7.5
2. Local Diseases				
Of Nervous System.....	7.5	9	9	20
Of Circulatory „	1	2	13	1.5
Of Respiratory „	27	20	11	17.7
Of Digestive „	17	13	9	7.5
Of Urinary, etc. „	2.4	3	2.6	0.7
Of Skin and Cellular	11.5	10	0	2.7
3. Accidental Injuries and External Violence	10	11	9.5	0.7
	100	100	100	100

TABLE III.—Deaths and Superannuations in the Force of Her Majesty's Customs in London in the Years 1857-74, being equal to those occurring in One Year in a Force of 20,000 Men.

	General Diseases.	Deaths.	Superannuation.	Total.	Ratio per 10,000 Men.
A.	Typhus fever	6	0	6	3
	Enteric fever	1	0	1	0.5
	Relapsing fever.. ..	1	0	1	0.5
	Remittent fever.. ..	1	0	1	0.5
	Small-pox	5	0	5	2.5
	Cholera	2	0	2	1
	Erysipelas	2	0	2	1
	Rheumatism	0	38	38	19
	Gout	1	4	5	2.5
	Cancer	6	1	7	3.5
B.	Tuberculosis	2	0	2	1
	Phthisis	71	12	83	41.5
	Syphilis	1	0	1	0.5
	Dropsy, from complex diseases ..	10	1	11	5.5
	Diabetes	1	0	1	0.5
	Pyæmia	1	0	1	0.5
	Leucocythæmia.. ..	1	0	1	0.5
	Local Diseases.				
	Apoplexy	6	1	7	3.5
	Paralysis	4	5	9	4.5
Diseases of the Nervous System.	Epilepsy	4	4	8	4
	Brain-disease	4	0	4	2
	Delirium tremens	3	0	3	1.5
	Insanity	0	14	14	7
	Loss of vision	0	3	3	1.5
Diseases of Circulation.	Disease of heart	24	2	26	13
	Aneurism	4	0	4	2
	Embolism	1	0	1	0.5
	Senile catarrh	0	2	2	1
	Bronchitis	11	17	28	14
Diseases of Respiration.	Pneumonia	8	0	8	4
	Pleurisy	3	0	3	1.5
	Hydrothorax	3	0	3	1.5
	Asthma	0	4	4	2
	Quinsy	0	1	1	0.5
Disease of Digestion.	Dyspepsia	0	3	3	1.5
	Gastritis	1	0	1	0.5
	Diarrhœa	1	0	1	0.5
	Dysentery	4	0	4	2
	Melæna	0	1	1	0.5
Diseases of the Urinary Organs.	Jaundice	1	0	1	0.5
	Disorder of liver	7	2	9	4.5
	Hernia	0	2	2	1
	Nephritis	2	0	2	1
	Bright's disease.. ..	3	0	3	1.5
Miscellaneous.	Cystitis	1	0	1	0.5
	Urinary calculus	0	1	1	0.5
	Disease of Bone	1	3	4	2
	Spinal disease	0	1	1	0.5
	Debility	0	4	4	2
Violence.	Atrophy	0	1	1	0.5
	Ulcers	0	0	0	0
	Fracture, etc.	7	1	8	4
	Drowned	11	0	11	5.5
	Suicide	4	0	4	2
		230	130	360	180

Phthisis yields 1.4 per cent. of the number of cases, and 8 per cent

* Professor Klein allows me to make this correction of a merely clerical error in the original.—A. B. S.

† Read before the Section of Public Medicine at the Annual Meeting of the British Medical Association in Edinburgh, August 1875.

of the time lost by sickness; 31 per cent. of the whole mortality, and 9 per cent. of the superannuation.

Proceeding now to the local diseases, we find that the various maladies of the nervous system give 7.5 per cent. of cases treated, and 9 per cent. of time lost by illness; 9 per cent. of the mortality, and 20 per cent. of the superannuation, one-half of which latter proportion is caused by insanity.

Diseases of the organs of circulation show only 1 per cent. on the number of cases, and 3 per cent. on the time lost by sickness; but lesions of the heart and great vessels have caused 13 per cent. of the deaths and 1.5 per cent. of the superannuations.

Diseases of the respiratory organs yield 27 per cent. of the cases treated, and 20 per cent. of the time lost; 11 per cent. of the whole number of deaths, and 17.7 per cent. of the superannuations. Including phthisis (which, in the great majority of the cases that occur in this body of men, may be considered as a local pulmonary rather than a constitutional disease), the maladies affecting the lungs and air-passages yield the large proportion of 28.4 per cent. of the cases, 30 per cent. of the time lost by sickness, 42 per cent. of the whole mortality, and 27 per cent. of the superannuation.

Diseases of the organs of digestion exhibit the ratio of 17 per cent. of cases, 13 per cent. of time lost, 9 per cent. of deaths, and 7 per cent. of superannuations.

Diseases of the urinary organs give only 2.4 per cent. of cases, 3 per cent. of time lost, 2.6 per cent. of deaths, and less than 1 per cent. of superannuations.

Affections of the skin and cellular tissue occur in the proportion of 11.5 per cent. of cases and 10 per cent. of time lost by illness; but no death and only two superannuations (from ulcers) have to be recorded under this head.

Injuries of various kinds and of every degree of severity are necessarily of frequent occurrence, from the nature of the duties of those officers, more particularly afloat. They constitute 10 per cent. of the cases disabled, and 11 per cent. of the whole time lost in illness by the force. Deaths from violence form 9.5 per cent. of the entire mortality, of which 3 per cent. are the result of fractures, etc., 4.7 per cent. are from accidental drowning, to which the out-door officers and watermen are especially liable in following their vocation, and 1.8 per cent. are due to suicide. The ratio of superannuation from external injury does not amount to 1 per cent.

GENERAL SUMMARY.

In reviewing these figures, it is obvious that pulmonary and rheumatic diseases are those which, as might be expected in a climate which for eight months in the year is more or less wintry, prove most destructive, nearly one-half of the sickness and mortality of the force being due to those diseases; for, although rheumatism and gout are rarely fatal *per se*, they are too often the precursor of heart-disease, bronchitis, and dropsical effusions, which, next to phthisis, are the maladies which show the largest mortality. In about one-half of such cases occurring in persons above middle age, I find a history of former arthritic disease. Gout appears to be unusually prevalent in this body of officers, averaging 6 per cent. on the total number of cases, and 5 per cent. on the time lost by sickness, and the watermen are the class most liable to it, although they are temperate in the use of fermented liquor, and their duties are of a very active, exposed, and arduous character. The attacks seem to be irrespective of age or personal habits; often most severe in abstemious men; but, in the majority, gout is of hereditary origin, and very remarkably influenced by weather. In last year, no fewer than forty cases of true gout occurred in the force, chiefly in the warmer months, when a humid state of the atmosphere had succeeded suddenly to dry weather. The mean duration of such cases is eleven days, that of rheumatism being twenty-four days.

Pulmonary consumption, the most formidable in its mortality aspect of all our diseases, is probably less fatal in this force than in most other bodies of men of similar age. It exacts four lives per 1,000 annually, the average age of its victims being 41 years. In the army, 7 per 1,000, and in the navy 5.5 per 1,000, is the combined death and invaliding rate of this fell disease.

Cancer is of rare occurrence in the Customs force, having in the period not exceeded the rate of 0.3 per 1,000 men. Diabetes is also extremely unfrequent, showing only one death and one now under treatment: a rate equivalent to 0.1 per 1,000, or 1 per 10,000 men.

Brain-diseases yield a death-rate of 1 per 1,000 men, and a superannuation-rate of 1.5 per 1,000. Heart-disease and aneurism exhibit a mortality of 1.5 per 1,000 men, the average age being 48 years. Other chest-diseases, exclusive of phthisis, present a death-rate of 1.2 per 1,000 men. Bronchitis and pneumonia are the chief causes of mortality.

Diseases of the digestive organs are fatal only in the ratio of 0.8 per 1,000. One instance occurred of leucocythæmia. Disease of the liver and dysentery were the chief causes of deaths in this class.

Diseases of the kidneys and bladder are likewise rare or terminate fortunately, the death-rate not exceeding 0.3 per 1,000 men, or 3 per 10,000.

In some cases of complex organic disease, involving equally various viscera, and attended with serous effusion, the deaths have been tabled as dropsy, and amount to 5 in 10,000.

Deaths by accident or violence somewhat exceed the rate of 1 per 1,000; but I have already referred to them, and apportioned their causes.

We now come, in the last place, to the extensive group of zymotic diseases, which, all-important as they are to the general, and more especially to the youthful population, will be found to affect comparatively little the adult male community, when contrasted with the disability and death induced by constitutional and organic disease, exhibiting only 6 per cent. of the whole amount of sickness, and 7 per cent. of the entire mortality, the zymotic death-rate does not reach 1 in 1,000 (0.9). Yet no epidemic has visited the eastern and southern suburbs of London, where the large majority of the Customs officers reside, without their being, however slightly, affected by it; and typhus, relapsing fever, and small-pox have all claimed their victims in these visitations. Small-pox was especially destructive in 1870-71-72, when it inflicted an annual loss to the extent of nearly 2 per 1,000 men. One-fourth of the cases terminated fatally, of whom all had been vaccinated, some had been revaccinated, and others had been a few years before freely exposed to the contagion without injury: a proof of the peculiarly malignant potency of the variolous poison in the last epidemic.

Only two cases of fatal cholera are recorded in the last eighteen years, presumably sporadic. One occurred in 1861, when no epidemic existed in or near this country; the other in 1866, the year of the last outbreak of cholera; but it was apparently self-induced by the officer, who, although in good health, had taken of his own accord a powerful purgative. Violent catharsis degenerated into decided cholera, and, through consecutive fever, destroyed life. No other case occurred in the force, although many resided in the stricken districts or on board vessels from infected ports; but there was in that summer a greater amount of severe bowel-complaint than I have seen before or since, the ratio of diarrhoea having been as high as 70 per 1,000, or four times the normal average.

The almost entire exemption of the Gravesend officers from zymotic disease is very remarkable. It is their duty to board and live for a time in all vessels from abroad, and they are daily brought into the most intimate contact with crew, passengers, and cargo of every ship on arrival; yet there is not an instance on record for many years of any of these officers having contracted in his vocation any reputedly contagious malady. No more satisfactory proof could be adduced of the general healthiness of the port of London in relation to its enormous foreign trade, or of the satisfactory sanitary condition of the Customs officers employed on this service.

In conclusion, I would beg leave to observe, in regard to this somewhat dry accumulation of statistical facts, that in one respect they possess a peculiar advantage; viz., uniformity and exactness in the numerical details, reaching over many years, on which they are founded; and, as I believe the diagnostic data and calculations to be as accurate as the nature of the subject will possibly admit, I venture to hope it may be favourably received as a contribution to our knowledge of the sanitary condition of the industrious adult male middle-class population of the country, and may even prove serviceable, by affording an estimate of the quantity and quality of sickness probably existing among them, and so may conduce to the sounder and more equitable management of those institutions for mutual help which, though admirable in conception, so often result in failure and disappointment to their members through sanitary miscalculation.

ON DEFECTIVE NERVE-POWER AS A CAUSE OF BRIGHT'S DISEASE.

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CASES of chronic albuminuria are not unfrequently brought under the cognisance of the physician, whose etiology and course are not, to my mind, satisfactorily explained by the ordinarily received ideas regarding the pathology of Bright's disease.

I do not here purpose to enter into the question of the morbid ana-