

**Observations on the means of forming and maintaining troops in health in different climates and localities / by Edward Balfour.**

**Contributors**

Hume, Joseph, 1777-1855.

Balfour, Edward, 1813-1889.

Royal College of Physicians of Edinburgh

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*from Joseph Hume Esq*

OBSERVATIONS  
ON THE  
MEANS OF FORMING AND MAINTAINING  
TROOPS IN HEALTH  
IN DIFFERENT CLIMATES AND LOCALITIES.

By Assistant Surgeon EDWARD BALFOUR, Madras Army.

Read before the Statistical Society of London, on the 21st April 1845.

POLITICAL reasons may render it expedient to garrison a district or a country with soldiers, whose foreign origin, and language and customs, prevent their entertaining feelings in common with the natives of the land whom they may be required to coerce; but, where this is not required, from a higher state of health, and, therefore, of efficiency, which troops raised among the indigenous inhabitants of a country retain, it is of importance to employ them in their own land in preference to strangers; and, fortunately for the tranquillity of our rule, the people of India interest themselves so little in the wars that occur, and hostile feelings so rapidly subside, that the duties of our troops have become rather those of police, to check petty disturbances, and give effect to the orders of the civil authority, than of stern military coercion to overawe the countries in which they are located. The people of India may thus be very generally employed as soldiers in their native land; and it cannot be too prominently noticed, that the utmost care in selecting recruits, or attending to the men's health when enlisted, seems unable to retain foreign troops in equal health with that enjoyed by soldiers when natives of the countries in which they are serving; in other words, that foreigners cannot be kept equal in health and efficiency with the native inhabitants.

There seem to be circumstances, not well understood, inherent in a military life, which cause among soldiers, even in time of peace, and when serving in their native country, a somewhat higher rate of sickness and mortality than occurs among people of the same age in civil life; and in nearly all the foreign countries occupied by the British troops, the deaths among the soldiers exceed the number that are annually carried off by disease and other causes in their native land. The mortality among foreigners residing in any of the countries of the globe is an important subject of inquiry to the British nation, who are scattered over so great a portion of it, and it is also a point of great importance in any inquiry into the causes of sickness among the soldiers of the empire, who for the most part have to serve abroad.

So far as statistical inquiries have extended, there is no country, either temperate or tropical, where the mortality among the indigenous civil inhabitants, between the ages of 20 and 40, seems materially to exceed 16 per 1000 annually; and probably there is no country where troops composed of the indigenous inhabitants are subject to a higher rate."

## AVERAGE ANNUAL MORTALITY per 1,000 in Civil Life in BRITAIN.

	Died per 1,000 per Annum, at the Age of 29 to 30.
Mortality at the age of 29, 30, by the Carlisle Tables - -	10·
Mortality by Mr. Finlayson's observations, deduced from the duration of life among the Government Annuitants - -	13·
Mortality in 17 of the largest towns* where troops are generally stationed - - - - -	15·7
Mortality among the East India Company's labourers - -	12·5
Mortality among the parties insured in the Equitable Office from 1801 to 1832 inclusive, chiefly the better fed classes, between 20 and 40 - - - - -	9·1
Mortality among the Metropolitan Police Force - - -	9·
Average Annual Mortality per 1,000 of Men in } Civil Life in Britain - - - - - }	11·5

The different circumstances of most of the classes from whom the above averages have been drawn, prevent their being placed in comparison with soldiers. The inhabitants of towns are the individuals whose position most closely approximates with that in which troops are placed; and the mortality among the inhabitants of towns in the prime of life is nearly one-third greater than among the rural population. In comparing, therefore, the mortality of military with that of civil life, it becomes necessary to take for our standard the average of those towns in which the troops are generally quartered, and in the previous Table this is shown to be at the rate of 15·7 per 1,000.

## MORTALITY among Troops of the Kingdom serving in their Native Country.†

	Annual Mortality per 1,000.
Average in civil life in 17 of the largest British towns,* at 20 to 40 years of age - - - - -	15·7
Household Cavalry from 1830 to 1836 - - - - -	14·5
Dragoon Guards and Dragoons, from 1830 to 1836 - -	15·3
Troops serving in Ireland, 1797 to 1828, average strength 36,921	15·5
Depôts of West Indian Regiments, from 1830 to 1836 - -	18·5
Average Annual Mortality per 1,000 among } British Troops in Britain - - - - - }	15·9

The deaths among the Foot Guards amount to 21·6 per 1,000 annually, but as causes, hitherto unexplained, seem to affect this branch of the service, increasing the deaths above the usual number, they have been excluded in

\* The towns from which this average is drawn are Chester, Leeds, Bolton, Bury, Preston, Wigan, Bradford, Stockport, Macclesfield, with the averages of York, Hull, Norwich, Plymouth, Portsmouth and Liverpool, and of Glasgow and London. The information in this Table has been drawn chiefly from Mr. Chadwick's Report on the Sanatory Condition of the Labouring Classes.

† These points of information have been obtained from the Statistical Reports on the Health of Troops in the United Kingdom.

striking the average mortality among the troops in Britain. The mortality among the residents of towns in civil life, and that among the military, who are generally located in the principal towns, so closely approximate, that 15 per 1,000 may be fairly received as the average of the civil inhabitants, as well as of the soldiers employed in Britain.

We thus obtain a standard by which to contrast the loss of life in Britain with that to which our armies are subject when serving in foreign countries, and we observe with regret, from the following Table, that in almost every colony of the empire, the mortality of our troops exceeds the rate they are subject to in their native land—in general, immensely so.

AVERAGE ANNUAL MORTALITY per 1,000 of Mean Strength of Troops, Natives of the British Isles, serving in Foreign Countries during Peace.\*

						Annual Mortality per 1,000.
New South Wales	-	-	Marshall	-	-	14.1
Cape of Good Hope	-	-	Reports, &c	-	1818 to 1836	15.5
Nova Scotia and New Brunswick, ditto	-	-	-	-	1817 to 1836	18.
Malta	-	-	-	-	ditto	18.7
Canada, Upper and Lower	-	-	-	-	ditto	20.
Gibraltar	-	-	-	-	ditto	22.1
Ionian Islands	-	-	-	-	ditto	28.3
Nauritius	-	-	-	-	ditto	30.5
Fermudas	-	-	-	-	ditto	32.3
St. Helena, British Troops from 1816 to 1822, and 1836 to 1837	-	-	-	-	-	35.
Malassirim Provinces	-	-	Reports, &c.	-	1827 to 1836	50.
Madras Presidency	-	-	Quetelet	-	1826 to 1830	52.
Bombay - ditto	-	-	-	-	1826 to 1830	55.
Ceylon -	-	-	Reports, &c.	-	1821 to 1836	57.2
Bengal Presidency	-	-	Quetelet	-	1826 to 1830	63.
Hindward and Leeward Command, Reports, &c.	-	-	-	-	1817 to 1836	85.
Jamaica	-	-	-	-	ditto	143.
Alhamas, a small detachment	-	-	-	-	ditto	200.
Serra Leone, now withdrawn	-	-	-	-	ditto	483.

If we extend our inquiries on this subject, we shall find the annual decrement among the indigenous inhabitants of other countries to be very similar to that occurring among the natives of the British Isles, when serving like the latter in their native land, and like them, too, increasing when employed in foreign climates. The average annual mortality in the Prussian army, for example, from 1821 to 1830, was 11.7 per 1,000 of mean strength, and among the French troops, from 1820 to 1822 and 1824 to 1826, it averaged 19.8 per 1,000 of mean strength annually. The Prussian army is composed of younger men than the British, and the deaths among the French troops may possibly include those on foreign service, and thus account for the lower ratio of the former, and the higher ratio of the latter.

In most countries, however, we find the native residents enjoying a higher degree of health than the foreigners who may be dwelling among them.

\* The information in these Tables has been obtained from Inspector-General Marshall's Work on Validity, and from Col. Tulloch's Reports on the Health of the British Army.

**AVERAGE ANNUAL MORTALITY per 1,000 of Mean Strength of Soldiers of the British Empire, employed in their Native Countries.**

	Annual Mortality per 1,000.
British regiments, natives of the United Kingdom, and serving there - - - - -	15·9
Maltese Fencibles, natives of Malta - - - - -	9·
Hottentot corps, aborigines of Southern Africa - - -	12·5
Bengal Army, natives chiefly of the Northern provinces - -	13·
Madras Army, natives chiefly of the Peninsula of India - -	15·
Ceylon armed Lascareyns, natives chiefly of Ceylon, from 1821 to 1835 - - - - -	25·8
Average Annual Mortality per 1,000 of Soldiers of the Empire in their Native Countries - - }	15·2

Fifteen per 1,000 of mean strength may thus be regarded as the annual ratio of mortality among the soldiers of the British Empire, when serving in their native countries. The deaths among the Royal African corps amount to 32 per 1,000 ; but little is known of the native country of the men composing it ; being in general recaptured slaves, they may have come from the interior of Africa, possibly from table-lands and regions widely dissimilar to the hot and humid climate of Sierra Leone, where the corps is stationed ; and it has been thought proper to exclude them in calculating the average.

But in very few of the foreign countries where the Imperial troops have to serve is their health so good as in their native lands. With them, as with the natives of the British isles, most foreign climates seem to have an injurious effect.

**AVERAGE ANNUAL MORTALITY per 1,000 of Imperial Troops when in Foreign Countries.**

	Annual Mortality per 1,000.
Madras native troops, gun Lascars and Pioneers, serving in the Tenassarim provinces from 1829 to 1836 - - - - -	12·
Ceylon gun Lascars, natives of Madras and Bengal, serving in Colombo	13·
First Ceylon regiment of Malays from Java, Penang, Malacca and Singapore - - - - -	25·
Negro troops, military labourers in Jamaica, from 1817 to 1836 - -	30·
Ditto - - - ditto - - - Honduras - - - - -	30·
Ditto - - Black pioneers, of mixed origin, born in the Mauritius, partly, and in part brought from Madagascar, Mozambique, 1825-1836	37·2
Ditto - - brought from Africa, serving in Windward and Leeward Command, from 1817 to 1836 - - - - -	40·
Ditto - - brought from Africa, serving in Bahamas, 1817 to 1836 -	41·
Ceylon pioneer corps, natives of Madras and Bengal, from 1821 to 1833, serving among the passes and forests of Ceylon, and greatly exposed	43·
Negro troops, serving in Ceylon, brought from Goa and Mozambique -	61·
Ditto - - - - in Gibraltar, from 1816 to 1820 - - - - -	62·

The previous Tables may be advantageously combined to exhibit—

The AVERAGE ANNUAL MORTALITY per 1,000 among the Imperial Forces in their Native and Foreign Countries.

	Annual Mortality per 1,000.
British troops, natives of the Isles, serving in the United Kingdom - - - - -	15.9
Ditto - - - - - ditto - - - - - abroad * without the Tropics - - - - - 21.1	42.2
Ditto - - - - - ditto - - - - - ditto - † within the Tropics - - - - - 63.4	
British troops, natives of the Empire, serving in their native countries - - - - -	15.2
Ditto - - - - - ditto - - - - - foreign countries	35.8

This Table shows that the indigenous inhabitants of tropical as well as of most of the temperate latitudes, however well suited to the climates of the countries where they and their forefathers were born, whenever sent out of their native lands, suffer from a rapid rise in the rate of mortality; and this increased rate is observed when the climate differs but little, as well as when it differs very greatly from the climate of the country in which they were born. A reference to the last Table will show that, among Black troops employed in tropical regions, apparently not very dissimilar to their own, the deaths are more than double the number occurring in their native countries, being as 35 to 15. The rate of mortality among British troops, natives of the British isles, is still higher than this when serving from home. In countries without the Tropics, it is half as much more, or as 16 to 21. Within the Tropics, the mortality, in the average of the Commands, is four times higher than in Britain; and, in some of the colonies, the average number of deaths among the British troops, is increased to 20 times the usual amount of that occurring in their native land.

These rates, too, it must be remembered, only exhibit the mortality during peace, when the troops are placed under the most favourable circumstances. The ratio rises much higher, when to the ordinary hurtful influence of a foreign climate are added the harassing marches, short fare, exposure and anxiety, the invariable attendants of war; and great as the difference is between the number of deaths among our soldiers in Britain, and in the more unhealthy of our colonies, the history of our wars records a still more appalling mortality, and shows how fearfully climatorial agents affect the human frame when fully exposed to their action. The number carried off during war, in temperate as well as in tropical countries, is very great; and there are some facts inducing the belief that the native inhabitants suffer almost as much as the foreigners when equally exposed with the latter.

\* Average of New South Wales, Cape of Good Hope, Nova Scotia and New Brunswick, Malta, Upper and Lower Canada, Gibraltar, Ionian Islands and Bermuda.

† Average of Mauritius, St. Helena, Tenasserim Provinces, Madras, Bombay, Ceylon, Bengal, Windward and Leeward Command, and Jamaica.

The mental stimulus attending on success, and the depressing effects of defeats and reverses, no doubt exercise an influence over the health. Success, with the elatement and plenty it generally brings, and the anxiety that waits on reverses and defeats, must materially preserve the health or destroy it. But even with unvarying success, the mortality during war is very high, much higher than in most of our unhealthy colonies. More extended data than any we can here offer would be required to come to any definite conclusions, but the annexed Table will show, to some extent at least, the mortality to be expected during periods of war.

The AVERAGE ANNUAL MORTALITY per 1,000 of Mean Strength of  
British Troops during War.\*

	Average Annual Deaths per 1,000,		
	From Wounds.	From Disease.	TOTAL.
For the Expedition to Walcheren, 39,219 troops embarked for service, 28th August 1809; of these 217 were killed in action, and 4,175 died from disease, and on the return of the army to Britain, 11,513 were reported sick on the 23d December, a period of 117 days: supposing it to have continued, this would have given an annual ratio of - - - - -	16·7	332·	348·7
In the Peninsula, from January 1811 to May 1814, a period of 41 months, out of a mean force of 61,511, the total deaths were from disease, 24,930; from wounds in battle, 8,889: 33,819 - - - - -	42·4	118·6	160·9
And among the officers during the same period, there occurred - - - - -	66·	37·	103·
In Ceylon, during 1818 and 1819, two years of war, but numbers actually employed unknown, 1st year - - - - -	-	-	218·
In Ceylon, during 1818 and 1819, out of 2,698, the average strength at Ceylon, 2d year -	-	-	129·
In Burmah, during 1824, first year of war, deaths among all ranks - - - - -	35·	450·	485·
In Burmah, during 1824, and 1825, first and second years of war, deaths among officers -	106·6	300·	406·6
In Ceylon, Negro troops in 1818, 1819 -	-	-	132·3
In Burmah, 10 regiments, Bengal and Madras Sepoys and Pioneers, each supposed 800 strong employed there - - - - -	-	-	400·

War, however, is but a temporary state, and the loss of life, though proportionally severe, is but little in the aggregate compared with the annual loss in foreign countries during peace. It is, therefore, to the means of

\* The information in these Tables is collected from Inspector-General Marshall and Col. Tulloch's invaluable Reports.

preserving the soldiers' health in peace that attention should be directed ; and when we consider the little success that has attended our efforts to ascertain the causes of the great sickness and mortality which the soldiers of the Empire suffer from when employed out of their native countries, it cannot but be a source of much pleasure to see it established, that by employing the natives of the countries which we have conquered and wish to retain, to garrison and protect their own territory, we have it in our power to diminish greatly the waste of life : for it seems clearly proved by the foregoing Tables of the ratios of mortality among soldiers, that throughout our colonies in tropical or temperate latitudes, the mortality among the troops of the British Empire, when employed in the countries of which they are the aboriginal inhabitants, or in which they or their forefathers have been born and become naturalised, is only 15 per 1,000, or one in every 66 of their number ; while the deaths among our troops when in foreign countries, are often 10 and even 20 times greater.

These facts sufficiently indicate the importance of employing in our armies the natives of the lands that come into our possession, when not debarred from this by political considerations. Indeed, the Indian government have long practically acted on this ; and it is only alluded to here, that one of the principal objects of the plan, that of saving the lives of their troops, may not be lost sight of. The natives in the principal armies of Bombay, Madras and Bengal have been found almost as unable as Europeans of bearing up against the noxious influences of several of the unhealthy parts of the country.\* The Sepoys of the Bengal army, men recruited in the northern provinces of Hindostan, often suffer so severely in the hot and humid atmosphere of Bengal and Arracan, as to be completely broken up before their period of three years' service expires, and require a change to some of the northern provinces to recruit their health. And the Bombay regiments, which are almost similarly formed, with the addition of a few men from the table-land of the Dekhan, and the valleys of Maharashtra, suffer in the same manner when serving in the plains of Guzerat. I am aware how erroneous deductions from a limited number of cases are apt to be, and therefore refrain from stating the few that have come to my knowledge, though this indeed is of less consequence, from the fact being so generally known that a tour of duty in Bengal, Arracan or Guzerat, often cripples the regiments before it expires. Corps have accordingly been raised in many parts of India for military as well as political reasons, to occupy particular districts and localities. A local corps composed of Mugs, the natives of Arracan, has been raised under the name of the Arracan Battalion, to perform the military duties there. In the Bengal Presidency, in addition to the regiments of regular cavalry and infantry, there are several corps peculiarly local, raised and employed in unhealthy districts, and among the forests, hills and passes, where the troops of the regular army are found inefficient ; and the Nasseree Battalion, the Bhagulpore hill rangers, the Sylhet light infantry, the Muzaffpore legion, and the military police in central India, might be mentioned as instances of the carrying out of this system.

I am aware that political reasons led to the formation of many of these corps ; but the superior health of the aborigines to that of the men in the regular armies, who may be regarded as foreigners, was also kept in view

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\* "The native soldiers on the Bengal establishment," says Capt. Henderson (As. Res. vol. 20, p. 11), "are particularly healthy under ordinary circumstances. It has been found by a late inquiry, embracing a period of five years, that only 1 in 135, = 7.6 per 1,000 of the men on the actual strength of the army, died per annum. So injurious, however, is Bengal proper to this class of natives, in comparison with the Upper Provinces, that although only one-fourth of the troops are stationed in Bengal, the deaths of that fourth are more than a moiety of the whole mortality reported."

when being raised.\* The Talain corps in Burmah, and the Nair brigade on the Malabar coast, are perhaps the only instances in the Madras Presidency of the adoption of this principle. The Ahmednugger police corps, raised among the Mhars, Ramossies and Bheels of the neighbourhood, to occupy the posts along the hill ranges of the Dekhan; the Bheel corps, formed to coerce their own tribes among the hills and valleys of Guzerat and Candeish; the Tannah and Concan, or Rutnagheree rangers, holding posts between the Concan and the Dekhan, are instances of the employment of the aborigines as troops by the Bombay government, who retain other local corps in several parts of the country. In Bengal there are more than 30 irregular corps of foot and horse, many of them employed for purely local purposes; and in Bombay they are as much required as in Bengal, because the humid atmosphere among the forests and western ghats, and the hot, moist climate of Guzerat, is found as inimical to the health of the Rajahpoots and natives of the Dekhan, of whom the regiments of the Bombay Presidency are composed, as the almost similar climates of the provinces of Bengal and Arracan are to their Bengal comrades.

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\* Though the Indian armies are employed in Asia, and therefore in countries not altogether dissimilar in climate and products to that of their native provinces, there are, nevertheless, marked differences in climate existing in consequence both of latitudes and altitudes. And not more than half the Madras army, and about the same number of the Bengal troops, are at any time serving in the territories of which they are, strictly speaking, natives; while nearly the whole of the Bombay army are strangers in the countries in which they are employed.



