

Death, Disease and Medicine on Jamaican Slave Plantations; the Example of Worthy Park, 1767-1838.

by Michael CRATON*

Even while condemning the institution of slavery, many modern writers on the subject have echoed the early apologists of slavery in assuming that the health of plantation slaves can be positively correlated with the number of doctors and the amount of medicine used.¹ The motives of the slaveowners are usually acknowledged to have been economic calculation rather than disinterested philanthropy, but the facts that there were more 'doctors' in Jamaica in 1800 than in 1900, that nearly all plantations had their own practitioners, and that medicines featured largely in any list of imported plantation supplies, are taken as evidence that slaves were relatively well cared for. Without such care, it is assumed, slave health conditions would have been far worse; perhaps even as bad as those in the notorious 'graveyard' of the West African coast.²

More careful research, however, revises—even reverses—these views. Ignorance of the etiology of tropical diseases placed them largely beyond human control, and this situation was compounded by treatments based upon a purblind ignorance of human physiology, and an irrelevant pharmacopeia. Even at Worthy Park plantation in central Jamaica, which was serviced for 55 years by a doctor famous for his efficiency, slave medicine was a mixed blessing indeed.³

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¹ Not excluding Michael CRATON, *Sinews of Empire; A Short History of British Slavery*, (New York: Doubleday, and London: Temple Smith, 1974), 192-4. The ideas in this paper largely stemmed from remarks concerning the dubious benefits of European medicine practised in West Africa, made by Philip D. Curtin while commenting on a paper on West Indian slave-doctors by Richard B. Sheridan at the M.S.S.B. comparative slavery conference at Rochester, New York, in March 1972. CURTIN's own article, "Epidemiology and the Slave Trade," *Political Science Quarterly*, LXXXIII, 2 (June 1968): 190-216, was the pioneer work on this subject. See also Richard H. SHYROCK, "Medical Practice in the Old South," *South Atlantic Quarterly*, XXIX, 2 (April 1930), reprinted in *Medicine in America; Historical Essays* (Baltimore: Johns Hopkins Press, 1966), 49-70. Much of the material here is to be included in a chapter in a forthcoming study of slaves, slave society and ex-slaves, *Searching for the Invisible Man*, to be published by Harvard University Press, later in 1976.

² For an analysis of the mortality in West Africa, mainly white, which shaped European views, see K.G. DAVIES, "The Living and the Dead: White Mortality in West Africa, 1684-1732," in S. ENGERMAN and E. GENOVESE, eds., *Race and Slavery in the Western Hemisphere; Quantitative Studies* (Princeton University Press, 1975).

³ Hans Sloane's strictures against black doctors (1707) could indeed be turned by modern commentators against such white practitioners as Sloane himself: "[...] There are many such *Indian* and Black Doctors, who pretend, and are supposed to understand,

Under the Jamaican Consolidated Slave Law of 1792, not only were overseers to hand in to the vestries annual lists of births and deaths on their plantations on a penalty of £50 for non-compliance, but every plantation doctor was also, "...on oath, to give-in an account of slaves dying, with, to the best of his judgement, the causes thereof, under penalty of £100 for each neglect..."⁴

Thus, for at least those estates for which records have survived, there exist cause-of-death diagnoses up to the standards attained by eighteenth century plantation doctors. In addition, at Worthy Park and some other estates the slave ledgers included, rather less systematically, comments on the health of slaves whose efficiency was impaired, and lists of medicines used. Besides this, Worthy Park's chief slave doctor, John Quier (1739-1822), published an account of seven years of his practice in the district.⁵

What follows is a table showing all the causes of death ascribed in the Worthy Park records between 1792 and 1838, applying to 401 slaves. Wherever possible, the slave doctor's diagnoses have been translated into modern terms, and grouped together into classes along the lines of the World Health Organisation categories. Further on, the significance of the diagnoses given in the 'Condition' columns of the Worthy Park slave ledgers is also discussed, but the Condition listings are so much less systematic and conclusive — so much less final — than Causes of Death, that they cannot easily be tabulated.

WORTHY PARK: INCIDENCE OF CAUSES OF DEATH NOTED, 1783-1838, ASSIGNED BY WORLD HEALTH ORGANISATION CATEGORIES.

<i>Worthy Park Diagnoses</i>	<i>Incidences</i>	<i>Modern Diagnoses</i> (where different)	<i>W.H.O. Categories</i>
Dysentery	10	Bacillary Dysentery	I 004
Flux	25	Diarrhoeal Disease	009
Phthisis, Consumption	15	Tuberculosis	011
Coco Bays	2	Leprosy (Arabian)	030
Whooping Cough, Croup	4		033
Locked Jaw	2	Tetanus	037
Measles	5		055
Smallpox	2		056
Diseased Brain, Water on the Brain	2	Encephalitis	062
Yaws	24		102

and cure several Distempers, but what I could see of their practice [...] they do not perform what they pretend, unless in the vertues of some few Simples. Their ignorance of Anatomy, Diseases, Method, &c. renders even that knowledge of the vertues of Herbs, not only useless, but even sometimes hurtful to those who imploy them [...]" *A Voyage to Madera... and Jamaica*, 2 vols. (London, 1707, 1725), I, cxli.

⁴ *Jamaican Act of 32 George III, c. xxiii, 33-5.*

⁵ J. QUIER, J. HUME and others, *Letters and Essays on the Smallpox* (London, 1778).

⁶ *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, Based on the Recommendations of the Eighth Revision of Conference, 1965, and Adopted by the Nineteenth World Health Assembly*, 2 vols., (Geneva: World Health Organisation, 1967).

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Dirt Eating	9	Helminthiasis		127
Worms, Worm Fever	14	Internal Parasites		129
Fever	26			
Palsy	3	Cerebral Palsy	VI	343
Fits, Convulsions, Epilepsy	7	Epilepsy		345
Complaint in Spine	1	Spinal Chord Disease		349
Apoplexy, Stroke	2		VII	436
Elephantiasis	1			457
Violent Cold, Cough, Catarrh	11	Acute Common Cold	VIII	460
Influenza	2			470
Pneumonia	1			480
Asthma	4			493
Pleurisy	10			511
Abcess in Lungs	2			513
Rupture	3	Hernia	IX	551
Suppression of Menses	2	Menstrual Disorder	X	626
Childbed	7			644
Puny from Birth, At Birth, Still Born	18		XI	677
Ulcers, Ulceration	14	Chronic Skin Ulcers	XIII	707
Spasms	1	Nervous System	XVI	780
Dropsy, 'Cold, Bloating & Dropsical'	38	Cardiovascular, Lymphatic		782
Lung Trouble, Sore Throat	3	Respiratory System		783
Stomach Complaint	1	Upper Gastro-intestinal		784
Bloating, Swelled & Bloating, Inflammation of Bowels	4	Lower Gastro-intestinal		785
Swelled Leg, Sore Foot	4	Limbs & Joints		787
Old Age, Decline, Weakness, Infirmity, Invalid (where old)	89	Senility		794
Suddenly, In the Night, Sudden, Act of God, Vindication of God	7	Sudden Death (Unknown Cause)		795
Diseased Many Years, Infirmity, Invalid (not aged), Sick Some Time, Worthless, At Hospital in Kingston	7	Other Sicknesses, Unspecified		796
Accident	14		XVII	880
Ate Poison, Suicide by Poison	3	Suicide		950
Shot while Stealing	1	Legal Intervention		970
Suffocation	1			994

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The 401 specific causes of death from Worthy Park represent perhaps the largest sample it is now possible to recover from a single Jamaican estate. However, any such single source needs careful preliminary evaluation before its general value is established. The two chief deficiencies of the data are that they are not complete, and that they are derived from a population which changed considerably during the 46 years covered, particularly in the gradual increase in the proportion of Creole (island-born), and thus fully 'seasoned' (acclimatised) slaves. It is likely that between 1792 and 1838 some 1,100 slaves actually died at Worthy Park, so that causes of death are specifically unknown for almost two-thirds. However, the nature of the records determine that these causes of death can

be regarded as virtually a random sample, scattered evenly over the entire period and over the whole range of the population.

Causes of death data are deficient for two periods of exceptional mortality, following a large influx of new Africans in the 1790s, and the arrival of more than 100 new Creoles in 1830. This may have led to a slight understatement of the deaths by 'fever' and 'flux'. Yet these periods of exceptional mortality occurred in only about four of the 46 years covered. Were all causes of death in those years specifically known and recorded, this would surely have led to a severe distortion of the overall situation. Moreover, only a minority of Jamaican estates had comparable influxes of population in slavery's last years.

Another area of slight doubt was the degree to which causes of infant death were underrepresented. It is well known that infant mortality itself was commonly understated by plantation records, though not quite to the degree that some writers believe.⁷ At Worthy Park, the number of those who were born and died during the intercensal periods and thus went unrecorded was probably no more than one in five overall. Over the period 1792-1838 just over 30 per cent of those born on the estate died in their first five years. Only about 20 per cent of the known causes of death related to deaths in this age range. But since about a third of Worthy Park's slaves were African-born and never were infants at Worthy Park it seems likely that causes of infant death were not underrepresented at all.

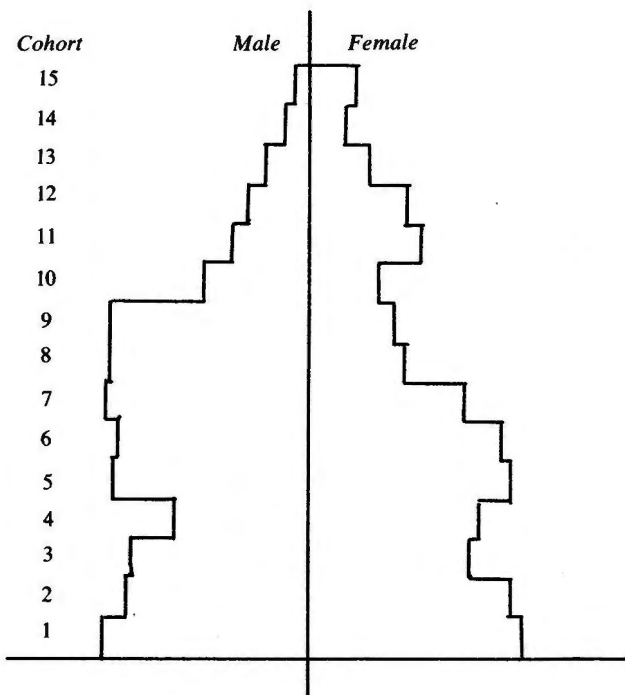
It is a commonplace of plantation studies that new African slaves suffered far higher mortality rates and died from different diseases than seasoned Creoles. Yet it should be remembered that by the beginning of the period covered an established plantation of 500 slaves would, on the average, receive only two or three new Africans a year, and that from the ending of the British slave trade in 1808 the flow dried up altogether. Accordingly, for Jamaica as a whole, and for most long-established estates, the proportion of Africans in the slave population declined from only about 50 per cent in 1792, to no more than 10 per cent in 1838. The Worthy Park figures were 42.1 per cent in 1784, soaring to 63.4 per cent in 1794, and then declining gradually to 37.9 per cent in 1813 and 9.6 per cent in 1838.⁸

If it is accepted then that the causes of death from Worthy Park for the last half century of slavery were more or less random and representative, it is worth stating here what were the average demographic characteristics of that plantation during that period, in respect of the sex ratio, age cohorts, mortality and fertility levels, and life expectancies.

⁷ For example, by George W. ROBERTS. *The Population of Jamaica* (Cambridge University Press, 1957), 165-75. Roberts, however, does not prove his contention; he asserts it, substituting figures for a later period of the worst known infant mortality (the 1890s), on the assumption that slavery must have been as bad, or worse.

⁸ Michael CRATON, "Jamaican Slave Mortality; Fresh Light from Worthy Park, Longville and the Tharp Estates," *Journal of Caribbean History*, III, (November 1971): 1-27. The percentage of Africans at Worthy Park actually rose steeply in 1792 itself because of the influx of over 200 new Africans. It was 45.7 per cent in 1791 and 60.3 per cent in 1793.

WORTHY PARK: AVERAGE POPULATION PYRAMID 1784-1813



Cohort	Ages	Totals in cohorts	Males	Females	% in Cohort of Total	% Males in Cohort of Total	% Females in Cohort of Total
1	0 - 4	488	241	247	10.76	5.31	5.45
2	5 - 9	447	215	232	9.86	4.74	5.12
3	10 - 14	392	208	184	8.64	4.59	4.05
4	15 - 19	350	158	192	7.72	3.48	4.24
5	20 - 24	459	230	229	10.12	5.07	5.05
6	25 - 29	451	225	226	9.95	4.96	4.99
7	30 - 34	417	236	181	9.20	5.20	4.00
8	35 - 39	335	230	105	7.39	5.07	2.32
9	40 - 44	325	227	98	7.17	5.01	2.16
10	45 - 49	205	123	82	4.52	2.71	1.81
11	50 - 54	220	89	131	4.85	1.96	2.89
12	55 - 59	181	68	113	3.99	1.50	2.49
13	60 - 64	126	50	76	2.77	1.10	1.67
14	65 - 69	69	27	42	1.52	0.60	0.92
15	70 +	70	11	59	1.54	0.24	1.30
		4535	2338	2197	100.00	51.55	48.45

WORTHY PARK: AVERAGE POPULATION PYRAMID 1784-1813

Cohort	Ages	Numbers in each Cohort	% of Total in each Cohort	Recorded Deaths in each Cohort	% Dead in each Cohort	Dead each year per thousand (av. mortality 39.37)	Annual Death rate (per thousand)	Probability of Dying in Cohort Period	Dead in Each Cohort Period of 10,000 at year 0	Survivors at end of each Cohort Period	Expectation of Life at beginning of each Cohort Period
1	0 - 4	488*	10.76	63**	14.26	5.61	52.14	.2607	2607	7393	27.4
2	5 - 9	447	9.86	24	5.43	2.14	21.70	.1085	802	6591	31.2
3	10 - 14	393	8.64	17	3.85	1.52	17.59	.0879	579	6012	29.7
4	15 - 19	350	7.72	13	2.94	1.16	15.03	.0752	452	5560	27.3
5	20 - 24	459	10.12	55	12.44	4.90	48.42	.2421	1346	4214	24.3
6	25 - 29	451	9.95	28	6.33	2.49	25.03	.1252	528	3686	26.3
7	30 - 34	417	9.20	28	6.33	2.49	27.07	.1354	499	3187	24.7
8	35 - 39	335	7.39	26	5.88	2.31	31.26	.1563	498	2689	22.8
9	40 - 44	325	7.17	33	7.47	2.94	41.00	.2050	551	2138	20.6
10	45 - 49	205	4.52	27	6.11	2.41	53.32	.2666	570	1568	19.0
11	50 - 54	220	4.85	21	4.75	1.87	38.56	.1928	302	1266	18.2
12	55 - 59	181	3.99	17	3.85	1.52	38.10	.1905	241	1025	15.3
13	60 - 64	126	2.77	19	4.30	1.69	61.01	.3050	386	639	12.0
14	65 - 69	69	1.52	26	5.88	2.31	151.97	.7594	485	154	4.9
15	70 +	70	1.54	45	10.18	4.01	—	1.0000	154	0	2.5
Totals:		4535	100.00	442	100.00	39.37					

* 21 added for under-recording

** Increased by 50% from 42 for under-recording

Worthy Park was a typical Jamaican sugar plantation in most respects, though somewhat larger, further inland, and consequently even more self-contained than the average. How then did its pattern of death and disease compare with other types of settlement and other areas? Although comparable vital statistics were not obtainable, it has at least proved possible to compare the Worthy Park causes of death figures for 1792-1838 with the only previously published cause-of-death analysis for a West Indian slave population, derived from British Guiana, 1829-32, and with figures for the total population of heavily urbanised St. Catherine's parish, Jamaica, between 1774 and 1778, including free whites, coloureds and blacks as well as slaves.¹⁰

In fact, when looking for comparisons with the Worthy Park causes of death, it was the data from St. Catherine's — a lowland area with some sugar plantations but heavily dominated by Spanish Town, the Jamaican capital — which were first employed. The contrasts between a tightly-knit but closed and rural population of slaves, and largely urbanised and geographically mobile population, including all races and classes, were immediately apparent. This was particularly so in the far greater incidence of death by 'fever' and the far smaller number of deaths by old age in Spanish Town and its environs. A tragically high proportion of those who died from fever in Spanish Town were members of the white army garrison who, during their period of acclimatisation, suffered from one of the highest mortality rates in the world.¹¹ The evidence for mortality among urban slaves is ambivalent,¹² but it is almost certain that the beneficial effects stemming from the fact that they were largely Creoles, and from rather better food and working conditions than on plantations, were offset by a vulnerability induced by slum crowding, poor sanitation, nearby swamps, and the chances of reinfection by transients, particularly in respect of epidemics. All in all, the mortality rates in tropical towns were

⁹ These tables are all taken from the forthcoming *Searching for the Invisible Man*, Chapter III.

¹⁰ The British Guiana data is cited in ROBERTS, *op. cit.*, 175. The St. Catherine's data is derived from Jamaica, Island Record Office, *St. Catherine's Copy Register, Causes of Death*, Vol. I. There is a list of death causes in Edward BRATHWAITE, *The Development of Creole Society in Jamaica* (Oxford, Clarendón Press, 1971), but since these refer to the deaths of soldiers in the military hospital, it is not comparable. Barry Highman, "Slave Population and Economy in Jamaica at the Time of Emancipation" (unpublished Ph. D. thesis, University of the West Indies 1971) also has a cause of death table for parts of Jamaica in the Registration period (1817-29). This suggests close parallels, but cannot be correlated with those given here because of the smallness of the samples (125) and the differing categories. Between 1817 and 1836 the average annual mortality for white troops stationed in Jamaica was 121.3 per thousand, of whom 101.9 died from fevers. This compared with total figures for black troops of 30 per thousand (fevers 8.7). The comparable figures for the Windwards and Leewards station were 78.5 per thousand for white troops (fevers, 36.9), and 40 (fevers, 7.1) for black troops. ROBERTS, 165-72, quoting TULLOCH and MARSHALL.

¹² Barry Highman believes that 'race/geographic' origin was more important than rural/urban dichotomy, and that 'urban' slaves were healthier than plantation slaves. However, his definition of 'urban' includes concentrations no larger than a hamlet, as well as the few true Jamaican towns; Kingston, Port Royal, Spanish Town, Montego Bay.

probably twice the average for whole colonies, and higher than for any plantations.¹³

Though largely explicable, the very great differences between the causes of death from Worthy Park and from St. Catherine's left the question of the typicality of Worthy Park as a sugar plantation up in the air. The discovery of the remarkable correlation between Worthy Park's figures and those for a far larger sample drawn from sugar plantations in a colony a thousand miles distant in a rather later period, was therefore very exciting. Many contemporary writers spoke of sugar plantations as if they were standard in every respect, and of the contrasts between different types of settlement and locations within the Caribbean. Some analysis has recently been made of differences in overall mortality figures.¹⁴ But here for the first time was statistical evidence by specific causes of death. Moreover, from this it was clear that there were health characteristics common and peculiar to sugar plantations wherever they were found within the Caribbean region. These contrasted to a marked degree with West Indian towns, and probably differed to a lesser but significant degree from smaller, less intensively cultivated plantations growing staples other than sugar, in hillier areas, for which similar work remains to be undertaken.

In drawing up both cause-of-death tables there were many difficulties of classification. Too many of the alleged explanations of death from Worthy Park were non-specific or downright evasive. What, for example, is learned from 'Accident'? And what can be made of 'At Hospital in Kingston', 'Suddenly', 'In the Night', or 'A Vindication of God'? In a dismaying number of cases the doctor was describing — and presumably had been treating — symptoms rather than actual diseases. 'Convulsions' and Gastro-Intestinal complications were particularly difficult to identify, but even the common diagnoses of 'flux', 'fever', 'ulcers', and 'dropsy' proved troublesome. At first sight there also seemed to be a remarkably high number of different causes of death. However, discriminating reclassification — first along World Health Organization lines and then, less scientifically, into the categories used for the British Guiana slaves — elicited a much clearer picture.

Despite the depredations of epidemics (not all of which were killers) and the decimation of the 'seasoning' process among new slaves, the chief single cause of death on sugar plantations was still old age — or at least debility among elderly adults. That over a fifth of the slaves lived long enough to die of what were regarded as natural causes surely runs counter to the impression given by *average* survival rates, which suggest a life expectancy at birth of less than 30 years for Creoles, and for newly-arrived Africans an average expectation of no more than a dozen more years.

¹³ As late as 1851, the annual mortality rate in New Orleans was 81 per thousand, three times as high as contemporary rates in London, New York and Philadelphia. The rate for Jamaica as a whole in the last decades of slavery was about 35 per thousand, compared with the 1792-1838 average for Worthy Park of 40 percent.

¹⁴ For example, HIGMAN, *op. cit.*

COMPARATIVE CAUSES OF DEATH: WORTH PARK, 1792-1838;
BRITISH GUIANA, 1829-32; ST. CATHERINE'S (SPANISH TOWN), 1774-8.¹⁵

	Worthy Park Slaves, 1792-1838	British Guiana Slaves 1829-32	St. Catherine's (Spanish Town) 1774-8
Old Age, Debility	22.2	19.1	3.6
Dysentery, Flux	8.7	12.0	9.3
Dropsy	9.5	9.2	3.4
Pulmonary Diseases	11.4	9.2	5.7
Fevers (inc. Measles, Small pox)	9.2	8.1	39.9
Yaws, Ulcers	9.5	6.1	6.1
Inflammations, etc.	2.0	4.4	3.8
Gastro-Intestinal	6.0	4.3	3.8
Accidents	4.3	4.2	1.6
Leprosy	0.5	3.8	—
Convulsions	3.8	3.7	6.3
Lockjaw	0.5	2.6	0.8
Syphilis	—	1.0	1.1
Others & Unknown	12.4	12.3	14.6
	100.0	100.0	100.0

¹⁵ Basic categories from British Guiana slave data; ROBERTS, *Population of Jamaica*, 175. Data for St. Catherine's from Jamaica, Island Record Office, *St. Catherine's Copy Register, Causes of Death*, Vol. I. Total sample of 472 made up and allocated as follows: Old Age, Debility — 'Old Age', 17; Dysentery, Flux — 'Putrid Fever', 40, 'Flux', 4; Dropsy — 'Dropsy', 16; Pulmonary Diseases — 'Consumption', 25, 'Pleurisy', 2; Fevers (inc. Measles, Smallpox) — 'Fever', 159, 'Fever and Worms', 4, 'Nervous Fever', 2, 'Smallpox', 21, 'Spotted Fever', 1, 'Putrid Sore Throat', 1; Yaws, Ulcers — 'Decayed', 28, 'Sore Leg', 1; Inflammations, etc. — 'Swelling', 1, 'Gout', 9, 'Schirrous Liver', 1, 'Gout in Stomach', 2, 'Bilious Fever', 5, 'Bellyache', 2, 'Swollen Liver', 1, 'Gravel', 1, 'Obstruction', 1; Accidents — 'Accident', 2, 'Murdered', 2, 'A Fall', 3; Convulsions — 'Fits', 26, 'Convulsions', 3, 'Palsy', 1; Lockjaw — 'Lockjaw', 4; Syphilis — 'Sores & Ill Habits', 5; Others and Unknown — 'Unknown', 28, Not stated, 7, 'Infancy', 1, 'Childbirth', 6, 'Rheumatism', 1, 'Surfeit', 1, 'Mortification', 1, 'Apoplexy', 3, 'Teething', 1, 'Suspicious', 2, 'Suddenly', 7, 'Hystericks & Broken Hearted', 2, 'Hanged' (for forgery), 1, 'Insobriety', 4, 'Cancer', 1, 'Want', 1. In these St. Catherine's diagnoses 'Decay' might well be a synonym for the 'Debility' used in British Guiana. 'Putrid Fever' may well be a synonym for 'Flux'. The incidence of fever was disastrously high among the garrison. The two victims of Bellyache were both planters. Some of those listed with convulsions may well have suffered from worms. Leprosy (like Venereal Disease) was probably not specifically diagnosed for social reasons. A high proportion of the population of St. Catherine's was white, coloured and free, though persons were not invariably identified by race or status in the Register.

Epidemics of measles, smallpox and yellow fever carried off numbers of plantation slaves in some years, but the dreaded 'fluxes' struck more regularly and killed even more overall. Known by their symptoms either as the 'white' or 'bloody' flux, these were nearly all varieties of bacillary dysentery, particularly infection by the protozoa *shigella shigae*. Bacillary dysentery could kill quickly by dehydration and poisoning by bacterial toxins. Amoebic dysentery was probably less common, and where fatal was not always identified as a flux, killing more slowly by chronic infection and secondary ulcerations in intestines, liver or lungs.

Plantation deaths from 'inflammation' and 'mortification' were rather less common than might be expected. On the other hand, intestinal and subcutaneous parasites were extremely common, and it was not the most evident types — such as the nauseating tape and guinea worms — which were necessarily the most dangerous. The tiny hookworm in particular was a far more serious and widespread cause of ill-health, debility and death than was recognised by contemporary doctors. The larvae of these creatures were picked up by bare feet, causing what was known as 'ground itch' between the toes. Shedding their skin and burrowing, the larvae travelled through the bloodstream to the lymph glands or lungs, where they caused a cough. Migrating to the mouth, they were ingested, finding a home in the intestines, where they came to maturity. Still only about a centimetre long, hookworms, if undisturbed, could live in their host for seven or even 10 years. Females in season laid thousands of eggs a day which, deposited in faeces, restarted the cycle.

Where colonies of over 500 hookworms developed, ancylostomiasis, or hookworm disease, resulted. This was characterised by symptoms often regarded as separate diseases: flux-like emissions, fluid retention ('dropsy'), convulsions, and the mysterious craving to eat strange substances, particularly clay ('dirt eating').¹⁶ Besides this, non-fatal ancylostomiasis could stunt growth and delay puberty, and caused chronic anaemia, which brought on the fatigue, dullness and apathy which were often regarded as natural African traits.

Dysentery and intestinal parasites were promoted by unhygienic overcrowding, especially where drinking water, earth closets and cooking facilities were in close proximity, and lack of washing water made personal cleanliness difficult. In these respects, Worthy Park, with good running water from an aqueduct, was rather more fortunate than some estates and most of the crowded 'yards' of the Jamaican towns. This may have been the reason why the recorded cases of tetanus, or lockjaw, in infants — normally contracted through umbilical infection in unhygienic conditions, and invariably fatal — were fewer at Worthy Park than elsewhere. An-

¹⁶ For contemporary views on 'dirt eating' see Thomas DANCER, *The Medical Assistant; or Jamaica Practice of Physic* [...] (Kingston, Jamaica: Aikman, 1801); James THOMPSON, *A Treatise on the Diseases of Negroes as they occur in the Island of Jamaica* (Kingston, Jamaica: Aikman, 1820), 24, 32; James STEWART, *A View of the Past and Present State of the Island of Jamaica* (Edinburgh: Oliver & Boyd, 1823), 307. Some modern commentators have suggested a connection between dirt eating and the deficiency disease beri-beri; Shyrock, 'Old South', 50.

other reason, though, might have been that the Worthy Park doctor was less ready than other plantation doctors to diagnose lockjaw as a cause of death.¹⁷

At least two fevers which were later recognised as tropical scourges, the food and water-borne typhoid, and the louse, flea, and mite-borne typhus, were also encouraged by unhygienic conditions such as were found in West Indian plantations and towns. Unfortunately, certain identification of these fevers in the West Indies during slavery days is now impossible. However, if they did occur, typhoid was probably more common in the towns than on rural plantations, and of the three main types of typhus, scrub typhus, carried by ticks and chiggers and characterised by dropsy-causing myocarditis, was that most likely to have occurred on plantations. Cholera was apparently not known in the West Indies until after British slavery ended, though there were disastrous outbreaks later. Diphtheria, if it existed, was not recognised during slavery days.

Of the endemic fevers detectable in the records, malaria ('ague') and dengue were widespread, but the chief killer was probably yellow fever. This disease, so-called for the jaundicing that followed from liver infection, was technically endemic, but went through epidemic phases as different strains of virus went the rounds. Doctors correctly associated fevers with marshes, but erroneously attributed infection to 'miasmas' rising from them at night, rather than to the *anopheles* and *aedes aegypti* mosquitoes that bred in them and carried the viruses. Slaves did what they could to repel mosquitoes by sleeping with permanently smoking fires nearby, but this was to reduce the nuisance rather than through a perception of danger. It was the immunisation process of the passage of time rather than such preventative measures which brought about the gradual decline in deaths from fevers. Many slaves indeed were already

¹⁷ In his report to a committee of the Jamaican House of Assembly in 1788, Dr. Quier was reported as saying, "That he has not in general observed any very great Mortality amongst the Negro Infants, soon after their Birth, in that part of the Country where he practises, nor any peculiar Disease to which they are more subject, than any other Children would be under the same Circumstances [...]. That in his Opinion, difficult Labours happen as frequently amongst Negro Women here as amongst the Females of the Labouring Poor in England; but that he has not observed that a greater proportion of the Infants of the former perish in the Delivery than of the latter; that he does not conceive the Tetanus or Locked Jaw to be a disease common to Infants in the part where he practices; that he apprehends there may be a reason to suppose that a Symptom which generally attends approaching Death, from whatever Cause it may proceed, in Children vizt. a Paralysis of the Muscle of the Lower Jaw, has been frequently mistaken by People unacquainted with Medicine, for the Tetanus, as he has often observed the same name to be given in common discourse to both those Afflictions though of so very different a Nature [...]." Report of the Assembly on the Slave Issues, enclosed in Lt. Gov. Clark's No. 92, 20 Nov. 1788, London, Public Record Office, C.O. 137/88.

Relative to the common belief that many slave infants died of tetanus before they reached the age of nine days it is worth pointing out both that tetanus is rarely fatal in less than two weeks, and also that slave mothers probably regarded the killing of an ailing infant less than nine days old as abortion, not infanticide, since the humanising spirit was believed to be acquired after the ninth day. For tetanus, see also, Edward LONG, *The History of Jamaica*, 3 vols. (London, 1774), III, 713; DANCER, *Medical Assistant*, 269.

less likely to suffer from certain types of disease notoriously fatal to Europeans in the tropics. Most types of malaria and yellow fever were African in origin, and African slaves at least had inbuilt immunities. Sleeping sickness (trypanosomiasis), however, was only known among the African-born, since the infection was carried by the tsetse fly, which never migrated from Central Africa to the West Indies.

Rather more common killers than fever on plantations, even among acclimatised slaves, were the many varieties of pulmonary infection imported from Europe. In these cases, resistance was low through lack of immunisation, but also was sapped by overcrowding, overwork, and deficient diet. Influenza could kill directly, but even the common cold could accelerate into fatal pneumonia, or a cough or 'catarrh' degenerate into 'galloping consumption'. Whooping cough, though not common, could be fatal to slave children. Diet and vitamin deficiencies also contributed to the high incidence of dropsy, a diagnosis applied to any swelling thought to be caused by an excess of one of the bodily fluids.

Yet dropsies were at least as common among the whites as among the blacks in Jamaica, with liver, heart and urinary conditions often exacerbated by excessive drinking. Though some writers deplored the intemperance of town slaves, few slaves in fact had opportunities for such indulgence. This probably also explains why they so rarely suffered from the gout, or the mysterious 'dry belly-ache' so common among Jamaican whites, now known to have been lead poisoning due to drinking rum distilled in vessels made of lead, and drunk from pewter pots.

Some 'dropsies' and 'ulcers' among slaves were symptoms of horrifying diseases originally imported from Africa which remained endemic among blacks, though whites were seemingly immune; elephantiasis, 'coco bays' (alias 'Arabian leprosy'), scrofula, true leprosy, and yaws. Of these, yaws, a highly contagious but non-venereal variant of syphilis, was especially virulent. Often contracted in childhood, it was characterised first by raspberry-like eruptions, then by scarring and ulceration, and, in the prolonged tertiary stages, often by excruciating 'bone-ache' and damage to cartilages, spleen and brain. Many sufferers died of old age or general debility rather than of yaws itself, but the disease progressively sapped energy and will, as well as making the victims pathetically unsightly. On some Jamaican estates about a sixth of the slaves, at any one time, suffered seriously from yaws, and there was a separate 'yaws hothouse', or isolation hospital, where the worst cases withered away.¹⁸ At Worthy Park, however, the disease was rather less serious and a second hothouse was not considered necessary.

From the death diagnoses, true venereal disease seems to have been relatively uncommon at Worthy Park and elsewhere, though the effects of yaws were often indistinguishable from those of syphilis, and gonorrhoea

¹⁸ At Braco Estate, Trelawny, for example, there were an average of 68 slaves "In the Hothouse, in Yaws house with sores, Pregnant, lying in & attendants" in June 1796, out of a population of 402; *Braco Slave Book, April 1795-December 1797* (Braco: Trelawny).

may have been so common as to be considered unworthy of notice.¹⁹ Certain other diseases which afflict modern society, such as heart disease, stomach ulcers, and cancers, were noticeably rare on slave plantations, either because the slaves did not have the opportunities to contract them, or did not live long enough to develop the symptoms. With the possible exception of the single slave 'shot while stealing', no deaths recorded at Worthy Park were directly attributable to the slave condition. Deaths by accident were no more common than one would expect in any industrial situation with minimal safeguards; and suicides (of whom only three were certainly recorded) were probably no more common than in the British Army during National Service, or among undergraduates at a modern university.

The data derived from the Condition listings at Worthy Park are not only more fragmentary and capricious than those for Causes of Death; for several reasons they also seriously understate the low level of general health on the plantation. Even for the years for which full records survive, the health of individual slaves was only noted if their condition incapacitated them. For example, there is no reference at all in the Worthy Park records to eye diseases, though it is unlikely that the plantation was entirely free from forms of ophthalmia common among slaves elsewhere. Short-term or non-fatal illnesses such as colds and malaria were rarely recorded either. Cases of measles and smallpox which did not kill, however, sometimes were; for though immunisation theory was not yet developed, it was already recognised that these diseases rarely recurred.

Many other diseases were too common for diagnosis, not diagnosed in their early stages, or not recognised at all. From the incidence of death from yaws, 'coco bays', scrofula, and 'dropsy', it seems likely that at least a third of the slaves suffered from diseases of the skin and tissues at some time during their lives, and perhaps half from serious internal disorders. In most cases these diseases were incurable and progressive, though not invariably fatal in themselves. If the debilitating effects of deficient diet and parasites less crippling than hookworm are included, nearly all slaves were subject to tropical ailments which lowered their efficiency, their fertility, and enjoyment of life.

In sum, though seasoned slaves on established sugar plantations were not more subject to fatality than most persons in the tropics — and much less so than those living in towns in the lowlands — the general level of their health was dismally low.

* * *

¹⁹ Modern Worthy Park offers an illuminating parallel. When the Sugar Industry Labour Welfare Board clinic was set up on the estate in 1951, the doctor was called upon to treat no less than 331 cases of yaws and 250 of syphilis, but only 28 of gonorrhoea. In a comparatively short time yaws and syphilis were contained, but the cases of gonorrhoea treated multiplied to hundreds. Such is progress. Michael CRATON and James WALVIN, *A Jamaican Plantation; The History of Worthy Park, 1670-1970* (London: W.H. Allen, and Toronto: University of Toronto Press, 1970), 308. That gonorrhoea was in fact common among the Worthy Park slaves, at least around 1824, is suggested by the purchase by the estate of the six penis syringes included in the list of medicines and equipment appended.

Masters and doctors alike were disposed by their 'interest' and ignorance to minimise slave ailments. Owners and overseers were determined to keep all but the dying at work, and to trim the costs of medical treatment. To their eyes, a successful doctor was one who satisfied these requirements. Paid a *per capita* fee, plantation doctors were rewarded positively for cursory treatment, and encouraged to ignore failure and simulate success. Faced by a level of general health that condemned the plantation system by which they lived, or was beyond their care or ken, doctors tended to disguise the inadequacy of their treatments and the ignorance of their diagnoses with accusations of malingering, self-inflicted injury, and 'natural' unhealthiness stemming from the slaves' racial origins. In this they perpetuated the malign ignorance of Dr John Trapham, who in 1679 attributed the high incidence of yaws among blacks to the alleged fact that they were an 'animal people', subject to an 'unhappy jumble of the rational with the brutal Nature;'²⁰ or even the distasteful fatalism of a slave trader in 1694:

[...] What the small-pox spar'd, the flux swept off to our great regret, after all our pains and care to give their messes in due order and season, keeping their lodgings as clean and sweet as possible, and enduring so much misery and stench so long among a parcel of creatures nastier than swine; and after all our expectations to be defeated by their mortality.²¹

The medical profession, like all self-legislating and self-perpetuating 'misteries', has always been a conservatising force. What particularly bedevilled eighteenth, and even nineteenth century medicine were the persistence of the fallacy of the four 'humours' in the teeth of the clinical evidence, and the tradition that devalued surgery in favour of 'physic'. When Dr Trapham wrote his *Discourse on the State of Health in Jamaica* in 1679, belief in humoral theory was still absolute. Every human ailment, from hookworm to cancer, was said to be due to an excess of one of the four vital fluids which flowed from liver to heart; melancholy, phlegm, blood, cholera — the counterparts of earth, water, air, and fire. The sole purpose of medicine, it was held, was to keep the elements in balance, the chief methods being bloodletting, 'salivation', blistering, and purging. Physicians were neither willing nor able to use the surgeon's knife, save in emergencies such as amputations.

Besides this, doctors made indiscriminate use of at least two dangerous specifics; mercury and opium. The first, beloved of alchemists as 'quicksilver', had some success with 'the pox', but produced crippling

²⁰ Thomas TRAPHAM, *A Discourse on the State of Health in the Island of Jamaica* (London: Boulter, 1679), *passim*. The equating of black slaves with animals by a plantation doctor immediately brings to mind a parallel between slave and veterinary medicine. If planters and their doctors regarded slaves as little more than valuable animals, it is not surprising that slave medicine was little better than 'horse doctor cures'. Veterinary science — probably because the treatment of animals has been required to remain cheap, and animal doctors are even less regarded as colleagues by MBs and MDs than once they were — has made comparatively far less progress than medicine for humans. For example, horses are still poulticed, blistered, and cauterised, much like eighteenth century slaves.

²¹ Elizabeth DONNAN, *Documents Illustrative of the History of the Slave Trade to America*, 4 vols. (Washington: Carnegie Institute, 1930-1), I, 410.

side effects which until recent times were thought to be symptoms of the disease it purported to cure.²² The second quelled pain but was demoralisingly addictive, inducing withdrawal symptoms after very little use. That both mercurials and opiates were relatively expensive may have been positively beneficial to such dependent patients as slaves. The herbal remedies preferred for cheapness' sake were, where ineffectual, generally harmless. It might be argued that in the absence of antiseptics and anaesthetics the reluctance of doctors to operate was also to the slaves' advantage.²³

What medical progress was made during the slavery period was not due to any revolution in theory or dramatic new methods (save inoculation for smallpox), but a slightly more empirical attitude, a greater attention to the individual patient, and the first glimmerings of a belief in cleanliness, rest, and restorative diet. In these respects, the pioneers were the English Thomas Sydenham (1624-89) and the Dutch clinicians such as Hermann Boerhaave of Leyden (1688-1738).²⁴ Hans Sloane, a disciple of Sydenham, displayed a comparatively open mind and a willingness to experiment (honestly recording failures as well as successes) in the descriptions he published of the many cases he treated during his brief stay in Jamaica (1688-9).²⁵ But neither Sloane nor his eighteenth century successors made any systematic discoveries concerning causes or cures. At best they simply learned, through bitter experience, that a West Indian doctor was more likely to succeed the less he applied the 'scientific' humoral theory and the pharmacy he had learned in the European schools.

This gradual awareness can be well illustrated by the career of Dr John Quier, graduate of Leyden and London, who was Worthy Park's doctor from 1767 to 1822, from six published letters written to a former colleague during Quier's first years in Jamaica,²⁶ and from his later practice. From the letters it seems that Quier was not obsessed by humoral

²² The miners of quicksilver at Almadén in Spain, the Japanese of Minimata who ate mercury poisoned fish, and the thousands of Iraqis who ate mercury-dusted seed grain, were alike found to be suffering from *locomotor ataxia* and other manifestations thought to be classic symptoms of tertiary syphilis. It would be instructive to discover how often *locomotor ataxia* and the other symptoms occurred in persons with syphilis before they were treated with mercurials.

²³ It was not long since surgery had been entirely in the hands of barbers. Readers of Samuel Pepys' diaries will recall with what trepidation Pepys submitted to surgery for the stone, and his gratitude to the Almighty for allowing him to survive what was technically a very simple operation. In Pepys' case the 'miracle' was almost certainly that the surgeon used a brand new knife. Until the days of Lister, deaths from appendicitis were far more common among those operated on than those with whom nature was allowed to take its course.

²⁴ Douglas GUTHRIE, *A History of Medicine* (London: Nelson), revised edition, 1958), 216-31.

²⁵ Hans SLOANE, *A Voyage to... Jamaica*, I, *passim*. This work was not published until 1707, 18 years after Sloane's sojourn in Jamaica as physician to his kinsman, Governor Albemarle.

²⁶ QUIER *et al.*, *Letters and Essays on the Smallpox*. The letters, dating from 1769 to 1776, were addressed to Dr. Donald Munro of London, a member of the famous Edinburgh medical clan of that name.

theory, but still placed too great an emphasis upon bodily fluids and the efficacy of 'cleansing the blood'. From the descriptions of some of his early treatments it seems that his patients might well have stood a better chance with no treatment at all. For the eye disease he called 'the dry ophthalmies', for example, he specified a copious bleeding, 'antiphlogistic' purges, a 'cooling regimen' with nitre, and blisters behind the ears and on the side of the neck, as well as the 'emollient poultices' which alone might have brought any relief.

What caused Dr Quier most concern were smallpox and measles, serious outbreaks of which occurred in Lluidas Vale during his first few years there. Indeed, he has been given credit, almost certainly exaggerated, for advances in the prevention and diagnosis of these diseases.²⁷ Although distinguishing clearly between smallpox and measles, he attributed quite distinct afflictions such as dysentery, dry bellyache, and even tetanus as 'secondary manifestations' of them. In these respects, only in being able to diagnose whooping cough was Dr Quier farther advanced than the Persian medical authority Rhazes (A.D. 860-932) who, while being the earliest correctly to identify smallpox and measles, was apparently not aware of any other endemic diseases.²⁸

At least John Quier differed from the majority of his fellow slave-doctors in learning somewhat from his failures. At first he believed that excessive heat made the blood 'putrescent', and he tended to let blood by venesection at the onset of any fever. He also administered savage purgatives such as the mercuric calomel, nitre, or jalap, in almost all cases of serious illness. When in some measles cases these led not to a 'salutary salivation' and gentle evacuation, but to bloody vomiting and diarrhoea, he bled the patients more, applying blisters to the thighs. If the internal spasms and pains became too severe, he administered — literally almost as a last resort — heroic doses, up to four grains a day, of opium.

Although he never admitted that it was the medicine rather than the disease which was killing his patients, John Quier soon realised that excessive purging and bleeding weakened them, and gradually relented. Ironically, strong 'medicine' became reserved for those unfortunates whom the well-intentioned doctor regarded as strong enough to stand them. In the cases of the very old or young, the seriously undernourished and 'naturally' debilitated, nature was 'allowed to take its course', and some patients clearly gained a fortuitous reprieve. In the eighteenth century it was medicine as often as death itself which acted as a great leveller.

As to inoculation for smallpox, John Quier was certainly no innovator. The technique of inoculation had been introduced into England from Turkey by Lady Mary Wortley Montagu as early as 1717, and there is some evidence that some form of 'variolation', or intentional inoculative

²⁷ Heinz GOERKE, "The Life and Scientific Works of Dr. John Quier, Practitioner of Physic and Surgery, Jamaica, 1738-1822," *West Indian Medical Journal*, V, xviii, 22-7.

²⁸ GUTHRIE, *History of Medicine*, 89.

infection with the disease, was known in West Africa.²⁹ Quier himself acknowledged that he used the method developed by Thomas, Baron Dimsdale, consultant to Catherine the Great — infecting those who had not yet had the disease through a scratch on the arm, with matter drawn from smallpox pustules. Although effective in most individual cases — inducing only a mild form of the disease — it did not avert or check the general spread of smallpox, and could lead to serious cases and death. There is no evidence that John Quier or any slave-doctor in Jamaica adopted the much more satisfactory system of vaccination by cowpox matter introduced by Edward Jenner, even when it gained widespread acceptance in England after 1800.

John Quier's method was to wait until a smallpox outbreak threatened, and then to inoculate large numbers of slaves together. In 1768 he treated over 700 slaves, receiving a flat fee of 6s. 8d. a head. As with his treatments, at first Quier's methods were almost indiscriminate. Yet experience and empirical observation taught him that it was pointless to 'inoculate' those who already had the disease, and dangerous to infect the young, the old, the weakly, those far gone in pregnancy, and anyone he classified as having 'putrid blood'. By exercising such discrimination Quier diminished his income at first; but as his reputation for success grew, the call upon his services increased.

Success for all West Indian doctors indeed came with moderation and common sense. A wise and humane doctor, such as John Quier clearly became, was one who realised that since his medication could rarely cure, and no doctor could — or ought to — persuade planters to improve slave conditions in general, he should concentrate on ameliorating symptoms and, by providing care, cleanliness, fresh air, and decent food, encourage any natural tendency towards a cure, as well as the will to survive. Harsh medicine was simply for the peace of mind of those who paid, and those patients strong enough to take it who believed in it.

Thus, while he continued to pay lip service to the crude, irrelevant, and harmful mysteries of his craft such as bleeding, blistering, and purging, John Quier more often came to prescribe strengthening diets, emollients, cooling lotions, and analgesics such as the opiate laudanum. It was also during his regime that the slave 'hothouse' still standing at Worthy Park was built, as on many Jamaican properties one of the most substantial buildings erected. For women in childbirth, John Quier recommended that they be allowed to 'lie in' at least two weeks. Observing that the blacks who worked in the stillhouse (distillery) were the fatter on the estate, he recommended that infants be drafted there to fatten up. Although Dr Quier disapproved of the African customs of swaddling new born infants and suckling children into their second year, there is at least one

²⁹ Cotton Mather, who promoted inoculation in Boston in 1721, wrote to a fellow member of the Royal Society in London in 1716 that he had heard of variolation from one of his own slaves, a 'Guaramantee' fittingly named Onesimus; Frederick C. KALGAN, "The Rise of Scientific Activity in Colonial New England," *Yale Journal of Biology and Medicine*, XXII, (December 1949), 130.

scrap of evidence that he came to place as much credence in 'African' medicine as in his own received pharmacy. Noticing that his black slave 'doctress' assistant was in the habit of bathing the swollen feet of yaws sufferers in urine he did not tell her to desist, and honesty compelled him to admit that the patients came to no further harm.

To modern eyes, the wisest section of Dr John Guier's letters from Jamaica concerns a regimen for maintaining general health in a tropical climate. It could serve as a model in most respects even today: choose a dry, healthy location; practise temperance, drinking a little wine but selecting a diet more vegetable than animal, including fresh fruit; rise early, take a moderate amount of exercise, and avoid the night-time damp; bathe frequently, and change clothing according to the time of day and season; maintain a cheerful disposition. Unfortunately, however, these excellent suggestions (which John Quier perhaps followed himself, for he lived to 83) were absolutely irrelevant to the lives of slaves. As Hans Sloane had found long before, they were also almost reversed by the habits of most of the Jamaican whites.

From the Worthy Park evidence for 1792-1838 it is clear that the level of health on slave plantations was low. Yet the situation should not be exaggerated. Disease alone did not account for the continuing natural decrease in the population, which was also influenced by purely demographic characteristics.³⁰ If sugar plantations, with their large cramped populations and intensive agriculture, were less healthy than mountain pens and coffee plantations, estates like Worthy Park in spacious highland areas were healthier than those in the swampy lowlands of St. Catherine, St. Thomas-in-the-East, St. Mary, or St. James; and all were far less disease-ridden than the kennels and yards of Spanish Town, Kingston and the other ports, the ships on the Middle Passage, and the barracoons of the African coast.³¹ Besides this, the health situation which the Worthy Park records for 1792-1838 disclosed was almost certainly better than that which obtained in the plantation's earlier days — though the improvement, like that in the population's demographic balance, was largely beyond the understanding or control of planters, doctors, and 'amelioration' laws.

The 'triangle trade' of trade goods, slaves, and sugar, made the West Indies a crossroads for the diseases of Europe, Africa, and tropical America. Until immunities built up over the years, newcomers were infected by unfamiliar strains of virus, germ, and parasite. This well-documented but unexplained phenomenon accounted for perhaps half of all African slaves between the time of their original seizure and the conclusion of

³⁰ This argument is developed in CRATON, "Jamaican Slave Mortality" (1971); *Sinews of Empire*, 194-9 (1974); "Jamaican Slavery" (1974).

³¹ The mortality of the slaves on the Middle Passage was probably about 20 per cent per voyage on the average at the beginning of the eighteenth century, and just about 15 per cent by the end of the century. This represented an annual rate of nearly double these figures, since voyages averaged only about six months. These rates of 300-400 per thousand per year were probably equalled among the slaves from the time of their capture until the time of shipment; CRATON, *Sinews of Empire*, 96-8.

the seasoning process on a West Indian plantation four years later. It likewise killed almost as high a ratio of all whites newly arriving in the sugar islands, and an even higher proportion of white crewmen on the slave ships, or white soldiers cramped and ill-fed in barracks in the West Indies and West Africa.³²

Owing to the fallacies of humoral theory, medical treatment for diseases was totally inadequate: never curative, at best palliative or innocuous, at worst positively baneful. The greatest improvement came fortuitously, with the process of creolisation. The increasingly closed nature of the plantation population made it a closed disease environment, rather less subject to attack from passing epidemics than towns or villages.

What remained, however, was serious enough; the general debility from ailments associated with unhygienic conditions, poor diet, and overwork. Here, it might be argued, 'amelioration' legislation such as was passed in all British West Indian colonies from about 1787, and particularly after 1823, should have improved health conditions, by regulating the workload, and establishing standards of food, clothing and medical care.³³ Yet these regulations were minimal, reflecting standards rather than improving them, often a form of 'window-dressing'. Medical treatment was effectively beyond the control of legislation. Besides this, towards the very end of slavery the effects of any improvements were offset by the decline in plantation profits, which made masters inclined to work their slaves harder and spend less on their upkeep and care. If slaves towards the end of formal slavery were able to grow more food, to expand their homes, and to improve their clothing, this was mainly through their own efforts. It might also be argued that there was an ironic virtue in necessity, since the decline in expenditure on slave medicine may have been actually beneficial to health.

³² The annual rate among white troops stationed in Jamaica of 121.3 deaths per thousand, though the second highest in the world, was made to seem quite moderate by the West African figures. As late as 1823-6, the death rate for British troops stationed in Sierra Leone was 483 per thousand, and for the Gold Coast, 668 per thousand. In the slave trade, between 20 and 25 per cent of all white crewmen died on each round trip, which averaged about a year, in the 1780s, compared with less than 3 per cent on ships sailing simply between England and the West Indies. ROBERTS, *Population of Jamaica*, 167; DAVIES, "The Living and the Dead"; CRATON, *Sinews of Empire*, 97.

³³ See, for example, Elsa GOVEIA, *Slave Society in the British Leeward Islands at the End of the Eighteenth Century* (New Haven: Yale University Press, 1965), 183-8.