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# PRELIMINARY REPORTS

ON THE

## Mortality and Sanitary Condition of Valletta and the Three Cities

BY

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To the Commission (of which they were Members), appointed by His Excellency the Governor, on the 23rd July 1874, "to enquire into and report upon the causes of the recent increase in the mortality of Malta."

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*On the mortality in Valletta and Floriana  
from 1st January to 31st August 1874.*

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In the year 1873, 2827 deaths were returned in Malta, and the annual rate of mortality was 22·73 per 1000 persons living, against 25·09 in 1872, the number of deaths having been 3121 inclusive of 111 from small-pox and 122 from diphtheria.

The deaths referred to zymotic diseases were, in 1872, 579, and to other causes 2542; in 1873, 412 and 2415 respectively.

In Valletta the annual rate of mortality, in 1872, was 21·37, and in 1873, 19·59, the number of the deaths, exclusive of those which had occurred in the Hospital of Incurables, was in the former year 504, and in the latter, 463. The deaths from zymotic diseases in 1872 were 73, against 431 from other causes, whilst in 1873, 54 persons died of the former and 409 of the latter diseases.

The mortality in Floriana in 1872, exclusive of the deaths occurred in S. Giuseppe road, in the Central Hospital and in the Ospizio of Invalids, was 128, corresponding to the annual rate of 23·23 per 1000, against 178 in 1873 or 32·25. And the deaths from zymotic diseases in 1872 were 27 against 101 from other causes, while in 1873 the deaths from the former were 31, and 147 from other causes.

The year 1873 may be considered as one of the healthiest years in this island. Towards, however, the middle of August, a particular eruptive disease broke out at Senglea where nearly two thirds of the population, consisting of about 7000 souls, were affected with it, the elderly persons of both sexes in preference. The disease, according to a report forwarded to me by Dr. I. Sammut, the Police Physician for that city, consisted in a fever of a short duration, preceded by prostration, head-ache, and pains in the lumbar region and accompanied by gastric disorder with foul tongue, frequent retchings and in some cases also vomiting. The pulse was in the commencement full and hard and some patients suffered from cough and coryza. In many patients, an eruption of red spots presented itself on the skin; in others it appeared under the form of urticaria: both eruptions were attended with itching. Prostration was a constant and persevering symptom: it preceded and accompanied the fever and followed it for a long time after. The disease made, afterwards, its appearance in the neighbouring city Cospicua where few families were spared from its influence; then it passed to other places in the island, Valletta included, and to some parts of Gozo. It was every where of a mild character, and very few cases ended fatally, the patients eventually dying of typhoid fever.

That disease had entirely disappeared in the ensuing November, when the mortality began to increase and went on increasing to such a degree that in the second fortnight of July last, it rose to the extraordinary rate of 52·73 per 1000 against 22·95 in the corresponding period of 1873.

On comparing, in fact, the mortality of the first months of this year with that of the corresponding period of 1873, an excess will be found in the current year,

of 1234 or  $\frac{7}{10}$  over the number of deaths occurred in the preceding one. The excess took place in almost each inhabited place of the island; certain localities, however, suffered more than others, but in some of them the excess was very slight, as may be seen from Table I.

The excess was in Valletta 120 or  $\frac{4}{10}$  over 295 of last year, and in Floriana 2 over 115.

The deaths from zymotic diseases were in the whole island 590 against 2390 from other causes; in Valletta 52 against 363, and in Floriana 37 against 79.

In the Hospital of Incurables three patients died of zymotic diseases and 28 of other causes and in the Ospizio of Invalids, 4 persons died of the former and 95 of the latter diseases.

**Table I.** showing the excess in the mortality in the first eight months of 1874 over that in the corresponding period of 1873.

Localities	Population in 1871.	Deaths in 1873.	Deaths in 1874.	Excess of Deaths in 1874.
<b>Malta.</b>	123,373	1,746	2,980	1,234 or 0·7
Axiack ... ..	1,193	10	48	38 „ 3·8
Chircop ... ..	509	5	22	17 „ 3·4
Luca ... ..	1,728	14	50	36 „ 3·0
S. Giuseppe ... ..	2,388	29	91	62 „ 2·1
Zeitun ... ..	5,770	87	204	117 „ 1·3
Tarxien ... ..	2,358	32	70	38 „ 1·2
Rabato ... ..	6,091	49	102	53 „ 1·1
Dingli ... ..	515	4	8	4 „
Zabbar ... ..	4,398	49	98	49 „
Safi ... ..	263	4	8	4 „ 1·0
Naxaro ... ..	2,826	37	72	35 „
Gudia ... ..	985	15	28	13 „ 0·9
Lia, Attard, & Balzan	3,259	49	88	39 „
Zebbug ... ..	4,987	76	137	61 „
Gargur ... ..	1,290	13	24	11 „ 0·8
Misida ... ..	2,312	37	67	30 „
Senglea ... ..	6,907	74	133	59 „
Siggieui ... ..	2,845	35	63	28 „
St. Julian's ... ..	2,207	37	64	27 „
Curmi ... ..	...	86	147	61 „ 0·7
Birchircara ... ..	6,247	83	140	57 „
Melleha ... ..	1,429	12	20	8 „
Cospicua ... ..	11,192	182	294	112 „ 0·6
Zurrico ... ..	2,906	42	70	28 „
Crendi ... ..	998	15	24	9 „
Musta ... ..	3,987	47	69	22 „ 0·5
Valletta ... ..	23,585	295	415	120 „ 0·4
Micabiba ... ..	974	14	20	6 „
Vittoriosa ... ..	6,310	86	112	26 „ 0·3
Floriana ... ..	5,520	115	117	2 „ 0·0
Hospital of Incurables, Valletta	222	24	31	7 „ 0·3
Ospizio of Invalids, Floriana	657	55	99	44 „ 0·8
Lunatic Asylum, Attard	338	8	29	21 „ 2·6
Saura Hospital, Rabato	76	6	9	3 „ 0·5

**Table II.** showing the deaths from zymotic and general diseases in Malta, Valletta and Floriana, from 1st January 1872 to 31st August 1874.

Years	Districts	Deaths from			Population in 1871.	Death-rate per 1000
		Zymotic diseases	General diseases	Total		
1872	Malta . .	579	2542	3121	123,373	25.09
	Valletta . .	73	431	504	23,585	21.37
	Floriana . .	27	101	128	5,520	23.23
1873	Malta . .	412	2415	2827	... ..	22.73
	Valletta . .	54	409	463	... ..	19.59
	Floriana . .	51	147	178	... ..	32.25
1874 up to 31st August	Malta . .	589	2391	2980	... ..	36.28
	Valletta . .	51	364	415	... ..	26.41
	Floriana . .	16	100	116	... ..	31.52
	Hospital of Incurables	3	28	31	222	
	Ospizio of Invalids	4	95	99	657	

**Table III.** Deaths from zymotic diseases from 1st January to 31st August 1874.

Zymotic diseases	Valletta	Floriana	Hospital of Incurables, Valletta	Ospizio of Invalids, Floriana	Total Malta	Total Gozo
Smallpox ... ..	—	—	—	—	1	—
Measles ... ..	9	1	—	—	45	—
Scarlet Fever ... ..	—	—	—	—	1	—
Diphtheria ... ..	7	3	—	—	69	6
Quinsy... ..	1	1	—	—	10	2
Croup ... ..	1	3	—	—	26	—
Whooping-Cough	2	1	—	—	90	—
Typhus Fever ... ..	1	—	—	—	6	—
Typhoid Fever ... ..	2	1	—	—	20	1
Nervous Fever ... ..	—	—	—	—	3	—
Fever ... ..	3	—	—	—	11	—
Erysipelas ... ..	10	1	3	3	58	9
Puerperal Fever ... ..	4	2	—	—	38	2
Anthrax ... ..	—	—	—	1	4	2
Dysentery ... ..	—	2	—	—	57	6
Diarrhæa ... ..	7	—	1	21	135	8
Rheumatism ... ..	2	—	—	—	3	1
Purpura ... ..	—	—	—	—	6	—
Alcoholism ... ..	1	1	—	—	3	—
Syphilis ... ..	—	—	—	—	1	—
Worms ... ..	1	—	—	—	2	—
Total ... ..	51	16	4	25	589	37

Increase of mortality is of no more rare occurrence in these islands, than it is in other countries. Such high tides of deaths are, commonly, experienced during the visitations of epidemic diseases, or during a particular condition of the atmosphere. We, unhappily, had this year, both causes; namely, epidemic diseases and an excessive cold which lasted about two months. Erysipelas, in fact, whooping-

cough and measles prevailed epidemically throughout this island; and although a few deaths were returned as caused by measles and whooping-cough, still a large number of children died, either of pneumonia, diarrhæa, enteritis, meningitis, provoked by measles, or of the sequelæ of measles and whooping-cough. Indeed, measles is a morbid poison, the action of which is not limited to the skin alone, but is extended, in many cases, to different tissues, and ordinarily to the mucous membrane of the respiratory or digestive organs. Erysipelas, on the other hand, was a cause of death of adult, old people, and children; and puerperal fever was fatal to several women after parturition. Other sporadic diseases had also their share in swelling the death returns.

Erysipelas and puerperal fever, which, in ordinary years, affect sporadically some individuals, became more frequent, assuming an epidemic form. In fact, from erysipelas only 13 persons in Malta and 1 in Gozo died in 1873, whilst in the first eight months of this year, 58 persons in Malta and 9 in Gozo died of it; and from puerperal fever, 18 deaths occurred in Malta and 1 in Gozo in 1873, but in this current year, up to the 31st August, 38 deaths in Malta and 2 in Gozo were registered. Those two diseases were, in my opinion, produced by the same cause, the erysipelalous poison. The puerperal fever, indeed, commenced to affect lying-in women more frequently than usual at a time in which erysipelas showed a tendency to increase in an epidemic form; and it is a fact that during epidemic or contagious diseases, pregnant women or in confinement are very much disposed to catch them. "The puerperal female," Professor Aitkin remarks, "is not only highly susceptible of poisons of the zymotic kind, but she is proved to favour their further development."

The above statement shows that this island was in autumn last and afterwards visited by 1) Epidemic eruptive fever; 2) Erysipelas; 3) Whooping-cough; and 4) Measles. And the insidious diphtheria, which within the last seven years has devoured in Malta more than 900 children, was not, in the presence of those diseases, dislodged from its position.

But, though the indiscriminate and large mortality in this island was due to the poisons above mentioned, their presence alone does not account for the alarming excess in the death-rate. Generally speaking, a morbid poison may originate in, or be introduced into, a place without acting upon its population. To affect a population, it is necessary, besides a particular physical condition of the place, favourable to the development and multiplication of a virus, that the population be so conditioned as to receive, and be influenced by it. Without those conditions, the virus gradually loses its power and dies away. Unhappily such conditions are not wanting in these islands: for, besides certain congenite organisms which parents transmit to their children disposing them to particular diseases both zymotic and sporadic, there are other disposing causes which originate in the dwelling-houses and in the manner of living of the population — causes that may be prevented.

Dwelling-houses in these islands, particularly those inhabited by the lowest and poorest classes, and many of the so called mezzanini occupied by the middle classes, are very unhealthy. Dwellings of this sort are to be found in the four cities and Floriana and in all the streets of them, both on high and low grounds, chiefly below the bastions, as, for instance, in Valletta those in the streets Fontana, S. Giuseppe, Pozzi, and in the Manderaggio. The ground floors of houses and

mezzanini are damp, dark, and unventilated. The air in those places is more or less contaminated by the issue of foul gazes from the privies and sinks which are, generally, untrapped. In many dwelling-houses as mezzanini, ground-rooms and cellars, the privies open either into the staircase, or the apartments, or into the room that serves for all purposes, even as a sleeping-room. Such dwellings are, indeed, unfit for human habitation;—they are dangerous to health, and dispose their inmates to diseases.

Again, the increased poverty was, this year, a calamitous cause of disease and death. I think, indeed, that the excess in the mortality was, chiefly, due to that cause. Many persons and entire families, owing to want of work and the high price of all kinds of provisions, were deprived of the necessary food. A prolonged want of a sufficient and wholesome food, impairs the constitution and disposes to disease. “As a general principle,” says Professor Aitkin, “it may be stated that morbid poisons act with an intensity proportioned to the enfeebled or “depressed state of the constitution.” A man well nourished may resist against morbid causes, even against viruses; but a hungry man must, in a short time, succumb, even if he lives in the most healthy place, and free from any unwholesome influence.

What, finally, greatly contributed to the increasing of the mortality, was the extraordinary cold, fatal to the poor, and the old.

It appears, in conclusion, that in and after last autumn, the population of this island had to struggle against five zymotic diseases, an excessive cold, and hunger; and that from January to 31st August last, there was an excess, in the mortality, of 1234 over that in the corresponding period of 1873, due, I think, to measles, whooping-cough, erysipelas, diphtheria, and other diseases, against which the patients,—who were old people, adults, but chiefly children, generally very poor, with a constitution impaired by unhealthy habitations and a prolonged want of a sufficient and nutritious food, and deprived of the necessary means of protecting themselves from the excessive cold,—could not resist.

A. GHIO.

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*On the sanitary condition of Malta, and especially of the Three Cities ;  
and on the recent increase of mortality.*

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Geological conditions.

The geological structure of these islands is remarkable for its absence from those natural conditions calculated to cause endemic and zymotic diseases. We have no marshes, no streams, no lakes, no mountains, very few inhabited low vallies; hence malarial fevers, and other kindred diseases, which decimate thousands every year in many of the Mediterranean towns, are seldom met with here to any appreciable extent.

Malta has a thick population indeed, but not being gathered on one limited area, but scattered over 120 square miles, in towns, villages, and hamlets, enjoys in this respect a great advantage over other Mediterranean towns. I must add that Valletta, Floriana, and the Three Cities, are built on the calcareous sandstone, which is the fourth group of the strata that form these islands, the upper three groups, viz. the upper limestone, the bed of foraminiferous sand and the marl, having been washed away by the wear and tear of the elements. Thus the subsoil of dwellings deprived, as it is, of the deposits of marl, which, all the year round, is kept moist by the winter rain, is not, as a rule, so damp as to injure health. Some of the north-western districts of Malta, surrounded, as they are, by wet marl, are occasionally subject to paludial fevers, and cases of intermittent fever now and then take place in the labourers' cottages of the country districts of *Gineina*, and neighbouring places. (Vide 1st Number of *Il Barth*, and my remarks on pulmonary consumption in No. 10 of the same).

Physical conditions.

Our summer temperature is not in any way considered deleterious to those who live in temperance and according to the rules of hygiene.

Character of the population.

The population of these islands has no vicious propensities: drunkenness, although it has of late increased, is not comparatively bad, and prostitution is less than in most other Mediterranean cities.

Sanitary condition of Malta compared with that of Italian towns.

Notwithstanding the natural advantages of Malta, and the character of its population, its sanitary condition is by the most eminent hygienists, such as Parkes, considered to be most objectionable. Really with so many advantages, the mortality of these islands should be smaller than that of Naples, Genoa, Palermo, and other Italian towns, especially of the South, where the geological and other conditions of public and private hygiene, so widely differ: nevertheless the normal mortality of these islands is often in excess of that which ordinarily obtains elsewhere. Lately the mortality in our towns and *casali* has so much increased as to double the percentage of former years. Coincident augmentation has been observed, however, in some other Mediterranean cities, which has been more or less satisfactorily accounted for by medical authorities; and it is a well established fact, that an unexplained increase in the mortality may from time to

Increase of mortality in 1873-74.

time occur amongst dense populations. Similar phenomena are observed often in nature: cold, heat, and rain, are in some years unaccountably increased: and augmentation in the morbid phenomena also takes place among animals and plants, and frequently from causes altogether unknown.

Causes of  
the high  
mortality.

Happily in our case the increase of mortality is so easily explained that but few words will suffice for the purpose. Of children a large number died of measles, whooping-cough, diphtheria, epidemic erysipelas, and especially of diarrhæa, which bore in most cases an atonic character, and was only a sequela of the above mentioned zymotic diseases. This was clearly shown by nearly all the Physicians examined by the Commission. Many cases of puerperal fever ended fatally both to mother and child: and if influenza has only proved fatal to a few of the aged, it has however carried away many children, chiefly through its sequelæ.

1st. Prevailing  
epidemics.

2nd. Severe  
winter  
1873-74.

An unusually cold and damp winter has also increased the mortality in the aged, especially amongst those classes which were without means to cope with the vicissitudes of the climate, or to furnish themselves with food sufficiently nutrient and sustaining. The poorer classes are proved to have resorted to bread of the worst description, even to the saccharine pod of carob; animal food having been to them an unknown luxury.

Poverty, its  
special causes  
in the Three  
Cities.

Mortality also increased within the last year as a consequence of poverty, which was, and still is, very distressing; the sad consequences of which, are insufficient suckling, premature weaning, bad food, deficiency of warmth, and the like. The causes of poverty are too well known to require any notice here, but there is one which seems special to the Three Cities, which is the removal of the ship-yard from the French creek to the Marsa, where now happily the building and ship traffic promise to be busy and prosperous.

Carelessness  
of mothers.

Many children died from neglect, abandoned by their mothers for indefinite periods, while these sought employment to obtain the necessaries of life; improper and indigestible food was at the same time given as sustenance; medical advice was often sought when the preservation of life was almost hopeless, and too often only to avoid the dreaded autopsy, obtainable as assistance always is, from the dispensaries. The moral supineness engendered by poverty has rendered the parent apathetic of consequences, and even in cases when there was no evidence of positive neglect, premature weaning often was followed by early and fatal disease. I believe the Commissioners are satisfied that hundreds of sick children, within the last few months, have been allowed to die, no effort being made towards their recovery.

Predisposing  
causes.

Thus, I believe the high mortality of the last months is satisfactorily accounted for. Of course, there have been other predisposing causes that have had their share in augmenting the habitually high mortality of these islands, such as a supine ignorance of hygiene, want of cleanliness, perverse and faulty construction of the dwellings, overcrowding, polluted water, want of, or bad, sewage and drainage.

Their  
importance.

To laymen, who are not conversant with sanitary matters, the consideration of these predisposing causes may probably appear out of place,

although it is quite the contrary; for it is proved by sanitary science that epidemic diseases are most readily propagated when they break out in places having insanitary conditions, and that where these are good their course is easily checked, more especially if some special precautions are resorted to. The above mentioned predisposing causes by themselves maintain the high normal mortality of these islands, and in epidemic seasons increase the number of attacks, as they evidently did in 1873-74, when the above-mentioned epidemics were prevalent, especially amongst children. Many eminent physicians, whose opinions have never been seriously opposed, assert that erysipelas, puerperal fever, carbuncles, and several varieties of dyspepsia are entirely due to some of the causes, which I have termed predisposing, such as faulty drainage, bad water, and tainted air.

I am satisfied that in a great measure the ravages of epidemics, by which Malta is so often visited, are attributable to the listless apathy of the people to all the measures required for the removal of predisposing causes, which, having always their share in the augmentation of mortality, it would be a great omission on our part to overlook.

The Cotonera district, or the Three Cities.

I refer especially to the Cotonera district, invited to do so by Surgeon General Innes, C.B., who, as President, has guided the sittings and the proceedings of the Commission with the greatest tact and ability.

The Three Cities contain the dense population of upwards of 24,000 inhabitants. I am satisfied that, with proper hygiene both private and public, a great number of diseases, which carry away many prematurely, could be prevented in ordinary and epidemic times. Of the Three Cities the worst is Cospicua, next comes Vittoriosa; Senglea being the least insalubrious: in all undoubtedly many influences are acting for the physical degeneration of their inhabitants. Anæmia, rickets, cardiac diseases, entozoa, strumous diseases, rheumatism, all forms of nervous complaints, splenic enlargements in children, phthisis and fevers are there daily encountered. These are diseases which for the most part arise from preventable causes. I must admit that the people here are very backward in hygiene, the knowledge of which is far more advantageous than any bulky legal code.

Water supply.

In the Three Cities the poorer classes, who form by far the greater bulk of the population, have perhaps a sufficient supply of spring water, derived from the reservoirs under the upper limestone of the hilly districts of Fauara, through the Bouverie aqueduct; meanwhile the middle and upper classes drink the soft water collected in tanks from the house-tops, and very often polluted by organic impurities.

It is an established fact that a large number of diseases are due to the use of impure water: admitting this, the tank water used by these inhabitants must often be a cause of disease: and although we cannot always estimate the etiological value of impure water, it is necessary that every means should be resorted to in order to avoid impurities. I have written in my medical magazine a series of articles on liver diseases, and have shown that Echinococci are here pretty often met with in the

liver from the use of tank water containing the ova of these entozoa (*Il Barth* No. 20).

It was wisely proposed by the Government to compel such arrangements as should be effectual in preventing the percolation of putrescent matters from cesspools and latrines into cisterns, which I am sure, in the Three Cities, is at present a frequent cause of water contamination. It is much to be regretted that any such law should have been opposed by the Elective Members.

Dwellings. The wretched sanitary condition of some of the dwellings of the poorer classes, such as "mezzanini," *kerreyas* or houses sublet in several small holdings, and rooms on the ground-floor, should, of course, engage the attention of a sanitarian, for, from most of these abodes, comfort, cleanliness and pure air are banished, and they are often the nurseries of epidemic diseases. Most of the houses are night and day charged with sewer emanations, an air extremely poisonous, and productive of diseases, which carry off the weakly and imbue the strong with germs, which lead to early decay.

Damp from their faulty construction. I fully believe that a considerable number of cardiac diseases, which are so prevalent in Malta, are due to the dampness of the great majority of modern dwellings, the external walls of which are built with single stones of our very soft and porous sandstone. These thin walls during the rainy season, which usually commences in October and ends in April, drive the moisture into the interior of the rooms, and thus cause rheumatic fevers, heart diseases, and other kindred ailments, which are becoming daily more frequent in these towns. In years of drought rheumatic diseases are infrequent, but in rainy seasons, as was the winter of 1873-74, these ailments are very common indeed, which depend, in a great measure, upon the amount of dampness with which these porous dwellings are permeated.

Prof. Carlo Livi, one of the best Italian sanitarians, in writing on the hygiene of dwellings (*Igiene delle case*) remarks that "Humidity is one of the greatest antagonistics to health: hence it should be everywhere combated and by every means." As I am not writing a treatise on hygiene, I refer those who are interested in this matter to the latest works on sanitation, in order to ascertain the best means of removing and preventing dampness of our dwellings.

Overcrowding. The overcrowding, which is so extreme in many districts of Cospicua and in Strada Punta, Strada San Giuseppe of Senglea, and in several of Vittoriosa, is the source of evils which become apparent in the anæmic condition of their inhabitants, who seldom breathe a better atmosphere. Dr. Innocenzio Sammut, the zealous Police Physician of Senglea, stated that by far the greater number of cases of diphtheria, and other epidemic diseases, broke out in these two streets, in one of which (*Strada Punta*) influenza (*grippe*) of the most weakening character, broke out in 1873, and subsequently attacked nearly two thirds of the entire population of Cotonera. (Vide *Il Barth* No. 17 and 18 where I give a full description of the epidemic).

It is hardly necessary to emphasize the outrage to decency, which

must result from the occupation of a single room by eight or ten persons, in which all the functions of life are performed. It is, therefore, highly desirable that our legislation should oppose overcrowding, and not allow places unfit for habitation to be occupied, and thus made a focus of disease.

One of the most important and vexed questions is whether the actual system of drainage and sewage in the Three Cities is injurious to health or not. That it is so was affirmed some two years back by a Sanitary Commission, of which I had the honour of being a member, and in which three gentlemen of our present Commission had also a share.

I do not believe that sewer-matters can generate *de novo* typhoid fever and other zymotic diseases, as was formerly thought by Budd and Murchison, and is still maintained by many pathologists. I am not prepared to establish what other diseases are caused by sewer emanations, but it is contrary to the established facts of modern sanitary science to doubt that several diseases are attributed to these effluvia: that these produce a spanæmic condition of the blood, which becomes a predisposing cause both to zymotic and constitutional diseases, which are, as I said, so prevalent in the Three Cities, is certainly doubtless. And when any contagious disease, such as cholera, enteric fever, scarlatina, or diphtheria, has broken out in a dwelling, and the discharges or substances separated from the body of the patient are emptied into privies, the night-soil, heretofore innocuous as regards these zymotic diseases, becomes a nidus of infection for an indefinite period of time. Indeed, it has been proved that the infectious and specific properties of those dreaded diseases are in this way communicated to drains and sewage matters, and may thus prove a perennial source of contagion in any given locality.

From a sanitary point of view the lower portion of Cospicua is most objectionable. Effluvia arising from houses and sewers are so intense that silver articles left exposed in houses blacken in a short time; this is due to the abundance of hydrosulphide of ammonium continually allowed to escape through untrapped drains, and this gas is inhaled by the inhabitants of that spot, the air of which becomes so polluted and so offensive to the nose that none could seriously maintain that breathing such an atmosphere could be other than detrimental to health. Very often people are observed closing their nostrils with a handkerchief in order to avoid the offensive effluvia which emanate from these subterraneous conduits. There is nothing to cause surprise in this circumstance, for upwards of 180 openings between the main sewers and the air are to be numbered in the streets of the Three Cities, and no less than 40 of these give off the poisonous effluvia in the above mentioned low district of Cospicua. The whole façade of Mr. Ruggiero Busuttill's house, which is above an untrapped sewer, was lately blackened by these emanations.

But I must say, that with the exception of 41 streets, of which here I subjoin a list, all the others are pretty well sewered. (Vide Table A).

The sewers of Vittoriosa and Senglea and of the high districts of Cospicua, having a sufficient declivity to maintain the discharge of matters, require chiefly flushings in summer, for in winter they are well scoured by storm water.

Measures to  
be adopted.

As regards the already mentioned lower part of Cospicua, it requires by all means a new system of sewage, the scheme of which it is the province of engineers to plan. As regards the ventilation of sewers, another important question, I believe that ventilating shafts, as proposed by Dr. Ghio, the active and intelligent Chief Police Physician, would be useful in the highest parts of the Three Cities, but that their use in the lower streets is open to much objection. Similar shafts (Fries's system) have been lately put up in the principal streets of Valletta, from which it is to be hoped that some benefit will be derived to public health.

I am satisfied that the openings of sewers, untrapped as they are now left in the Three Cities, are most injurious, especially in summer, for then the penetration of air and the burning rays of the sun in the sewers augment the process of putrefactive fermentation, and hence it is my opinion that they should be closed as soon as possible.

Dock Yard  
creek  
objectionable  
to health.

It is not my province to enter into further details on this important subject, the attention of our authorities being now seriously engaged on the consideration of this question. I thus hope that some step will soon be taken to improve the drainage and sewage where it is faulty in the Three Cities, and I trust that the sewage matters will no longer be suffered to pour themselves and accumulate in the Dock Yard creek, the condition of which, under existing circumstances, is most objectionable. (Vide *Il Barth* No. 14).

Early and  
improvident  
marriages.

Early and improvident marriages, as was proved by the evidence of the Curate of Cospicua, the Rev. Can. Dr. Giuseppe Mercieca, and as I know from my observation, are common. I was pleased to find that in Gozo unthriftiness in marriage does not prevail, a circumstance reflecting favourably on the inhabitants of our sister island. It is highly desirable that unthrifty marriages should be less numerous, for they undoubtedly affect the well-being of our society. Diseased offspring is their result, with evil consequences to the welfare of the community. Besides these injudicious marriages, consanguine ones are found to be bad by the physical and mental deterioration of many of those amongst whom they exist. The highest authorities of hygiene consider this question as one of life and death to hundreds, and strongly advise the community against them. From 1864 to 1874, no less than 82 inter-marriages have taken place in the Cotonera. I have traced the history of several families, and found that strumous diseases, nervousness, insanity, phthisis and monstrosities, are often the result of these unhappy unions. (Vide *Il Barth* No. 15 and 16, and Table B).

Intermar-  
riages.

Ignorance.

A popular  
book on  
sanitation.

Ignorance of hygienic rules is very extensive in Malta, and even the upper classes are very backward in this respect. This might perhaps in some measure be obviated by the publication of a small book on sanitary subjects, with the view of educating those who attend public schools, and in which technicalities would be avoided as far as possible. It should contain brief notices on food and drink, air, dwellings, clothing, and training of children, and teach people that personal cleanliness and the avoidance of morbid causes are the first principles of health preservation: it would show people how intemperance and vice undermine health and

shorten life. The sound principles inculcated in a book of this kind could perhaps be easily explained by the Parish Priests to their flocks.

GAVINO GULIA.

**Table A.**

Streets and cul-de-sacs in the Three Cities with irregular and faulty main sewers.

<i>Cospicua.</i>	<i>Strada Tramontana.</i>
Strada Sta. Teresa, from Church Sta. Teresa to Piazza dell'Antico Mercato.	Strada Dietro il Convento.
Strada Leone up to Strada St'Elena.	Strada Stretta.
Strada Stella.	Strada Dietro la Prigione.
Strada Sta. Margherita, with the exception of Strada Buongiorno to Strada Cospicua.	Piazzetta.
Strada S. Giorgio.	Strada del Fosso.
Piazza Bonnici, below the Market.	Strada Bastione del Fosso.
Strada Conservatorio.	Strada Miratore.
Strada S. Giuseppe.	<i>Senglea.</i>
Strada S. Michele, only its cul-de-sacs.	Strada Concezione.
Strada Fortini Felici.	Strada St'Orsola.
Strada delle Grazie.	Strada Grecale.
<i>Vittoriosa.</i>	Strada Porto Salvo.
Strada S. Giorgio.	Strada S. Francesco.
Strada Libeccio.	Strada St'Angelo.
Strada S. Filippo.	Strada S. Giuseppe.
Strada Dietro il Quartiere.	Strada Crocifisso.
Strada Dirimpetto il Convento.	Strada Bastione (only Vicolo Giardino).
Strada Palazzo del Vescovo.	Strada Marina.
Strada Mezzodi.	Strada Salita della Punta dell'Isola.
Strada Alessandria.	<i>Calcara.</i>
Strada Nuova.	The Streets Rinella, Molo della Calcara, Ripa della Calcara have no sewerage.

**Table B.**

Consanguine marriages in the Three Cities, from 1864 to 1874.

Years	Cospicua	Senglea	Vittoriosa	Total
1864 . . . . .	4	—	2	6
1865 . . . . .	4	1	6	11
1866 . . . . .	5	—	3	8
1867 . . . . .	3	1	5	9
1868 . . . . .	5	1	1	7
1869 . . . . .	2	—	—	2
1870 . . . . .	4	1	2	7
1871 . . . . .	5	1	1	7
1872 . . . . .	4	3	1	8
1873 . . . . .	5	—	4	9
1874 . . . . .	4	2	2	8
	45	10	27	82

G. G.

