

CHANGES IN THE EPIDEMIOLOGICAL PATTERN OF DISEASE IN THE MALTESE ISLANDS

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RUDOLPH Virchow, the German Pathologist who is considered the father of medicine, in the middle of the last century, wrote that 'Medicine is a social science and that politics is nothing less but medicine on a large scale'.¹ In fact the incidence and pattern of disease in any community reflect not only the standard of medical care but also, and possibly to a greater extent, the socio-economic conditions of the country. In Malta, there are few accurate records of the incidence of diseases 50 years ago let alone a century ago.² However in a report of the Barracks and Hospital Improvement Commission on the Mediterranean Station published in 1863, it is stated that in 1851, when the civilian population was 90,021, the death rate was 25.5/1000 population.³ It is relevant to point out that at that time 57.5% of all deaths were in children under 5 years.⁴ This catastrophic death rate in the under fives reflected the state of very unhealthy conditions present both in the towns and villages of the Island. Though it is true that Medicine has changed more in the last 50 years than it had done in the previous 500 years, in Malta it is only since the end of the 2nd World War that the situation started to improve.⁵ Indeed before 1940, the pattern of poverty and its harmful effects on health were plain to see.⁶ The purpose of this communication is to discuss the changes in the pattern of disease which occurred before and after 1940 and to underlie the importance of these changes as an index of the state of health of the community.

The population of Malta had shown a steady increase, interrupted only during the war years 1940 to 1943, till 1962 when the net increase in the population has been controlled.⁷ The factors which brought this about were the marked reduction in infant mortality from 257.5 per thousand live births in 1932 to 19.9 in 1974 as well as

an increase in the life-span which in 1974 stood as 69.07 years for males and 72.65 years for females. The check in the population growth has been brought about by emigration and by a dramatic fall in the birth-rate from a peak of 39.3 per thousand population in 1944 to a figure of 15.8 in 1969. It has gone up to 17.9 in 1974. Figures I and II clearly demonstrate this.

If one studies the Expectation of Life (Table I) one realizes

Table I

EXPECTATION OF LIFE 1870-2 TO 1974

AGE	ABRIDGED TABLE							LIFE TABLE		ABRIDGED TABLE 1974
	1870-72	1880-82	1890-92	1900-02	1910-12	1920-22	1930-32	1	2	
MALES										
0	44.67	47.14	41.16	43.91	43.42	45.88	41.35	55.69	65.7	69.07
1	55.67	57.76	50.46	53.34	54.28	57.91	55.95	64.81	68.1	69.35
5	54.48	57.89	59.16	56.84	58.40	59.48	58.19	61.81	64.4	65.41
10	53.47	54.58	54.46	52.87	54.49	54.63	53.87	57.50	59.7	60.51
15	49.62	50.23	50.18	48.48	50.01	50.22	49.36	52.88	54.8	55.60
20	45.96	46.39	46.00	44.40	45.81	46.18	45.24	48.45	50.0	50.80
25	42.73	42.47	41.98	40.23	41.62	42.33	41.19	44.12	45.3	45.94
35	34.04	34.41	33.05	32.01	33.21	33.16	32.53	35.25	33.9	36.34
45	26.48	26.21	24.92	24.17	24.99	25.05	24.19	26.45	26.7	26.97
55	19.07	18.53	17.61	16.66	17.24	17.47	16.83	19.02	18.3	18.60
65	12.41	11.80	10.82	10.56	10.74	11.12	10.39	12.84	11.7	11.32
75	7.05	6.73	5.97	6.01	6.17	6.60	5.51	8.17	6.7	6.26
FEMALES										
0	47.40	48.45	42.80	43.90	44.74	45.23	43.46	57.72	68.9	72.65
1	55.73	57.56	50.75	51.88	54.75	57.40	57.09	56.92	70.8	73.22
5	54.41	57.42	59.08	56.23	58.55	59.52	59.41	63.52	67.1	69.28
10	53.76	53.99	54.37	52.49	54.48	54.91	54.91	58.85	62.3	64.37
15	50.05	49.77	50.20	48.23	50.16	50.34	50.43	54.24	57.4	59.45
20	46.28	45.88	46.36	44.23	46.18	64.33	46.10	49.62	52.6	54.54
25	42.65	41.95	42.30	40.30	41.94	42.55	41.89	45.22	47.8	49.69
35	33.97	33.93	33.47	32.29	33.83	33.57	33.71	36.40	38.4	39.88
45	26.21	26.50	25.64	24.38	25.46	25.45	25.68	27.94	29.1	30.37
55	18.20	18.60	18.03	16.80	17.76	17.73	17.74	19.96	20.3	21.40
65	12.75	11.74	11.24	10.31	11.23	11.19	10.92	13.54	13.0	13.71
75	7.13	6.66	6.32	5.58	6.15	6.55	5.93	8.75	7.5	7.45

Expectation of Life: the average future lifetime by persons aged exactly 'x' (the respective age group) if subjected to the recorded death rates of that period.

that though there has been a general trend of improvement in life expectation at all age groups, the maximum increase has been registered in the first year of life. There has been a 50.5% increase in the life expectation of the newly born between the years 1920 and 1974. An interesting aspect of the expectation of life table is the narrow gap which now exists between expectations of life at birth and at age 1 year. In the years 1930 to 1932, the increase in expectation of life after the first year was 14 years; in 1974, this has been reduced to 6 months. The difference is due mainly to the great reduction in infant mortality which occurred in the intervening period.

The end year population of these Islands in 1974 was 317,980. Table II shows the age structure of the population. It demonstrates that our population is being restructured and this is resulting in an increase in the over sixties. This trend is likely to persist and be accentuated over the next fifty years as it reflects the immediate post war large number of births which occurred at the time when infant mortality was dropping. As such, this implies not only more dependents on working groups but also increased demands on social and health services. It is thought that the distributions of persons in the different age groups is likely to even out because of the decreasing family size.

Table II

AGE STRUCTURE OF POPULATION

AGE	1964		1968		1974	
	NUMBER	%	NUMBER	%	NUMBER	%
0-14	106,806	33.3	92,971	29.2	76,605	25.7
15-59	176,781	55.1	183,909	57.8	183,202	61.6
60+	37,033	11.6	41,277	13.0	37,815	12.7

The relationship between the crude birth rate and crude death rate as well as the net rate is shown in Figure I. Whilst the crude death rate has remained fairly static since 1953, the crude birth rate continued to decrease till the mid-1960s and it has remained fairly stable since then.

One of the best health indices is still, despite some theoretical objections, the infant mortality rate. This is an expression of many factors – genetic, nutritional, health habits, provisions for an efficient drainage system a safe water supply and general hygienic measures as well as the availability and quality of health services.

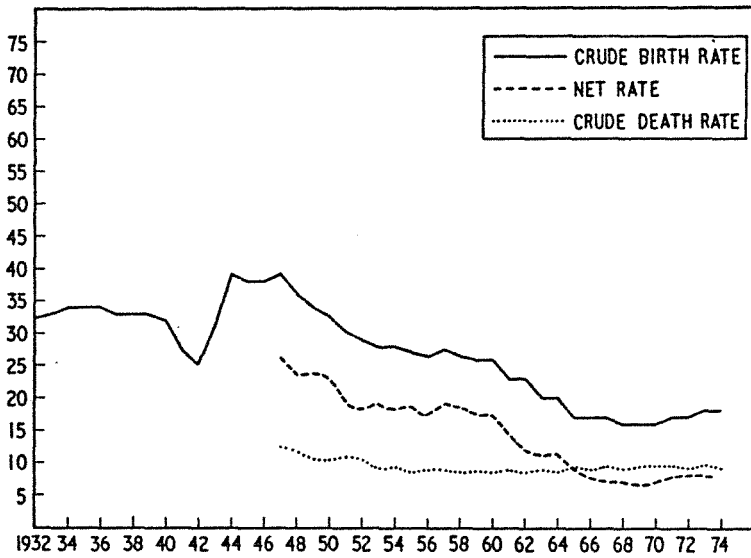


Fig. I

es. Indeed its multifactorial nature is an advantage when studied in this context. The infant mortality rate in Malta, as evident from Figure II up till 1943 was very high indeed. From 1945 onwards, it has shown a remarkable decline, the rate of 16.7 in 1972 being the

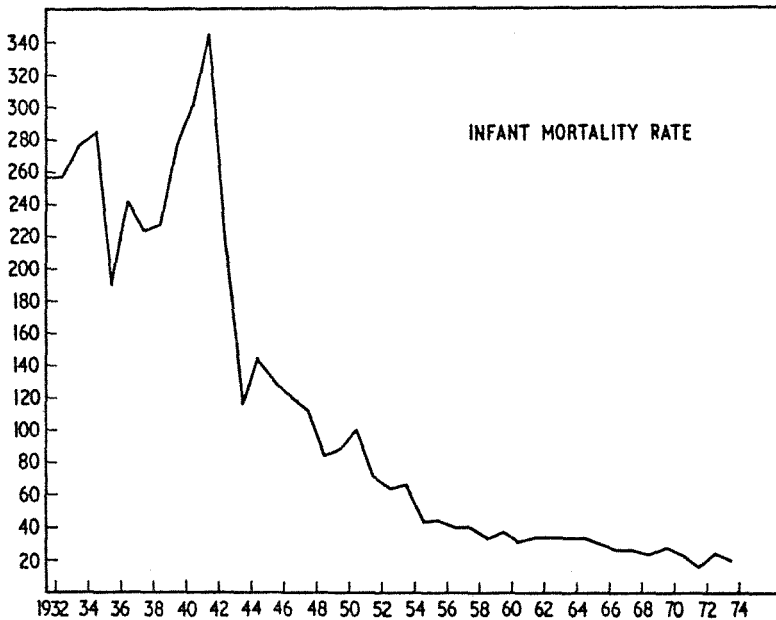


Fig. II

lowest ever recorded and less than one eighth of what it was in 1945. Indeed the present mortality rate in Malta compares very favourably not only with those of other Mediterranean countries but also with those of developed Northern European countries (Table III).

Table III

INFANT AND 1-4-YEAR MORTALITY RATES IN
SELECTED COUNTRIES, 1972

COUNTRY	INFANT MORTALITY PER 1000 LIVE BIRTHS	MORTALITY RATE IN 1-4-YEAR OLD PER 1000
Yugoslavia	44.41	1.7
Portugal	41.41	2.7
Greece	27.33	0.8
Italy	26.95	0.8
Bulgaria	26.15	1.1
Malta	19.68	0.6
Israel	18.91	0.7
United Kingdom	17.22	0.7
Spain	16.27	0.9
France	13.33	0.8
Iceland	11.56	0.5

Epidemiological studies of a number of infectious diseases very often provide a very good index not only of the state of health of the community but also of the effectiveness of the preventive and curative health services. *Puerperal fever*, *diphtheria* and *poliomyelitis*, *tuberculosis*, *trachoma* and *Brucellosis* will be considered in turn.

Puerperal fever, which can be defined as an infection which has entered through the birth canal during or after labour or abortion, is an index of the standard of obstetric practice in the country. Since 1944, there has been a progressive fall in the number of cases of puerperal sepsis (Figure III). It is gratifying to note that no cases of puerperal fever have been notified since 1963. This clearly reflects the high standard of obstetric care in Malta.

The control of infectious diseases through vaccination is rightly considered as one of the big success stories of preventive Medicine. Vaccination against smallpox in Malta had been compulsory since before the War, however it was only in 1953 that a free immunisation service against diphtheria was started, however some

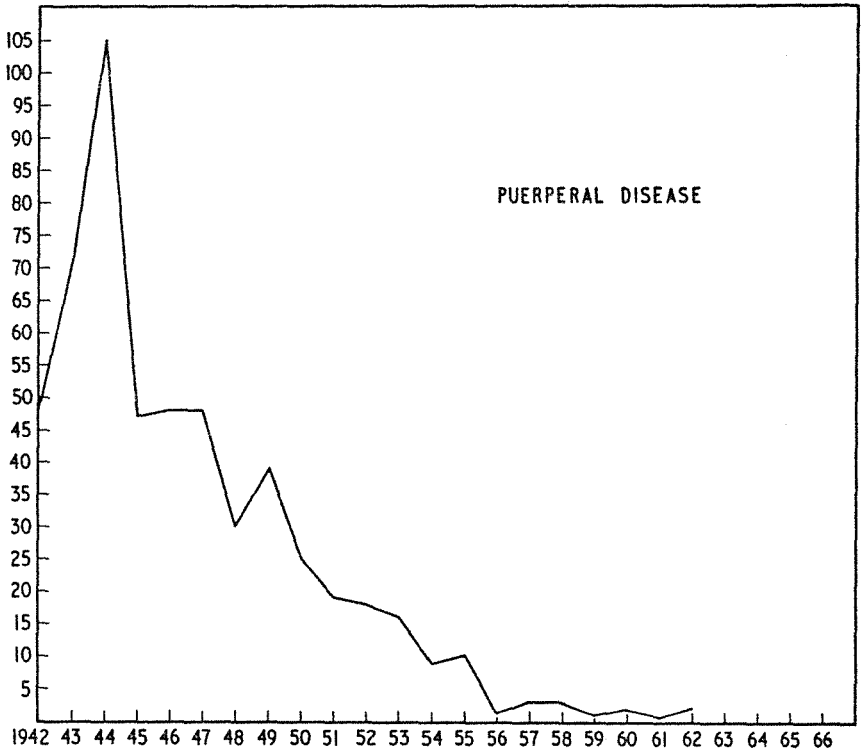


Fig. III

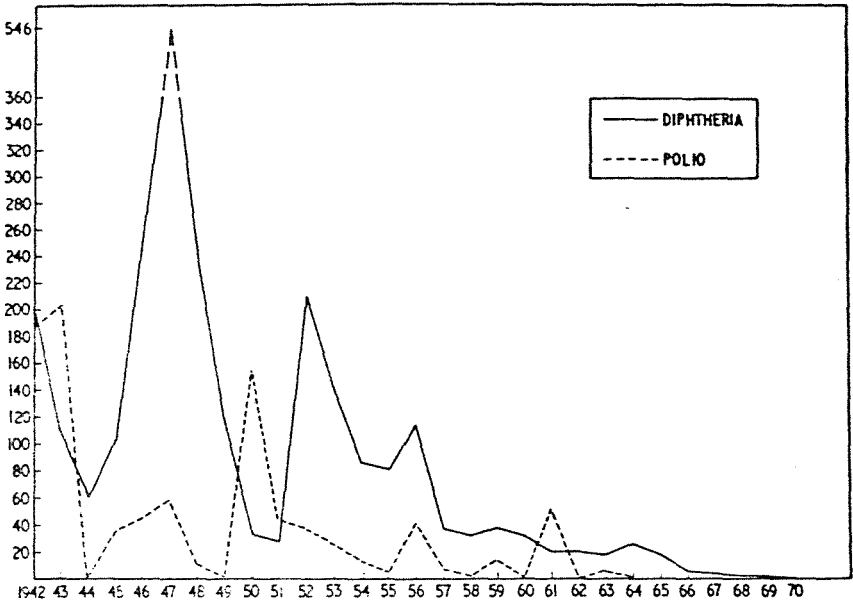


Fig. IV

years had to elapse before parents of schoolchildren realised the usefulness and advantages of this preventive measure.⁸ Now nearly 80% of school entrants are vaccinated against diphtheria. Figure IV illustrates the marked drop in incidence; there has been no case reported since 1970. The same can be said for poliomyelitis and as a successful vaccine became available, there was a most satisfactory response to the offer of free vaccination. In fact there has been no notified case of poliomyelitis since 1965 (Figure IV).⁹

There has been epidemiological evidence of an association between a poor social environment and susceptibility to tuberculosis,¹⁰ Figure V shows the death rate from pulmonary tuberculosis in a number of Mediterranean countries. It will be realised that in the

MORTALITY IN PULMONARY TUBERCULOSIS

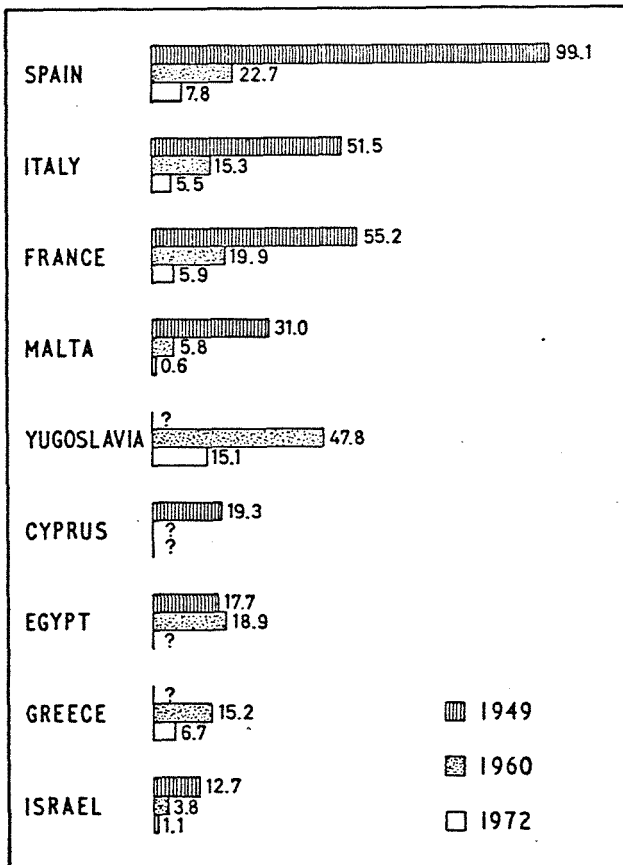


Fig. V

case of Malta, these rates have markedly improved and are now very low indeed. As indicated by Figure VI, dramatic downward trends

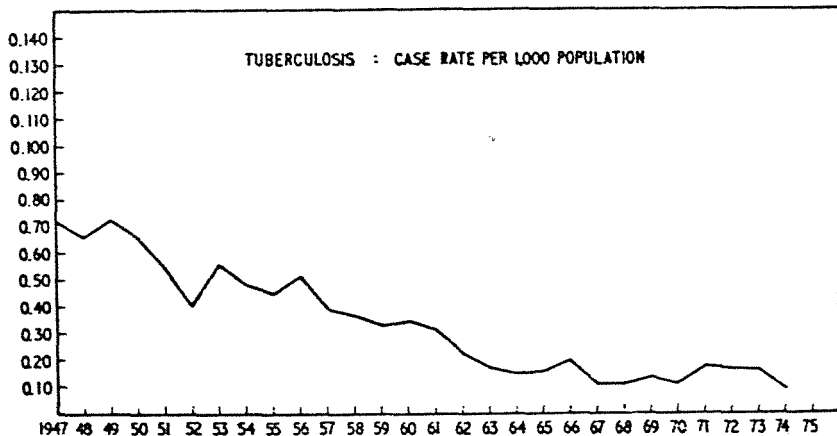


Fig. VI

in the case-rate for tuberculosis have been registered over the last two decades. The early pulmonary disease of young adults has been brought under control and the incidence is highest in middle aged and other people, a situation common in developed countries.

Another infection to be discussed is Brucellosis. This is being done because Brucellosis is intimately related to the history of medicine in Malta. It was in Malta that most of the work to discover the causative agent of undulant fever was carried on and it was in 1886 that Sir David Bruce found the microbe of brucellosis in the spleen of four soldiers stationed in Malta.¹¹ Brucellosis is a disease in humans acquired through ingestion of infected goats' and cows' milk. The practical effects of the discovery of the microbe in goats' milk in 1906 were immediately evident. The prevalence of Brucellosis in British Forces was immediately reduced first by banning goats' milk. As evident from Table IV, the incidence in the local population remained high and was only drastically reduced when milk pasteurization became compulsory in 1957. Brucellosis is now limited to dairy industry workers as well as to persons eating raw cheeselets.¹²

Trachoma, a disease affecting the eyes, which not infrequently led to blindness, was rampant in Malta up to 1950. Through the effort of local ophthalmologists we have succeeded in eradicating the condition from these islands, and have not had a single case since 1962. Figure VII vividly reproduces the dramatic decrease in the incidence of Trachoma in immediate the post-war period.

Table IV

INCIDENCE OF BRUCELLOSIS 1942 -

YEAR	TOTAL NUMBER OF CASES	YEAR	TOTAL NUMBER OF CASES
1942	456	1960	260
1943	334	1961	127
1944	173	1962	90
1945	1024	1963	69
1946	2410	1964	56
1947	1390	1965	70
1948	1039	1966	24
1949	902	1967	29
1950	864	1968	14
1951	613	1969	57
1952	550	1970	51
1953	425	1971	56
1954	548	1972	63
1955	522	1973	34
1956	432	1974	31
1957	257		
1958	117		
1959	220		

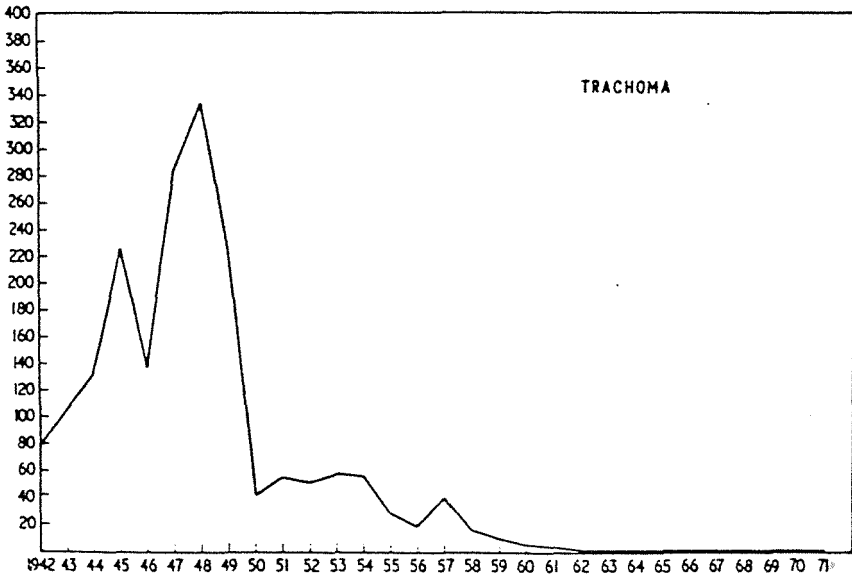


Fig. VII

There is no doubt that poverty and its ill-effects on health has been successfully controlled in Malta. A pattern of diseases which are prevalent in developed countries is now seen to be emerging, however. In 1974, deaths from heart disease and cerebrovascular disease accounted for 40% of all deaths. These together with cancer, which accounts for 13% of all deaths, make up the major causes of death in Malta (Figure 9). Malta is now beginning to experience the harmful effects of affluence on health that result from the increase in tobacco consumption, from the overindulgence in food – especially the wrong food – and from lack of exercise. If the pattern of other developed countries repeats itself here, as one believes it will, the incidence of cardiovascular deaths is bound to increase. This is more likely to occur in Malta because of the known high incidence of *diabetes mellitus*, a disease well known to accelerate the degeneration changes in arteries. This state of affairs can be forestalled if the experience of others is learnt from. Though the relief of poverty is clearly associated with general health benefits, the onset of affluence may, as has been shown in other countries, prove deleterious to the health of those individuals who were not prepared for it. As already indicated, real dangers result from overindulgence in food, tobacco and alcohol as well as from lack of exercise. Such dangers can be controlled if we can train ourselves and others in the habits of moderation. Indeed the results from Framingham in the United States have demonstrated unequivocally that in heart disease, once the recognised adverse factors have been brought under control, the actual incidence of heart attacks has decreased.¹³ It is therefore important that at this critical stage of the history of disease in Malta, a health education programme be formulated in order to inform and instruct the public on the control of these adverse factors. Clinical experience frequently suggests that for health education to be shown in stark reality the possible consequences of ignoring reasonable medical advice. One very often finds that, in the vast majority of individuals, knowledge of the facts by itself is a useless prophylactic agent. It is only when it is combined with fear that it becomes effective.

NOTES:

¹Quoted in H. Miller *Medicine and Society* (Oxford, University Press, 1973), p. v.

²It is important to distinguish between *incidence of disease* and *causality of mortality*. For the latter, data is more profuse.

³See *Report of the Barracks and Hospital Improvement Commission on the Sanitary Condition and Improvement of the Mediterranean Station* (London, H.M.S.O., George Edward Eyre & William Spottiswoode, 1863), p. 87. The rate is further confirmed by Dr Ghio *The Cholera in Malta and Gozo in the year 1865* (Malta, Govt. Printing Office, 1867), p. 6, where he says that 'the average rate of mortality in these islands under ordinary circumstances is about nine persons per diem (24 per 1000, annually on the entire population)'.

⁴Ghio, *ibid.*, adds further '... that is to say 5 under five years of age, 23 between five and seventy and 17 of seventy and upwards'. (p. 6).

⁵Ghio, *ibid.* adds further on 'The mortality among children of the lower classes is mainly due to want of care. If these children had the benefit of better care in sickness, the rate of mortality in the absence of the eruptive diseases which occasionally visit these islands, would be much reduced'.

⁶See, e.g. Giusè Bonnici *It-trobbija tat-Tfal* (Malta, Tip. Lux, 1932), p. 35 where he insists that the three major causes for the high rate of death among children were lack of recreational space, poor hygiene, and overpopulation in households.

⁷In the Demographic Review of the Maltese Islands for the Year 1969 (Malta, Central Office of Statistics, 1971), p. 1, it is stated that 'After the year 1962 the population reversed its long history of almost uninterrupted growth and began to show a tendency to decline rather slowly'.

⁸Report on the Health Conditions of the Maltese Islands and on the work of the Medical and Health Department for the year 1951 (Malta, Govt. Printing Press, 1953), p. 19.

⁹See Report on the Health Conditions of the Maltese Islands and on the work of the Medical and Health Department for the years 1965, 1966, 1967 (Malta, Dept. of Information, 1970) p. 6.

¹⁰See e.g. J. Crofton & A. Douglas *Respiratory Diseases* (2nd edition) (Oxford, Blackwell Scientific Publications, 1975) and L. Stein 'Tuberculosis and the "social complex" in Glasgow' *Br. J. Soc. Med.* VI, 1 (1952).

¹¹D. Bruce, 'Note on the Discovery of a Micro-organism in Malta Fever', *The Practitioner*, XXXIX (1887), p. 163.

¹²For an excellent historical excursus on the control of Brucellosis, see P. Cassar *Medical History of Malta* (London, Wellcome Historical Medical Library, 1964) pp. 240-247.

¹²W.B. Kannel, W.P. Castelli & P.M. McNamara 'The coronary profile: 12 year follow up in the Framingham study' *J. Occup. Med.*, 9 (1967), p. 611; J. Truett, J. Cornfield & W. Kannel 'A multivariate analysis of the risk of coronary heart disease in Framingham', *J. Chron. Dis.*, 19, (1967), p. 382; and T.R. Dawber, G.C. Meadors & F.X. Moore 'Epidemiological approaches to heart disease: the Framingham study' *Am. J. Pub. Health*, 41, (1951), p. 279.