SIR ARCHIBALD GARROD AND MALTA

A historical occasion recalled

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Introduction

On the 16th December 1916, the University of Malta - as it then was - conferred on Archibald E. Garrod, and on three of his Army Medical Service colleagues, the honorary degree of Doctor of Medicine. The event was a unique one in the history of the University and one of which it should rightly be proud. Archibald Garrod was no mean physician. He was already very well known as a physician of stature, deeply interested in the chemical and metabolic processes which take place in the healthy and in the diseased human body. His Croonian Lectures to the Royal Colege of Physicians of London ,on the "Inborn Errors of Metabolism" delivered in 1908 and published under that title, had made him already famous. In an earlier work, not as widely known as it deserves to be, called "The incidence of alkaptonuria: a study of chemical individuality," he had developed a series of ideas on the nature of inherited variations in human biochemistry which today form the groundwork for our thinking in the science of Biochemical Genetics. He is, without doubt, the honorary graduate of the University of Malta whose ideas and work have had the most far-reaching influence and application in medical science.

A biographical sketch

Archibald Edward Garrod was born in Harley Street, London, on 25th November 1857, the fourth son of Sir Alfred Baring Garrod, a distinguished physician who had devoted himself to the investigation of the chemical problems of disease.

Sir Alfred had separated rheumatoid arthritis from gout with which it had till then been confused, and was first to demonstrate an increased amount of uric acid in the blood of gouty patients. His youngest son, in later years, delighted in citing this as the first quantitative biochemical investigaion ever performed on living human beings. At the time, Sir Alfred was Professor of Therapeutics and Clinical Medicine at University College Hospital and, a few months after Archibald's birth, was elected a Fellow of the Royal Society. Two of his sons, Alfred Henry and Archibald, were later to hold professorships and to be elected Fellows of the same Society, while a third, Herbert Baring, was to become a barrister and noted literary critic. There is little information on Archibald's second brother and on his two sisters.

His first education was at a preparatory school and, at age 15, he entered Marlborough where he does not appear to have excelled in, or enjoyed, the classical education he was receiving. His attitude to this can be gleaned from a paragraph in "University of Utopia", a lecture he delivered at the University of Malta on 3rd November, 1917: "But although I am convinced that compulsory Greek is doomed, and that its passing is merely a matter of time, I, for one, shall ever feel thankful that, in the days of my youth, some knowledge of the tongue was drilled into me against my inclination and will".

His father wanted him to go into business as he did not believe he was good for anything else, but was persuaded to allow him to go to Christ Church College, Oxford, as a commoner. There he read

Natural Sciences and obtained first class honours. During this time, he wrote an essay on "The nebulæ: a fragment of astronomical history" which won him the Johnson Memorial Prize. A few years later, while a clinical student, he re-wrote this essay and had it published privately. This was the beginning of an interest in astronomy which he retained throughout his life. In fact, a public lecture he gave in Malta on 12th November, 1918, at the Valletta Gymnasium, organised by the Church of England Men's Society, was on "Life on Other Worlds". This lecture had been postponed from the previous day to allow his audience to aftend the "Te Deum" at St. John's Cathedral, to celebrate the signing of the Arimstice.

Garrod took his clinical training at St. Bartholomew's Hospital, London, After qualifying M.R.C.S., he spent some months doing post-graduate work in Vienna and in 1885 qualified B.M. and M.A. at Oxford and M.R.C.P. London. The next year he married the daughter of Thomas Smith, a surgeon at Bart's. He held various house appointments in this hospital and later became Assistant and Demonstrator in Morbid Anatomy, and then Assistant and later Full Physician there. Promotion at Bart's was slow mainly because the staff establishment was small and not because Garrod was not well thought of or considered unworthy. Until 1896 he was also Assistant Physician to the West London Hospital ,when he became Physician at the Hospital for Sick Children at Great Ormond Street.

At the outbreak of the First World War, aged about 57, he entered the Service as a Major. On his promotion to the rank of Colonel in the Army Medical Services in December 1915, he was sent out to Malta as Consulting Physician to the Forces there. He served in Malta all through the war, and was appointed K.C.M.G. for his devoted services, besides being mentioned in despatches. On leaving Malta at the end of January 1919, he became Director of the Medical Unit at St. Bart's and, within a few months, succeeded Sir William Osler as Regius Professor of Physics in the University of Ox-

ford. He retired on reaching the age of 70 and went to live at Melton in Suffolk, but soon Sir Archibald and Lady Garrod moved to Cambridge to stay with their daughter.

Garrod had three sons and a daughter. He lost his three sons, all destined for Medicine, in the war. His daughter Dorothy, who survived him, had a latent interest in Archaeology aroused during a visit to her father in Malta. She become a distinguished archaeologist and held the Disney Professorship of Archaeology at Cambridge (and incidentally became the first woman professor in the United Kingdom). She is the recipient of several honorary Doctorates in Science and Letters, Garrod was very depressed over the death of his sons, but as he himself put it: "even in such pain, there was a certain pride which time could not efface, the pride of the sacrifice and the pride that those most dear to him had done their duty and had fallen for a just cause"3.

By the time he died on 28 March, 1936, Garrod had received honorary degrees from Aberdeen, Dublin, Glasgow, Padua and Malta and honorary Fellowships from Edinburgh and Glasgow. He had been elected F.R.S. in 1910 and served as Vice-President of the Royal Society between 1926-1928. The year before his death, he was awarded the Gold Medal of the Royal Society of Medicine.

Garrod's work

early publications Garrod's mainly clinical in character. They included several case reports, a small book on the use of the laryngoscope, several translations from foreign sources for the New Sydenham Society (including one of "A Treatise on Cholelithiasis" by B. Naunyn) and a series of papers on rheumatism, chorea and rheumatoid arthritis, in one of which he described the rheumatic nodules which have come to be known as "Garrod's pads". In "A Treatise on Rheumatism and Rheumatoid Arthritis" published in 1890, he classified osteoarthritis separately from these conditions and thus furthered the delineation of these diseases which had been started by his father. A full biblio-



Sir Archibald Garrod, K.C.M.G., F.R.S., Hon. M.D. (Malta) B.M., M.A. (Oxon.), M.R.C.P. (London) — (1857-1936)

graphy of his writings is given by Harris4.

He is best remembered, however, for his absorbing studies on urinary pigments (urobilin, urochrome, hæmatoporphyrins, melanin) and, in particular, on alkaptonuria. It is said that he would spend a whole morning at a window studying the absorption spectrum of a urine which had an unusual coloration. It is worth noting, so as to give a better idea of his contribution to the knowledge of alkaptonuria, that intestinal bacterial activity was considered to be the cause of the increased excretion of homogentisic acid which gives the characteristic darkening of the urine from these subjects. The fact that it could be detected in early infancy and that it was permanent suggested to him a congenital origin. He also noted that the unaffected parents of alkaptonurics were often blood relatives. Garrod had a good knowledge of the young science of Biochemistry and had collaborated in studies of urobilin and hæmatoporphyrin with F. Gowland Hopkins of Cambridge, one of the first professors of Biochemislry in England. He argued that alkaptonuria might result from failure of some step in the series of chemical changes which constitute metabolism in the tissue, each step being catalysed and controlled by a specific enzyme. He realised that the same reasoning was applicable to what was then known on albinism, pentusoria, and cystinuria, all of which were congenital, life-long, explainable by a failure of a metabolic step and, in each instant, a number of parents of affected subjects were known to be close relatives. He grouped these conditions together as "inborn errors of metabolism" and understood them to be due to a failure of development of a specific enzyme in each instance. His ideas have been amply confirmed and extended and especially by the elegant work of Beadle and Tatum on the induced mutants of the bread mould Neurospora which gave rise to the phrase "one gene, one enzyme", which has only recently been modified to "one gene, one polypeptide".

At the time Garrod was formulating his views on the "inborn errors", the work of Gregor Mendel on heredity was dramatically rediscovered and confirmed by three independent workers.5 Garrod was friendly with William Bateson, Professor of Biology at Cambridge, who was then investigating the phenomena of discontinuous variation in plants and their possible role in evolutionary development, and was being led to the same conclusions Mendel had reached some 40 years previously. Bateson whole-heartedly accepted Mendelism and suggested that Garrod's findings on Alkaptonuria could be accounted for by Mendel's ideas on recessive and dominant genes. Garrod was thus instrumental in bringing the modern sciences of Biochemistry and Genetics - both then in their infancy - to bear on Medicine and Pathology, and in elucidating the fundamental mechanism underlying certain disease processes.

Garrod in Malta

Colonel Garrod went out to Malta in the middle of December 1915 to succeed Col. G. L. Gulland (Professor of Medicine at Edinburgh University) and shared the work, as Consulting Physician, with Col. (later Sir) J. Purves Stewart (Physician to the Westminster Hospital, London). An opening paragraph from his lecture on "Islands" — also his farewell lecture to the Island he had become very attached to — delivered at the University of Malta on 21st January 1919, describes his first impressions of Malta thus:

"He who comes to Malta in the early morning can hardly escape it (i.e. "island charm") as he sees the shadowy outlines of the island emerge from the horizon mists, the unfamiliar features and colouring of the nearer landscape, the harbour girt with bastions and the half oriental buildings of Valletta and her sister towns, the gaily coloured dghaisas, which flock the ship".

At first he shared a house (probably Casa Said) on what is now Tower Road, Sliema, with the Purves Stewarts, but some time in June 1916 he shared the house at 4 Gunlayer Square, Floriana, with Col. (later Sir) Charles Ballance (Consulting Surgeon to the Forces in Malta since May 1915) and with Col. H. H. Tooth (Phy-

sician at St. Bartholomew's Hospital and the National Hospital for Nervous Diseases, London) who had replaced Col. Purves Stewart when the latter was posted to Salonika. Later, Garrod lived at the Osborne Hotel, Valletta, till his departure from Malta. Mrs. Garrod visited him twice during 1916 and again in 1918.

Between February 1916 and April 1917, Garrod had as his assistant Dr. George Graham, whom he had known at St. Bart's. In August 1964, Dr. Graham very kindly wrote me his reminiscences of Garrod during this period, from which the following is taken:

"On arriving at a hospital, he was met by the C.O. and Divisional Officer and the latter took him to see some 6 to 10 patients in the mornings; these were either very ill patients or patients with obscure diseases, or those in which opinions on treatment were wanted. Garrod had had little experience of tropical diseases before and I was astonished by his knowledge of dysentery, amoebic and bacillary, and malaria, kala-azar and Malta Fever which he had gained in the two months before I joined him. He complained bitterly of the lack of reference books and he made use of the Allbut and Rolleston "System of Medicine" which was kept in the D.M.S. office in the Castille. Thus, when he was shown a man with bacillary dysentery who had come from Salonika and had a severe arthritis. he recognised it as a complication of the dysentery and not due to serum or to gonorrhœa and confirmed it in Allbutt and Rolleston. He stimulated me to collect similar cases which were afterwards published. I always went with him and made some notes about the cases so that I could remind him to ask about the patients a week later. Visiting a different hospital each day of the week, and very occasionally on a Sunday, made it very difficult to remember all the cases and I was able to help him here and also to remind him about treatment. For he was rather like the great Bartholomew's physician, Dr. Samuel Gee, much more interested in the diagnosis of the disease than in its treatment, and it was for this latter that the Medical Officers often wanted his advice".

According to Dr. Graham, "there were two conditions in which Garrod was especially interested at this time, (1) the diagnosis of amoebic hepatitis. He was responsible for the diagnosis of many cases and used to percuss out the upper level of the liver dullness both front, back and in the axilla, and aroused the interest of the Medical Officers so that many cases were discovered and treated. Actual amœbic abscesses of the liver were few in number. (2) Later on, when the flood of patients with malaria arrived from Salonika, he recognised the dilatation of the right heart and often percussed this by light percussion and insisted on the patients being kept in bed until this disappeared". Garrod, in fact, addressed the Malta Medican Conference — a fortnightly meeting of Service Medical Officers which met at the University — on the 5th January, 1917 on the subject of "War Hearts" and published a paper on the subject later that vear.6.

Reference has been made to three public lectures delivered by Garrod in Malta. A fourth lecture, delivered to the Church of England Men's Society at the Valletta Gymnasium on 11th February 1918 was called "Other Worlds than Ours" and was probably on ancient history. It is recorded that Garrod made use of slides supplied by the University on the occasion, but there is no report of the subject matter of his talk. It is very well known however that he was friendly with Professor (later Sir) Temistocles Zammit, then Director of the Malta Archaeological Department, who was at the time excavating the Tarxien Neolithic Temples discovered in 1913. Garrod often accompanied Zammit on these excavations and Zammit delighted in taking Garrod and some of his service colleagues to visit sites of archaeological interest in Malta. Zammit had given a University lecture on the Tarxien temples a few weeks previously and had illustrated his talk with slides.7 It is possible that Garrod made use of these same slides for his talk.

Garrod became very knowledgeable about Malta's pre-history and referred to it in his two University lectures. Zammit respected his opinion so much that he invited Garrod to read the manuscript of his book on "Malta: the Maltese Islands and their History". It is worth mentioning, that the scale model of the Tarxien Temples which any visitor to the Malta Museum in Valletta can still see, was partly paid for by Garrod.⁸ The following quotation from "University of Utopia" reveals the depth of his interest:

"There are few branches of knowledge which are not becoming permeated by scientific method, and even classical studies are awakening to new life under the influence of scientific work upon the relics of the past. History no longer relies upon written records alone. The archaeologist is the practical historian, and his methods, which are strictly scientific, closely resemble those of the geologist. The broken sherd, the dropped coin or weapon, the hidden treasure, serve to date the successive deposits on a buried site. just as the fossils which they contain date the several strata of the earth's crust. A child's toy, a votive offering, the wares exposed for sale in a buried shop, are for the archaeologist precious documents. Even the scribblings of idle hands upon the walls help to reveal the daily life of remote peoples, and it is a comfort to think that those who so deface historic spots nowadays, may be providing valuable graffiti for archaeologists of the future!

"Here in Malta we have ample opportunities of studying the methods and results of scientific archaeology. As the spade brings to light the sanctuaries of our neolithic predecessors of five thousand years ago, the explorer needs to note, label and classify all his finds: to mark where they lay and at what depths. Pottery is of special value to him, for from its materials and decorations it can be identified as neolithic, bronze-age, Punic or Roman. — From the plans of the sanctuaries, from archaic statuettes and votive objects, he can reconstruct, to some extent, their cults and ceremonial, and from fragments of bone can identify the animals offered in sacrifice. The artistic level of the neolithic peoples can be appreciated in graceful carvings, painted ceilings, and

pottery of exquisite shapes and finish. Furthermore he can trace the coming of a bronze-age race, which finding the sanctuaries desolate, used them as burning places of its dead, and burial places of their ashes".

Garrod went out of his way to befriend the Maltese people and did not consider inspecting the bandaging and stretcher drill at a Rally of "Baden-Powell's Boy Scouts" in Mosta as beneath him. He became very familiar with various parts of Malta and visited Gozo on at least one occasion. According to Dr. Graham "his charming personality was never better shown than during these four years in Malta". In a farewell note, he was described as "a most prominent, familiar and sympathetic personality" who "soon commanded general respect, esteem and admiration..... and easily won the hearts of us all".10 In proposing a toast at a Farewell Dinner given to Garrod by the University and its Graduates at the Casino Maltese on 2nd January 1919, Judge A. Parnis stated: "Garrod is a household word not only among gentlemen belonging to the medical profession but even among laymen like myself". There is no doubt that Malta and the Maltese took him into their heatrs. He responded generously not only by giving of his professional service when needed but also by lecturing whenever invited. According to the late Professor V. Mifsud who served as a Medical Officer in one of the hospitals under his charge, "Garrod was a very good speaker who could be relied on to give an interesting lecture even without any previous notice".

Garrod's name occurs frequently in the English language daily newspaper of the period. Thus he is recorded as having visited the Valletta Hospital on Christmas Day;^{II} attended the funeral of Dr. Isobel Tate (a lady doctor attached to the Valletta Hospital),^{I2} of Father J. Strickland S.J. (Chaplain to the Forces),^{I3} of Lady Adeline Strickland^{I4} and of Mr. C. E. Strickland;^{I5} contributed to the "Lady Methuen Distressed Families Fund";^{I6} lost two sons in the war;^{I7} received at Buckinkham Palace for investiture as K.C.M.G.;^{I8} mentioned in dispatches;^{I9}

paid a tribute to the work of the V.A.D. nurses in Malta;²⁰ attending a wedding;²¹ attended the investiture of Lady Methuen as C.B.E.²² In addition, notices of all four of his public lectures and write-ups of two were published in this paper, while his name occurs in connection with the honorary degree ceremony, the granting of an honorary LL.D. to H.E. Field Marshal Lord Methuen, and the Farewell Dinner given to Methuen and Garrod on the 2nd January 1919.²³ There is no doubt that Garrod had become a household word in Malta. An obituary note was also published.²⁴

Honorary Degree Ceremony

On the 16th December, 1916, the University of Malta conferred the honorary degree of M.D. on each of the following:

Col. Charles A. Ballance, C.B., M.V.O., M.S., F.R.C.S., A.M.S.

Col. William Thorburn, C.B., B.Sc., M.D., F.R.C.S., A.M.S.

Col. Archibald A. Garrod, C.M.G., M.A., M.D., LL.D., F.R.S., A.M.S.

Col. Howard H. Tooth, C.M.G., M.A., M.D., F.R.C.P., A.M.S.

"in recognition of the high qualifications possessed and of the special services rendered by the same eminent professors in the cause of humanity during the war".25 The ceremony was held in the Aula Magna of the University at 3.00 p.m. and presided over by Lord Methuen is his capacity as Visitor to the University. The occasion was unique and historic, being the first time the University made use of provisions in its Statute to confer honorary degrees.

An eye-witness described the scene as follows: "The beautiful hall, from the walls of which look down the grave and revered countenances of several generations of Maltese worthies, was filled throughout; and the mise-en-scene, with its scarlet draped background, its carpeted dais, and gilded damasked chairs, — prepared under the direction of a skilful hand and eye—was in every way worthy of a solemn and impressive function. Members of

the Executive and of the Legislative Councils, judges in their lawns and velvet, members of the General and of the Special Councils of the University, Professors, Examiners and graduates in academical robes, occupied the space on either side of the dais; in front of which sat the four gentlemen to be honoured, square soldierly figures in khaki, and splendid types of British manhood as well as the noble profession which they adorn. The body of the hall was thronged with military and naval officers, many of the elite of Maltese society, and nurses, in the varied and becoming garbs of their calling". The address given by Professor E. Magro, the Rector, was punctuated by bursts of applause which served "to approve and applaud the action of the University in conferring its honours upon men who have deserved well of their country and of humanity".26

In his address, the Rector said: "There is yet one other fact which shows the appropriateness of the degrees conferred in this instance. One of the numerous hospitals, now dotting the Island, which have risen as if by magic under the wonderfully energetic Governor, our noble Visitor, with the thorough assistance of the various departments under him, is that which at present is known by the name of Valletta Hospital. Now, the premises of that hospital are nothing more or less than those of the Grand Hospital of the Order of the Knights Hospitallers, one of whose principal duties was exactly that of tending the sick and wounded. It was the boast of that hospital that each one of the six or seven hundred patients who were cared for in that hospital were served on massive silver plate, specimens of which may still be seen at the Museum. That one claim of excellence, is nowadays certainly more than compensated in the present hospitals, by their perfect sanitary and other suitable appointments, by the superior skill of the eminent doctors attending, and lastly by the infinite patience and graceful and sympathetic care with which their inmates are tended by the various nursing sisters. You may not know, however, that the old hospital was the home

of the first training school for barbers and nurses established in Malta, a school which in the course of time evolved into a regular medical school which was founded therein by Grand Master Nicholas Cottoner a great many years before the present University was even instituted as such with its various faculties including that of Medicine and Surgery. Consequently, considering that all the new Graduates have. more or less, worked in connection with a hospital which in a way is a continuation of the parent one where our own Medical School was originated, it was thought only proper in the fitness of things to confer on them our own Degrees of M.D. and in conferring that Degree our University has simply done what was assuredly its bounden duty, namely, to appreciate merit where merit exists, especially where the merit was of such superior order".

The occasion was "what will no doubt be remembered as the most memorable Anglo-Maltese gathering ever witnessed in the halls of the University". One person was inspired to write a sonnet on the occasion.²⁷

The closing paragraphs of "University of Utopia" seem to evoke this graduation scene and to express Garrod's feeling for his new Alma Mater: "In an ancient and renowned foundation the teachers and students of today are trustees of a great tradition. The paths and corridors which they tread have echoed to the steps of great men of the past, scholars divines. poets, philosophers, scientists and statesmen, men who have made history and shaped thought, and who departing have left behind them 'footprints on the sands of time'.

"To their successors of the present falls the task of carrying on their work, and of taking their share in shaping the history and thought of future generations. Such is their responsibility and such their privilege. They must not rest content to hand down their inheritance unimpaired, like the talent wrapped in a napkin, but must seek to leave to those who come after a wider knowledge and a still nobler civilization".

The Post-War Years

After the war, Sir Archibald maintained a very close interest in Malta and in her affairs. His taking up the Regius Professorship at Oxford, almost coincided with the award of an honorary D.Litt. by that University to Professor Zammit in 1920, when Zammit became Rector of the University of Malta. This recognition of his good friend's work must have pleased Garrod. It is not surprising that, at this time too, Garrod agreed to represent the University of Malta (together with Professor — later Sir — A. Bartolo) at the Congress of Universities of the British Empire held at Oxford in July 1921. At Easter time of that year, Sir Archibald and Lady Garrod and their daughter, spent a month in Malta visiting old friends (in particular Zammit and Sir William Robertson, the Vice-Governor). Garrod visited Malta again, for 1-2 days, in the course of a Mediterranean cruise and met old friends.

During the war years, Garrod was constantly aware of the Island's needs in the way of trained medical personnel. As Professor Mifsud put it to me, Garrod often said, "we want to do something for Malta". Garrod was probably instrumental in initiating the practice for Maltese medical graduates to seek post-graduate experience and qualifications in the United Kingdom, a practice which became almost standard after the Second World War.

The late Professsor P. P. Debono served during the war as Civil Surgeon attached to the Army Medical Services and between 1916-18 was Specialist in Pathology and Bacteriology in charge of the Tigne District Laboratory. Garrod was very friendly with Debono and held a very high opinion of him, Immediately after the war, Garrod introduced Debono to Professor H. G. Gask, Director of the Surgical Professorial Unit at St. Bart's. where Debono became Surgical Assistant till he took, successfully, the examination for Fellowship of the Royal College of Surgeons a few months later. Dr. Dorothy Garrod recently wrote me about her father: "He was much attached to Malta, and

always continued to take an interest in its affairs, and to keep in touch with Maltese friends, as far as possible". There must have been not a few in Malta who mourned the passing away of this good friend of the Island.

The Present

What remains to-day of the glorious association between the University and medical profession in Malta and this leading investigator, who achieved fame as a physician and is acknowledged as the father of the science of Biochemical Genetics? The writer has found the following relics:

- 1. A framed photograph of Sir Archibald in the Library of the Medical School.
- 2. A copy of "Inborn Errors of Metabolism" inscribed "T. Zammit, from A.E.G. Malta, 1918" in Garrod's handwriting, in the same Library. This was presented to the University in 1964 by Captain Charles Zammit, Director of the Malta Muesum.
- 3. A signature in the Liber Aureum of the University.
- 4. A handwritten letter from Garrod to Zammit, dated 17. VII, 1920, congratulating him on his election as Rector of the University and warning him: "Doubtless you will have some battles to fight, but King Stork is what is wanted nowadays, although people are apt to think him a bit of a nuisance".
- 5. A letter, in the University Archive, written on note-paper lined in black, dated 6. VII. 16 at 4 Piazza Miratore, Floriana which reads: "Dear Sir: Will you please convey to the Rector my sincere thanks for the Statute of the University kindly sent to me. Yours faithfully, A. E. Garrod, A.M.S.".
- 6. Two photographs, one showing Garrod in uniform, and three Service colleagues, watching Zammit excavating at Tarxien (taken in 1916), the other, a group, comprising Dr. S. Debono, Professor E. Ferro, Professor P. P. Debono, Professor C. Mifsud, Sir Archibald and a woman,

probably Miss Garrod, taken at the Point de Vue, Rabat, on 6th April, 1932. Both these are in the possession of Capt. Zammit.

- 7. A scale model of Tarxien Neolithic Temples in the Malta Museum, Valletta.
- 8. Copies of the lectures "Islands" and "University of Utopia" in the University Library (Melitensia collection) and in the Royal Malta Library.

Doubtless there are others, letters perhaps, or even small gifts exchanged between old friends. Even when the significance of these simple relics fades away, when the passing of the years makes them "footprints on the sand of time", Sir Archibald Garrod's name will command respect within the walls of the Royal University of Malta.

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Bibliography

- 1 A. E. GARROD (1902). Lancet, ii, 1616.
- COLONEL A. E. GARROD, C.M.G., A.M.S., Hon. M.D. Malta. "The University of Utopia", a lecture delivered in the Aula Magna of the

Malta University on the 3rd November 1917. Critiens Press, Malta, for the University, p. 14.

- 3. Daily Malta Chronicle, 16 January 1919.
- HARRIS, H. (1963). Garrod's Inborn Errors of Metabolism. Oxford University Press, p. 97.
- Vella, F. (1966). Mendel and his times, in Penguin Science Survey, B.
- 6. GARROD, A. E. (1917). Lancet, i, 156.
- 7. Daily Malta Chronicle, 30 November, 1917.
- 8. Daily Malta Chronicle, 26 February, 1919.
- 9. Daily Malta Chronicle, 22 October, 1917.
- 10. Daily Malta Chronicle, 30 January, 1919.
- 11. Daily Malta Chronicle 28 December, 1916.
- 12. Daliy Malta Chronicle, I February, 1917.
- 13. Daily Malta Chronicle, 19 July, 1917.
- 14. Daily Malta Chronicle, 19 December, 1918.
- 15. Daily Malta Chronicle, 18 January, 1919.
- 16. Daily Malta Chronicle, 8 March, 1918.
- 10. Daily Matta Chronicle, 6 Match, 1916.
- 17. Daily Malta Chronicle, 5 February, 1917.
- 18. Daily Malta Chronicle, 3 March, 1918.

- 19. Daily Malta Chronicle, 18 March, 1918.
- 20. Daily Malta Chronicle, I July, 1916.
- 21. Daily Malta Chronicle, 28 December, 1918.
- 22. Malta Herald, 24 December, 1918.
- 23. Daily Malta Chronicle. 15 January, 1919.
- 24. Daily Malta Chronicle, 6 April, 1936.
- Report of the University, 1916-1917, Malta,
 p. 10-11.
- 26. Daily Malta Chronicle, 23 December, 1916.
- F.D.B. "Aula Magna Dec. 15th, 1916".
 Daily Malta Chronicle, 15 December, 1916.

I have freely made use of biographical material contained in the following publications:

HART, C.J.R. (1949) The Life and Works of Sir Archibald Garrod. St. Bartholomew's Hosp. J., 53, 160-165, 186-190.

VELLA, F. (1965). Sir Archibald Garrod's Stay in Malta, 1915-1919. St. Bartholomew's Hosp. J., 69, 138-145.