

# The Human Fabric in Antiquity and other Facets

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*Fossil evidence indicates that the genus Homo probably originated from crude ancestors in East Africa, perhaps around two million years ago. These early Men very gradually spread, including northwards until eventually in due course they reached the shores of the Mediterranean. Some very ancient human remains were found in Algeria. It was probably the success of simple tools in antiquity that started the trend of development, besides other factors and very gradually led to the civilizations that developed much later.*

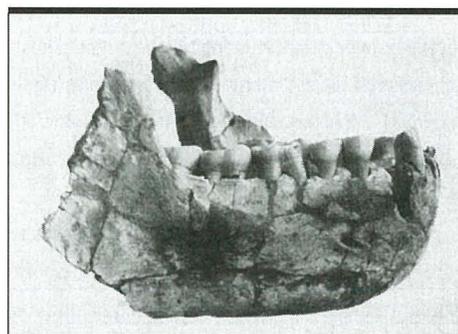
The spread and movements of populations were more complicated than a brief reference can convey. The process which brought the human structure in the Mediterranean to its present condition started many tens of thousands of years ago. It is among the oldest humanized landscapes in the world and has remnants of its ancient past.

It is believed that Man existed in Europe during a temperate interval some time in the Pleistocene Ice Age, perhaps around 450,000 years ago. The Pleistocene included very cold and warm interglacial periods. So called Cro-Magnon cavemen lived and struggled to survive, partly by hunting around 25,000 (?) years ago in sheltered valleys mainly where game was plentiful and edible plants were available. In the 1860's excavations in caves in south eastern France, brought to light skeletal remains of Ice Age Man at Cro-Magnon, Lez Eyzies. Other finds of other periods in Switzerland, Austria, Yugoslavia, Egypt, Crete, Palestine and Israel also throw some light on ancient men.

Palaeontological and archaeological research has thrown much light on the development of Man and the material side of life. The examination and dating of bones when possible and strata is based on scientific criteria. The chronological dating of pottery sequences and also of remains of animals and some human elements at Ghar Dalam were a case in point.

Pottery vessels are easily broken and though their shreds are of little value they are almost indestructible. As pottery styles change and develop through the ages, these shreds are a good indication of the chronology of a settlement and habitation. Certain means of dating such as analysis by carbon C14 contents and fluorine tests are valid mainly for certain long periods of pre-history and some later times. DNA tests are bound to throw more light on the development of Mankind.

There is a risk of suggesting too much completeness in the state of our knowledge of the ancient past. In the future as new data may emerge the picture will perhaps be clearer. With the improvements of



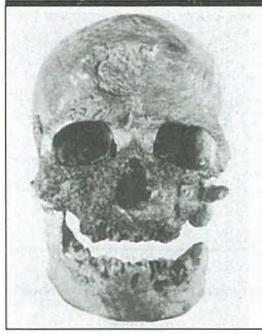
*Robust mandible from Ternefine, Algeria dated to early middle Pleistocene. Good support for strong masseter and medial pterygoid muscles. Dental arch parabolic.*

DNA analysis techniques and other advances more may be known.

New developments in biochemistry and molecular biology make it possible to extract DNA and proteins from ancient bones and these molecules can be used in studies on the origins, diversity and some other characteristics of past populations.

The ascent of Man has been marked by one distinctive feature, that is the very gradual progressive expansion and improvement of the brain since Eocene times. The process of change was slow. Although there has been an element of speculation, it is not clear what the fundamental cause of the expansion or improvement was. The fact that Man had to find ways and means to live and adapt to changing conditions, diet, selectivity, mutation and that nature favours the fittest possibly all contributed in various ways to a gradual improvement in the brain structure and the way it functions. It is surmised that possibly circa 100,000 years ago, Man evolved into Homo Sapiens Sapiens (wise Man).

The improvement of Man's brain has been indeed a very long process, but the foundation was in my opinion created by a great God Almighty. Mankind forms part of the fulfillment of God's marvellous creations.



*This Cro-Magnon skull was broader than the early central Mediterranean dolichocephalic type. (I.C.D. exhibition of photos, Paris 1979)*

In Genesis 1:26 we read 'And God said, Let us make Man in our image, after our likeness: and let them have dominion over the fish of the sea, over the fowl of the air and over the cattle and over everything that creeps upon the earth'. Our belief in divine creation involves a supernatural agency.

Man, the human being is among the most remarkable of God's creations. Besides having many fine qualities, as distinct from other mammals, Man has the power of speech, able to organize and the ability to fashion tools and at present highly sophisticated apparatus.

Of course one must mention the wonderful characteristics of the mind, nervous system, limbs, jaws, teeth, etc. As we reflect on Man's present eminence, it is well to remember that the events of the last 60,000 years or so, occupy only a short period in time. Ancient Man endured at least twelve times as long more.

Certain acquired characteristics over the ages, tended to be transmissible to succeeding generations. Other features of Man include the development of languages and written words; the use of words, for things instead of sounds and speaking of things in the past or future.

One of the remarkable characteristics of life is its additive quality and its adaptability to changing conditions. A living being passes on to its successor the being he himself inherited, but over the ages very slightly diversified in some respects. Something may pass, something develops through the chain of human lives. The mechanism of these changes is complex.

The study of cellular heredity leaves some questions unanswered. Studies indicate that there have been modifications which took place over millions of years, including the shape and dimension of skull, arms, legs, jaws and teeth. There are indications that the human jaws are very gradually diminishing very slightly in size. The fact that in numerous jaws of present day human beings there is no place for the wisdom teeth to erupt and crowded teeth, or/and other unerupted teeth is a proof of this fact. The influence of soft diets in many advanced countries is probably one but not the only factor.

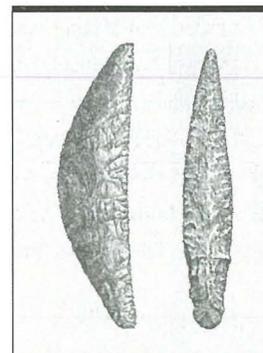
The earliest human bone found in Europe dates back to about 400,000 years ago. This is the lower jaw found about 80 feet deep in a sand pit near Heidelberg in 1907- the so called 'Mauer mandible'.

His jaw was fairly large and the chin receding, both rather primitive features. Of a later time than the Heidelberg fragment are parts of a skull and some teeth discovered at Vertesszollós near Budapest in 1965. Human and animal bones were analyzed and these date back from around 400,000 years ago. An interesting feature of the Vertesszollós skull is that it is more rounded and has a brain capacity of almost 1,400 c.c., or just below the average of modern man. The very ancient skull unearthed from Chapelle Aux Saints (France) was noteworthy.

Another significant find was part of a woman's skull unearthed at Swanscombe south of the Thames which was dated to around 250,000 years ago. In a cave at Parpallo in the east of Spain were found remains dated to about 28,000 years ago. Also some years ago it was reported that in Northern Italy some human bones dating to 25,000 years ago were unearthed.

Also significant are the man made drawings on the walls of a cave in Cogul in northern Spain dated to around 9,000 B.C. Although not very clear they seem to be a variety of dancing rituals. Others found in France show hunting and animal scenes.

Two rather young skull bones found under strata of soil at Fontchevade, to the west of Angouleme throw some more light on ancient man. These have fairly small brow ridges and a brain capacity of almost 1450 c.c. which are almost similar to present day human brains. The flint tools found with them were dated to between 120,000 and 180,000 years ago. Taken together the Fontchevade



*Drawings: In Prehistoric times sharpened flints were used as sickles (left) and to perform trepanation or to remove a superficial growth on the skin. (right)*

finds indicate that at least a number of Homo Sapiens, looking not very different from modern man were living in Europe long before the last major Ice Age.

It is probable that the Neolithic phase started in Europe about nine or ten thousand years ago, but it is likely that the Neolithic stage had been achieved around two thousand years earlier in the Middle East and Asia. They made pottery which they decorated with simple designs and sometimes geometric patterns. They knew how to light a fire and cook a meal. They stored food and water in urns and domesticated pigs, cattle, goats and dogs and were adapt at weaving plant fibers.

The Maltese Islands have sustained a stream of human life since the very early people, most probably from Sicily settled here around 5500 B.C. and gradually developed mostly in fertile areas where water was available. The Maltese megalithic temples were located fairly close to the environs of fertile areas, usually local points of activity. Aside this they tried to safeguard themselves as much as possible against disease and accidents.

Over the past centuries a considerable number of skeletons and bones have been unearthed from various parts of the Maltese Islands, such as from the Hal Saflieni Hypogeum, (unfortunately almost all of them had been discarded and lost) and numerous Punic tombs and elsewhere. Dampness and the pressure of soil, in the course of centuries caused most of the thousands of buried skulls and other bones at Hal Saflieni to be crushed and consequently only about a dozen were saved and measured – found to be dolichocephalic that is of the early Mediterranean type.

Stages of the Stone Age Culture: Eolithic-Dawn of the Stone Age. Paleolithic -Old Stone Age. Neolithic - New Stone Age. Chalcolithic-Transition from Stone Age to Bronze Age.

In ancient times the Maltese Islands were the centre of a remarkable Stone Age culture. There are 23 known places which once had megalithic structures,(approx.3,600-2,500 B.C) some large, others small.

It is surmised that the Acropolis in Greece, the site at Lipari, the pyramids in Egypt and Stonehenge in England were all constructed later than the temples in Malta and Gozo.

The Maltese who built the temples were fairly advanced for their time of around 4000 to 5000 years ago. The inhabitants at that time could have numbered about 10,000, or perhaps somewhat more and possessed construction skills. They somehow managed to cut huge blocks of stone weighing several tons and transport them on rollers and round stone balls across long distances. Some human remains found in the vicinity of Hagar Qim and Mnajdra indicate that some of them had well developed bones and limbs. The temples must have been frequented by many people and were centres of worship, health care and social gatherings.

It is significant that among archeological remains from Mnajdra, some statuettes representing diseased parts of the human body were found. Sir Temi Zammit inferred that the place in which they were discovered could have been a section to which the sick or injured were brought to be attended to by healing deity. Health hazards and infant mortality must have been very high.

In the mid 1950's while foundations were being constructed for buildings at Ghajn Dweili, Paola, roughly between Triq Isqof Buhagiar and St. Anthony's Church a few ancient tombs were encountered. The find included some human bones and Copper Age Pottery. Dr.Henry Micallef,( later Professor) and I were asked to measure two skulls, both were almost dolichocephalic. In the early eighties while rubble was being removed not far from ta' L-Erwieh, Tarxien (playground area), some fragmented pieces of human and animal bones came to light.

In 1993 while trenches were being dug at Tal Barrani Road, on the periphery between Zejtun and Ghaxaq about 200 metres from Bir id-Deheb, an ancient site was uncovered consisting of a chamber probably of the Roman period, which was used for funerary purposes. I remember being struck with the skeletal remains which were well placed and in a good state of preservation, in rather dry window-tombs. It was obvious that the skeletons were of adults, probably as was stated in the museum report and dating to a late antiquity period, Roman and Paleo-Christian. Three of the skulls had dolichocephalic features and another almost so. The finds included a broken glass beaker, two fossil sharks' teeth and a faience.

The Mediterranean has given our Islands their character and over the millennia brought sea-faring people to our shores. St.Angelo built by the Knights of St.John in mid 1500's stands on the site of a former Phoenician temple.

Who were the Phoenicians..? They were enterprising sailors and traders who came from a region now known as Lebanon, Palestine and Israel.

The Phoenicians traded with people around the Mediterranean littoral and set up trading colonies on Cyprus, Sicily, Malta, Corsica, Sardinia, Balearics, Tangier, Cadiz (Spain) etc. They were so enterprising that at one time they travelled as far as Britain to get tin which together with copper was used to make bronze. One of the Phoenicians' most valuable products was purple dye made from shellfish which was utilized to dye cloth from lighter shades of pink to deep purple. The Phoenicians are credited with being the inventors of the alphabet. Traces of them were found at Tas-Silg sanctuary overlooking Marsaxlokk Bay. Early Phoenician tombs not only contained the Levantine funerary pottery, but also Greek and Rhodian imports of later times.

The Phoenicians affected the genetic set-up. I am inclined to say that a considerable number of the Y chromosome in to-day's population originally came in with the Phoenicians. The Maltese islands have since prehistory, been almost at the centre of ancient civilizations in the Mediterranean. Early Minoan ships soon after 3000 B.C. were already very seaworthy with functional sails and oars varying from five to twelve on each side. Other ships depicted on old sketches were about 48 feet long and 12 feet wide.

The ports of Crete were utilized more than 4,000 years ago, when traders of pottery, textiles and a few metals moved about, especially in the summer months to sell or barter their wares.

Rome started its rise to power in 510 B.C. and by the birth of Jesus Christ the Roman fleets dominated the Mediterranean, having destroyed Greek and Phoenician sea power almost wherever they came in conflict.

The genetic set-up must have been influenced considerably also during the Greek, Roman and Arab occupations. With the increase of maritime trade along the Mediterranean routes and better sea craft, new settlers arrived from Sicily, Italy, Crete and elsewhere.

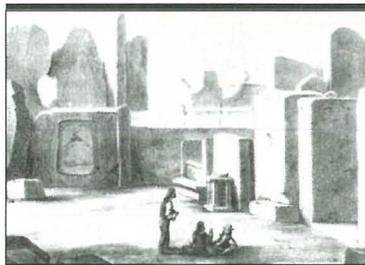
Genetically we are the heirs of the ages and various formative factors. At one time so many Greeks had settled in Sicily that it was called Magna Graeca or Great Greece. The nature of the Greek

expansion was more extensive than the Phoenician and around 600 B.C. and later they strengthened their colonies in Sicily, Malta and elsewhere.

The very large number of Sicilian and Italian immigrants since Neolithic and later times obviously affected the genetic make up. The Sicilian and Italian influences are obvious. In my studies about Maltese ancestry, I concluded that among the wide spectrum of our population we have quite a number with Greek physical features and also many others with Spanish, French and to a much lesser extent English traits. The English element is the result of marriages with servicemen or employees of British establishments and the Dockyard during the last two centuries.

At a period in ancient times during the Greek domination, a large number of Greeks and others from the East had settled in Sicily. Many of this background came over with other immigrants. The social and trade contacts with Sicily and Italy over the centuries was instrumental in encouraging others to marry and settle in our Islands.

Mankind and life are compounded of many factors. Rather than thinking about populations and other ethnicities, a more scientific way to think about the genetic variation is to consider the genome of any particular individual as a mosaic of heliotype blocks. The study of genetic variation includes interacting factors and also implications in medicine, dental features and weaknesses.



*Some old prints indicate that in general the Maltese were slightly shorter than today*

Every researcher who delves into the past, based on limited material is aware of the limitations that pertain to his study. Well known artists such as Gianni, the Schranz brothers, Brocktorff, Bellanti, Favray, etc., when focusing on Maltese men and women in their paintings, indicate that in general the Maltese of those times were shorter than they are today. One of the factors which brought this about could have been insufficient nutrition among a high

proportion of the population, but genetic factors were most probably also involved. From the cradle to the grave if you had been living then, health hazards were very high. At least three out of every four children born in Malta and Gozo in the eighteenth and nineteenth centuries failed to reach their second birthday.

Ethnically the Maltese have been influenced mostly by people coming from countries bordering the Mediterranean basin. In the blood of our people there is a mixture of Semitic, Sicilian, Italian, Greek, Arab, Spanish, French and to a limited extent also British and Nordic genes.

Dominique Fernandez a fine writer who had an eye for detail wrote: (translation) "The Sicilians have been Phoenicians, Greeks, Carthaginians, Romans, Byzantines, Arabs, Normans, Italians, Neapolitans, Spaniards". There is much truth in this contention. In Sicily, the past and present are intermingled as is shown in the human features, the traditions and the architecture.

The majority of Europeans of to-day have a complicated ancestry. The French, Belgians, Dutch, Swiss, Germans and Austrians are more mixed than others and a high percentage are not of pure descent. The European melting pot has not made for uniformity among its people although to a limited extent this can sometimes be seen in cut off communities in remote areas. The complex intermingling has juggled the variables and blended the genes to produce diversity. In the broadest of generalizations there have been recent and distant connections brought about by various factors over the millennia. The same can to some extent be said of our Maltese population.

The Mediterranean people who are mostly children of Southern Europe do not look alike. In Malta, Sicily and Italy people with a rather slightly brown complexion sometimes referred to as dark whites or brunettes predominate. However we come across men and women with blue eyes and blond hair, descendants of persons with such complexions. Mutations in genes and other factors also contributed to this fact. A comparison of people's height is interesting. The tallest tend to come from north-west Europe, while the shortest are found generally in Italy, Sicily and central Mediterranean Islands. Northern Italy and most of France have a slightly taller population and slightly taller still is that broad belt stretching from eastern central France, Germany, and Austria and as far as central Russia. Many tourists who come to Malta from England, Germany and Switzerland are generally taller than the Maltese.

However a considerable number of our rising generation is somewhat taller and the wide spectrum of faces we see in Malta and Gozo today are intriguing. Whatever genes are involved in coding for facial features they must be an enormous number to judge from the variety we see today. Over the centuries the average menarche has dropped from 15 to 13 years.

On the 26<sup>th</sup> October 1530, after their debacle in Rhodes the Knights of St John arrived in Malta with their retinue, men at arms and staff. Furthermore around 600 others from Rhodes- loyal to the Knights came and settled in Malta and added to the genetic pattern.

When the Knights arrived in Malta they found a population of just over 20,000. The period of 268 years of the Knights of St. John affected immensely the genetic picture and settlement pattern because they were instrumental directly and indirectly in bringing or attracting a very large number of people mostly of European stock.

In 1551 the population of Gozo about 4,700 suffered a severe setback when the vast majority of the inhabitants were taken away as slaves. In due course the Knights encouraged and aided a substantial number of Sicilians to take their place.

The 'Almanacco di Malta', 1807 records (translation) a significant fact, "a Catholic population of 93,000 and a total of 22,100 other inhabitants and domesticated strangers".

The contact with ships' crews, traders and thousands of foreign troops resulted in a proportion of them marrying local women. After 1800, Malta was the home of the British Mediterranean fleet for over 150 years. Many married Maltese as proved by the many English and other surnames which can be seen on the telephone directory.

Since the coming of the British, there has been a steady increase of population. Between 1842 and 1956, the numbers almost trebled, rising from 114,000 to 316,000 and the overall density increased from 935 to 2,511 per square mile.

Living human beings are an unparalleled source of information about the past. In general the shifting nature and pattern of the human gene map has been affected to a large extent by the movements of people from one country to another and the settlement pattern. In this way, gene patterns have been created in the Maltese Islands. This also applies within limits to health and disease tendencies.

The countless immigrants or settlers who settled in Malta in the past centuries brought about some negative genes as in the case of diabetes and thalassaemia. However the wide mixture did bring about many advantages as well.

In Diabetes mellitus, a chronic disease of carbohydrate metabolism due to a disturbance of the normal insulin mechanism, a heredity predisposition is present in most if not all cases. In some countries in the Mediterranean such as Malta, Sicily, Spain, Italy and Greece there is a higher percentage than in various other areas around the world. However the incidence worldwide seems to be gradually increasing.

Thalassaemia is a form of hemolytic anaemia resulting from a group of hereditary defects in hemoglobin characterized in common by impaired synthesis of one of its polypeptide chains. There is thalassaemia major and thalassaemia minor. The gene is autosomal recessive with a 1 in 4 chance of a child getting Cooleys anaemia if both parents carry the gene. Thalassaemia affects people of the Mediterranean littoral and of south-eastern stock.

### **Genetics and Genes:**

Genes come in pairs which interact what characteristics one inherits. Some characteristics are controlled by one single pair of genes, but most of our features are controlled by many pairs. When studying genetics we tend to stick to characteristics (not always) controlled by a single pair

of genes, because these are generally simpler to understand.

Among a broad spectrum of factors and end results, one of the fascinating aspects is the way we inherit the ability and way to roll our tongues. In this matter, two alleles can control this characteristic: the allele to be a roller or the allele to be a non roller.

Further to the above, if we inherit a roller allele from both our parents (RR) or only from one (Rr), we will be able to roll our tongue. An allele like this which controls the development of a characteristic even when it is present on only one of the chromosomes is referred to as a dominant allele. If a non roller allele is inherited from both parents (rr), it will not be possible to roll the tongue. This in general terms is known as a recessive allele.

As I am approaching the end of the space allotted, some reference to teeth and dental caries is opportune. Space limitations has made abridgement necessary. Man to-day retain fairly large canine teeth with long roots which were necessary in the ancient past to cut food, including meat etc. The Carabelli cusp found occasionally on molars in Maltese people is also a remnant from the dim past.

Enamel covers the tooth like a protective shell. It is the hardest of all biological substances. Of the possible approaches to the problem of caries the study of oral bacteria, is in the forefront. Besides other factors the acids produced by these organisms are responsible for caries. The refined diets which contain a considerable amount of sugar of many present day populations can be associated with an increased prevalence of dental caries and periodontal disease. However dental decay and associated lesions have existed since ancient times.

Skeletal remains tell us that the distribution of caries was somewhat different but the prevalence was very low in ancient times compared with the present situation. As long as food gathering and hunting were the major modes of sustenance, caries prevalence remained low but with the increased availability of fermentable carbohydrates and poor hygiene, the incidence gradually increased.

Dr. Joseph Baldacchino (Director of Museums, 1947-55) had noted that an ancient cave at Burmeghez near Mqabba had yielded many bones and about 250 teeth. I have not seen these teeth, but according to this erudite scholar only a very small proportion of the teeth showed carious lesions. In some he had noticed developmental irregularities, including fused roots. Teeth recovered from several Zebbug tombs also showed little dental caries.

And now to a later time horizon. In the middle ages, a pervasive view, seen on very old sketches depict a tooth or teeth inhabited by a form of worm, a concept which originated even as early as the twelfth century B.C., in Egypt and in later centuries in parts of Europe.

The effect of a form of worm or worms on teeth was not the only view in ancient times. Around 400 B.C., Hippocrates in Greece and around 130 A.D., the Roman physician Galen believed that dental caries was due to the accumulation of irregular juices in the tooth. He noted (liberal translation) that "dental decay, pyorrhoea and mouth ulcers are due to catarrhal ichors descending to them from the head". Crude extractions were performed sometimes with very serious complications, including infections which led to death.

In the early eighteenth century, recognition started to be given in some countries to the value of removing the decayed part of the tooth when possible, using small chisels and a form of a small scraper and putting in medications, one of which was a mixture of oil of cloves with pumice and/or particles of limestone or a special cement. Techniques and materials for fillings were gradually developed.

For a long period in the 19<sup>th</sup> and 20<sup>th</sup> centuries, there were two separate schools of thought: one considered dental caries to be due to caries attack, while the other considered caries broadly the result of bacterial attack. In brief one view believed that caries was due mainly to the solvent action of acids especially in areas of poor hygiene, while the other replaced so to speak the tooth worm bacteria. A lot of research went on and is still going on about the varied bacteria and elements which inhabit the oral cavity. At one time not enough attention was given to bacterial plaque and its harmful effect on tooth structure as we know today.



*A model of a present day head used for teaching purposes*

It was to the credit of Dr. W.D. Miller, (and later other researchers) who synthesized the two theories together into a chemical-parasite theory: dental caries resulting broadly speaking from the production of acid by microorganisms that ferment the carbohydrates in the mouth. Extensive research went on in many countries. Streptococcus mutans and the other cariogenic bacteria came into the picture besides other factors. The dental drill was introduced in the mid 18<sup>th</sup> century and more sterilization, at first by boiling and in our time by means of autoclaves.

## **New Concepts about Disease**

From the time of Hippocrates to that of Dr. Louis Pasteur, the medical profession had altruistic attitudes but various mistaken ideas about the causes of certain diseases and the best treatments for infectious diseases. Then between approximately 1879 and 1900, came the germ concept. After three decades of scientific virtuosity, outstanding research and hard work, some medical personalities realized that infectious diseases which brought about so much misery and deaths are caused mostly by microscopic organisms. The discovery of various germs led to safer surgery, an effective approach to various maladies, dental problems, sterilisation, anaesthesia, large scale vaccination programs, improvements in sanitation, hygiene and later on pasteurization of dairy products, etc. Above all it set the stage for X-Rays and other advances and later on the emergence of antibiotics, better medicines, and various apparatus to preserve the life stream.

## **References**

- Sir Temi Zammit. Prehistoric Malta (1930)
- D.R. Maiver. Greek Cities in Italy and Sicily (1931)
- L.M. Ugolini. Malta Origini della Civiltà Mediterranea (1934)
- J. Homell. Sea Trade in Ancient Times, Antiquity (1941)
- Dr. C.J. Boffa. Maltese Cave Teeth-pens of Prehistory (1957)
- Dr. J.D. Evans. Malta (1959)
- R. Lautier. La Vie Préhistorique (1965)
- W.S. Klug and M.R. Cummings. Concept of Genetics (1983)

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