On overseas expansion, sugar intake and human hybridization

MÁRIO GOMES MARQUES
FERNÃO ALBUQUERQUE

The onset of Neothermal conditions about ten thousand years ago exerted a profound influence on the possibilities for the diffusion of both animals and plants. In fact, under those «new» conditions, the great land masses remained separated from each other by vast expanses of water, mountain chains, and desert areas, which opposed movement and mixture. Thus, during the following millennia, when many animal and vegetable species were domesticated and improved through selection and hybridization, the corresponding diffusions outwards from the zones where domestication took place were for long restricted, not only by the need for favourable environmental conditions in the outer zones, but also by the presence of those barriers.

The permeability of the different barriers was obviously not the same in every case. Some of them, although difficult to overcome, were by no means insurmountable, even for people in rather primitive stages of civilization. On the contrary, some others appeared as virtually unpenetrable, even for those whose technological achievements were already remarkable. A paradigm of the barriers of the second type was the Atlantic Ocean, which until the last decade of the fifteenth century, most effectively opposed the exchange of species between the Old and the New Worlds.

Following the discovery of the West Indies by Columbus in 1942 and that of Brazil by Cabral in 1500, the Atlantic barrier lost its «impenetrability», and so a

large-scale exchange of species across it became a most important feature of the first period of the European Overseas Expansion. Even if some attempts for the intercontinental transplantation of species resulted in failures, a large part of them proved, not only successful, but also most rewarding from an economic point of view. This was the case of the sugar cane *(Saccharum officinarum)*, which, being indigenous to India, had been introduced into southern Europe and cultivated there for several centuries, but always with rather modest results. Thus, as some of the American soils in tropical areas became available to the Portuguese and Spaniards, they soon decided to introduce the cultivation of the sugar cane into the New World, which proved a most profitable enterprise.

However, the first serious attempt of the Portuguese to get a share in the sugar market had began half a century before the discovery of America. It had taken place in the island of Madeira, where a few settlers had developed a model of commercial farming, which was later to be adopted in every sugar plantation in the tropics.*(1)* In spite of the initial success of that early attempt, Madeira did not keep for long its leading position as sugar supplier to western Europe, achieved during the last decade of the fifteenth century. By the mid sixteenth century, that position was already occupied by São Tomé, and, by the 1590s, an overwhelming Brazilian production left little room for competition.

The relative brevity of the period during which Madeira held a leading position as the sugar supplier to Europe was a consequence, not only of competition, but also, and primarily, of a steeply decreasing production, due to impoverishment of the soil, sugar cane disease, orographic limitations to the expansion of the cultivated area, and possibly to some idiosyncrasies of the local settlement, which did not adapt well to commercial farming of the «tropical type». *(2)* Whatever the causes might haven been, the fact is that the contribution of that island to the increase in the sugar supply for Europe and the spread of the habit of using the product was mostly confined to a period of nearly seventy years, extending from the mid fifteenth century to the 1520s. On the other hand, the short duration of the «sugar cycle» in Madeira together with those idiosyncrasies of the local settlement account for the fact that the island did not suffer from the social consequences –

1. Capitalist farming based on servile labour was not new, as it had been practised, on both a large and small scale, in several civilizations of the Ancient World. However, it had virtually disappeared during the Middle Ages, and so its reinstatement in the aftermath of the Great Maritime Discoveries can actually be considered as something developed anew. Besides, there are some major differences between the servile labour of Antiquity and that of modern times. Most significant among those differences is the fact that, in Antiquity, slaves were not substantially different from their owners in either physical appearance or culture, whereas they were much darker in colour and much less civilized in modern times.

2. According to C. Fielden Jones', commercial farming of tropical type «began with the colonization of the hot humid portions of the Americas» and «involves the growing and processing of a cash crop for export to temperate countries, chiefly those of the Norhern Hemisphere».

namely the large-scale human hybridization – which became characteristic features of that particular type of commercial agriculture it had helped to create.

The purposes of the present paper are (*a*) to discuss the problem of the contribution of the island of Madeira to the spread of the use of sugar in the Iberian Peninsula, and (*b*) to advance some considerations on the social and economic conditions which locally opposed any large-scale human hybridization.

SUGAR SUPPLY AND SUGAR INTAKE

Throughout the world, the medical profession has held the widespread belief that the amount of sugar intake is closely related to the incidence of several pathological conditions, from dental caries to hypertrygliceridemia. It is, therefore, obvious that the study of the evolution of the sugar intake in different societies may contribute important data to a better knowledge of the history of those conditions. Unfortunately, for the period of the Overseas Expansion and for the different Peninsular kingdoms, or the Peninsula as a whole, estimates of average sugar intakes are far beyond the reach of historians. The available data on production, imports and exports are scanty, scattered, and frequently unreliable. Nevertheless, it seems reasonable to hope that a simultaneous consideration of the extant data on its production in the overseas settlements and those relating to sugarprices will eventually supply a fairly sound basis for the construction of logical hypotheses on the evolution of the habit of using the product.

Consequently, an attempt was made to collect data concerning production in the Portuguese overseas settlements from 1451 to 1650 and also those on sugar prices in Peninsular markets during the period from 1361 to 1650, in which period there are three distinct phases. The first phase (1361-1450) corresponds to the ninety years which preceded the «sugar cycle» in the island of Madeira, and its consideration is intended to form an opinion on price and consumption trends at a time when the sources of supply to the Iberian markets were still the traditional ones. The second phase (1451-1520) corresponds to the seven decades during which that island was firstly the only and then the more important *new* source of supply, and in which its *relative* contribution to the overall importation into the Peninsula cannot be quantified but was certainly considerable.*(3)* Finally, the third phase (1521-1650), which began with a steep decrease in Madeira's production, corresponds, nevertheless, to an epoch during which – due to a most successful cultivation of sugar cane in São Tomé, Canary Islands, West Indies, and fundamentally in Brazil – the sugar supply to Iberian markets increased enormously.

3. Quantitative data concerning imports of sugar from the Near East and North Africa as well as local sugar productions are not yet available. Thus, the contribution of the sugar produced in Madeira relative to the overall sugar supply to the Peninsula cannot be estimated.

Whenever possible, data concerning olive oil and pepper prices have also been collected, with the purpose of comparing their corresponding evolutions with that of sugar price. The choice of these commodities for comparison was dictated by the facts that *(a)* as happens with sugar, they are not essential nutrients but condiments, which were only bought when the basic needs were already satisfied, and *(b)* the conditions of the olive oil and pepper supplies to Iberian markets differed from each other as well as from those of the product under consideration. In fact, olive oil was, basically, an «European» condiment, locally produced, and there are no reasons to believe that the corresponding supply had undergone any important change throughout the period of the Overseas Expansion.*(4)* Olive oil was traditionally used, even if in largely different quantities, by people belonging to every social stratum. On the contrary, pepper was an exclusively imported product, whose import into the Peninsula increased greatly during that period, but to a proportionally much lesser extent than that of sugar, and under economic conditions which were certainly less favourable. *(5)* In contrast to olive oil, pepper and sugar were virtually only used by well-to-do people, that is to say, by no more than 15 per cent of the population. Before proceeding with the analysis of the data, and because the number of *potential* consumers – virtually the whole population in the case of sugar – and the corresponding average income are always basic factors underlying demand, it seems useful to summarize the demographic evolution as well as the evolution of the real wages in the Peninsula during the different phases under consideration. Even if scanty, the extant demographical data strongly suggest that, throughout the first phase (1361-1450), the lesser pestilences which followed the Black Death kept the population at the low level to which it had fallen in the early 1350s. Thus, a severe depletion of the workforce led to a sharp rise in real wages which peaked about 1420. From 1420 to 1450, wages were generally kept at steady levels. As the overall price trend was toward a slow decline, the purchasing power of most people still increased, though only in modest proportions. The available data also suggest that there were no significant increases in

4. As happens with every agricultural production, so that of the olive presents important variations from year to year. Yet, throughout the three centuries under consideration, the available information does not suggest that significant changes might have taken place either in extension of the areas where olive trees were cultivated or in the techniques of cultivation and processing the crop. On the other hand, there is no record of any period during which widespread olive tree disease might have resulted in any significant decrease in production. Thus, for the purpose of the present study, it seems reasonable to admit that the yearly variations probably had little effect on the average decennial productions and average decennial prices, and also that variations in supply would not have been substantial during those centuries.

5. During the period under consideration, pepper was never produced either by Portuguese or Spaniards. It was, therefore, bought by them under conditions which were imposed by producers and local traders. Although pepper production in the East had increased under the pressure of direct European demand, the truth is that pepper prices at the source hardened substantially from the early sixteenth to the mid seventeenth centuries.

population during the second phase (1451-1520). On the other hand, wages lagged behind falling prices, and so the workers' purchasing power continued to display a slow rising tendency. By the 1520s, the demographic trend seems to have changed, and a progressive increase in population – possibly in the order of 30 per cent – apparently occurred until 1598, but its effects were virtually nullified by a most severe epidemic which raged in 1599-1600. After the epidemic, demographic growth was soon resumed, and it seems reasonable to admit that, in 1650, the population was at nearly the same level it had reached in 1598. During the third phase (1521-1650), there were several significant oscillations in real wages, which began with a drastic fall in the early 1520s. Thereafter, they did not return to the previous level, except for the period from 1605 to 1625, when the workers' purchasing power was almost restored to the high levels of one hundred years before.*(6)*

Although based on a small number of sources, namely the expense accounts of the royal household, the best available price series for the first phase (1361-1450) is still that concerning Navarre, and which was published by Hamilton[6] in 1936. For the case of sugar, that series is almost continuous, as it includes entries for 74 out of the 90 years considered, and the missing years are not densely clustered. Besides, it seems fairly representative, as the total number of entries amounts to 684, with an average of 3.1 entries per year for the period from 1361 to 1385, and 11.2 per year for that from 1386 to 1450. The price series concerning pepper and olive oil seem also fairly representative. From the figures tabulated by Hamilton, and using as bases (value 100) the average prices obtained for the decade 1401-10, index numbers for sugar, pepper, and olive oil were estimated for the different decades and the corresponding evolutions were graphically represented in a semilogarithmic chart *(figure 1)*.

As a cursory glance at *figure 1* will reveal, among the three products considered, olive oil was the only one whose price – putting aside a slight downward deflection in the decade 1421-30 – increased progressively throughout the first phase. However, it is important to note that the entries were reckoned in money of account, and that, during that phase, the Navarrese coinage suffered from progressive debasement, which, in 1450, had brought the gold equivalent of the monetary unit to exactly one third of the value it had in the decade 1361-70. Thus, considering that the olive oil index number which was estimated for 1441-50 is equal to 2.8 times that estimated for 1361-70, it seems reasonable to admit that the price evolution was, in the main, a consequence of the debasement and not of a significant change in the ratio between supply and demand. This means – considering

6. The available information on demographic evolution is both scanty and vague. On the other hand, the extant continuous wage series concern only some regions. However, some scattered data concerning other regions strongly suggest that those series are fairly representative of the general trends in the Peninsula.

that substantial changes in olive oil supply seem improbable throughout the period of the Overseas Expansion – that the price evolution points to a fairly constant demand. And, considering that – except in situations of severe economic depression – substantial reductions in average intakes of traditional foodstuffs are also highly improbable in conservative societies with ingrained eating habits, the logical conclusion is that the number of people using olive oil must have been virtually constant from 1361 to 1450.

The evolution of pepper prices was somewhat more complex. Until the decade 1411-20, the general trend was to a progressive rise, with only a not very important downward deflection in 1401-10, which may well have been due to a transitory increase in supply. Even the fact that pepper prices hardened more than those of olive oil from 1361-70 to 1411-20 is not difficult to understand, when one appreciates that the concurrent depreciation of Navarrese money of account on the foreign exchange had a heavier influence on the prices of imported goods than on those of local products. But, from 1411-20 until 1431-40, pepper prices remained at almost the same level, and then suffered from a drastic decline in the decade 1441-50. Remembering that the Navarrese coinage continued being debased during the last decades of the first phase, and considering that reductions in average intake within an universe of habitual consumers is highly improbable, it is obvious that the only logical explanation of that evolution is that, throughout the second quarter of the fifteenth century, the pepper supply to the Peninsula increased to a proportionally much greater extent than that of any eventual increase in number of the consumers.

Interestingly, the evolution of sugar prices reinforces the hypothesis of an increase in supply of imported condiments throughout that period, but indicates that the increase in sugar supply had already begun some twenty-five years before that of pepper. In reality, the evolution was virtually parallel for both products until 1401-10, but, from then on, sugar prices declined progressively, to the point that, in 1441-50, they were nearly at the same level as that of 1361-70, or, at nearly a half of the value which had been reached in 1391-1400. Even if admitting large increases in supply, such an important decline in prices is difficult to reconcile with a substantially growing market, and so the available data strongly suggest that, at least in Navarre, the number of sugar consumers did not significantly increase from the mid fourteenth to the mid fifteenth centuries.*(7)* Some scattered data

7. Although a diminutive, mountainous kingdom with no access to the Mediterranean, Navarre should not be considered as atypical from the point of view of the evolutions of eating habits. In fact, throughout the Late Middle Ages, Navarre always kept intensive political and commercial intercourse with other countries, namely France and Aragon, and so the Navarrese, or, at least, a significant number of them were well acquainted with and certainly adopted the eating habits and fashions of those nations which had a more direct contact with the sources of supply of sugar and spices.

concerning other kingdoms, although insufficient to form a definite opinion, point to the hypothesis that the same happened in the rest of the Peninsula.

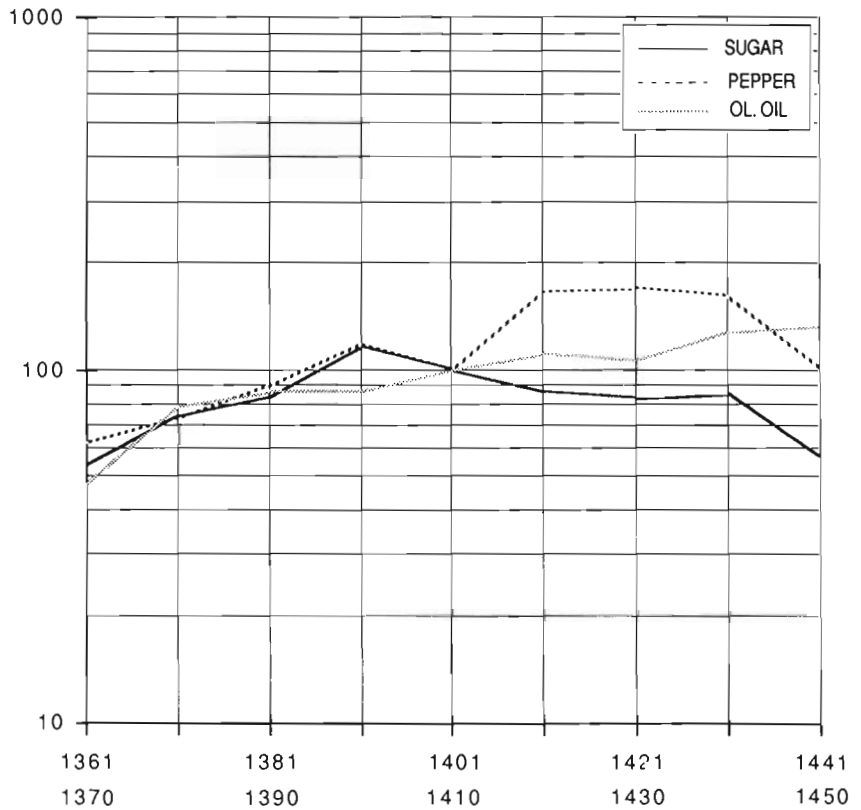

Fig. 1. Index numbers of the prices of sugar, pepper, and olive oil in Navarre from 1361 to 1450 (base: 1401-10).

The fact which marked the beginning of the second phase (1451-1520) was the appearance of a new source of sugar supply to Europe: the island of Madeira. Even if there can be no doubt that the local cultivation of sugar cane and production of modest quantities of sugar through rudimentary techniques began during the second quarter of the fifteenth century, it was only in 1452 that Prince Henry granted to Diogo de Teive an authorization to build the first water mill specifically intended to process sugar cane, whilst the earliest mention of sugar produced in Madeira for export purposes is dated 1454 (Cà da Mosto[1]). To judge from the information supplied by Cà da Mosto, it seems that the volumes of production during the decade 1451-60 stood probably at levels of about 50 tons per year. During the next half century, the volumes of production steeply increased, to

reach a peak value of about 2,000 tons per year in the decade 1501-10. This fast evolution is graphically represented in *figure 2*, which summarizes the available data on sugar production in Portuguese overseas settlements from 1451-60 to 1641-50. *(8)* According to these data, Madeira did not profit long from such relatively high production, as a most severe decline was already evident in 1511-20, which proceeded at a precipitate pace from then on. However, from the point of view of the sugar supply to Europe, the consequences of that decline were not very important, as they were compensated by steeply increasing productions in São Tomé, Canary Islands, West Indies, and also in Barbary, not to speak of those relatively modest and yet significant contributions of Azores and Cape Verde. This does not mean that some reduction in supply might not have occurred in the 1520s. Besides, it also seems reasonable to admit that subsequent increases in supply were moderate until the last quarter of the sixteenth century, when the Brazilian sugar began flooding the European markets. From then on, sugar supply grew skywards, as may be calculated from the production in Portuguese settlements alone, which, during the first quarter of that century, probably stood at between 2,000 and 3,000 tons per year and reached over 20,000 tons per year in the decade 1631-40.

Unfortunately, in the second phase (1451-1520) of the period under consideration, there are no three continuous price series, comparable with those used in discussing the first phase. In fact, the only available continuous price series which can be used in the discussion of the second phase is that concerning olive oil, which was constructed by Hamilton[7] on the basis of the abundant material supplied by expense accounts of several Valencian institutions. Besides, there are a few fragmentary sugar and pepper price series, which, although discontinuous and biased by the fact that they concern different markets, can, nevertheless, be used complementarily, as they display fairly consistent general trends.

The figures published by Hamilton reveal that, in Valencia, olive oil prices were kept at a relatively steady level from 1451 to 1500, and that a definite, although moderate, price increase took place during the last two decades of the second phase. By using as base (value 100) the average price which was estimated for the decade 1481-90, and comparing the index numbers corresponding to the different decades, it is easy to conclude that the average index number for the

8. The estimates of sugar production in Portuguese settlements which were used to construct *figure 2* were fundamentally based on data published by different authors, namely Rau and Macedo[15], Magalhães Godinho[3,4], Sousa Miguel[9], Amorim Parreira[10], Jasmins Pereira[11], Ferreira de Gouveia[5], Vianna[13], and Prado Junior[12]. Because those estimates were mostly derived from imprecise statements found in narrative sources, as well as on indirect documentary data concerning quantities of sugar received by the Crown in payment of taxes on sugar production, it is obvious that *figure 2* does not represent the evolution of the average values of actual productions, but only a rough approximation of that evolution.

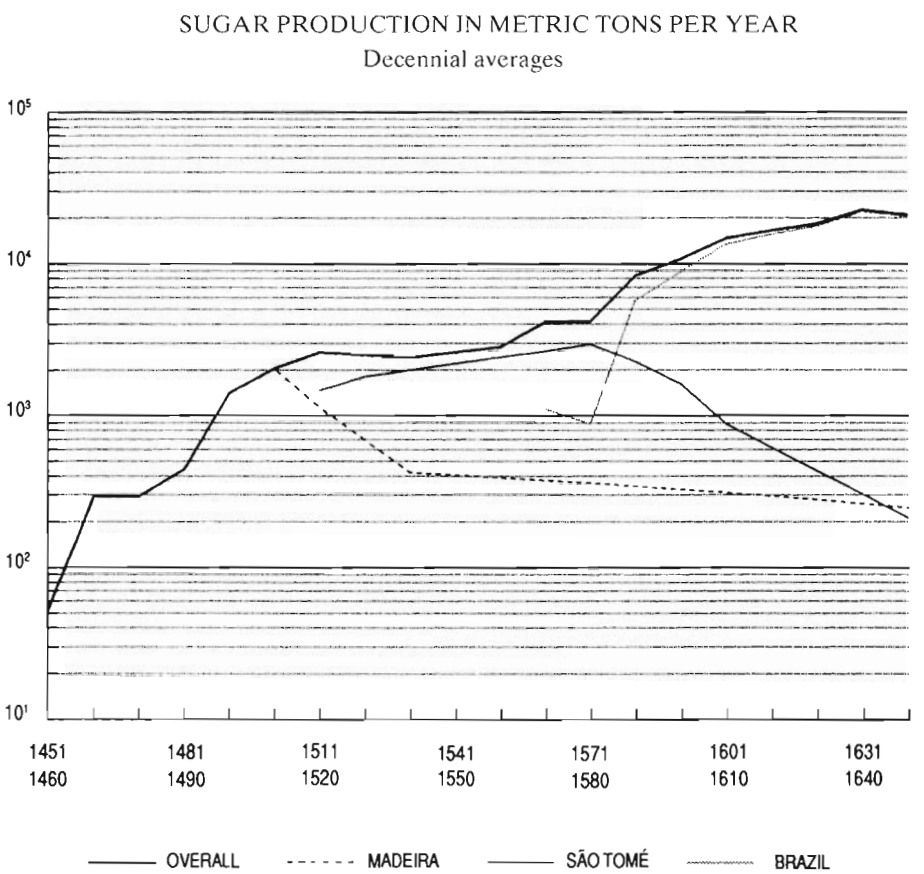

Fig. 2. Sugar production in Portuguese overseas settlements from 1451 to 1650.

period from 1451 to 1500 is 94.3, whilst that for the period from 1501 to 1520 is 111.4, which means a difference of 17.1 points. This evolution is fairly representative of the general price trend in the Peninsular states during the phase under consideration. In reality, in terms of moneys of account, that general trend can be described as corresponding to a stagnation during the second half of the fifteenth century, followed by a modest but definite increase in price of those commodities which were locally produced and consumed by the greater part of the population. This increase was the first sign of that economic phenomenon which has been called the Price Revolution of the sixteenth century.

Space does not permit individual consideration of the fragmentary pepper price series which were collected. But, for the purposes of the present paper, what really matters is that they point to an evolution which seems to have been characterized by relative stability throughout the second half of the fifteenth century, followed by a downward deflection during the period from 1501 to 1520. This

deflection, which is in contrast with the general price trend, was certainly a consequence of an increasing supply in the aftermath of the early Portuguese direct contacts with the centres of production. However, despite its importance, the increase in supply remained far from huge, and the decline in prices indicates that, from 1501 to 1520, the consumption of pepper in the Peninsula – and in the whole western Europe – did not substantially increase.

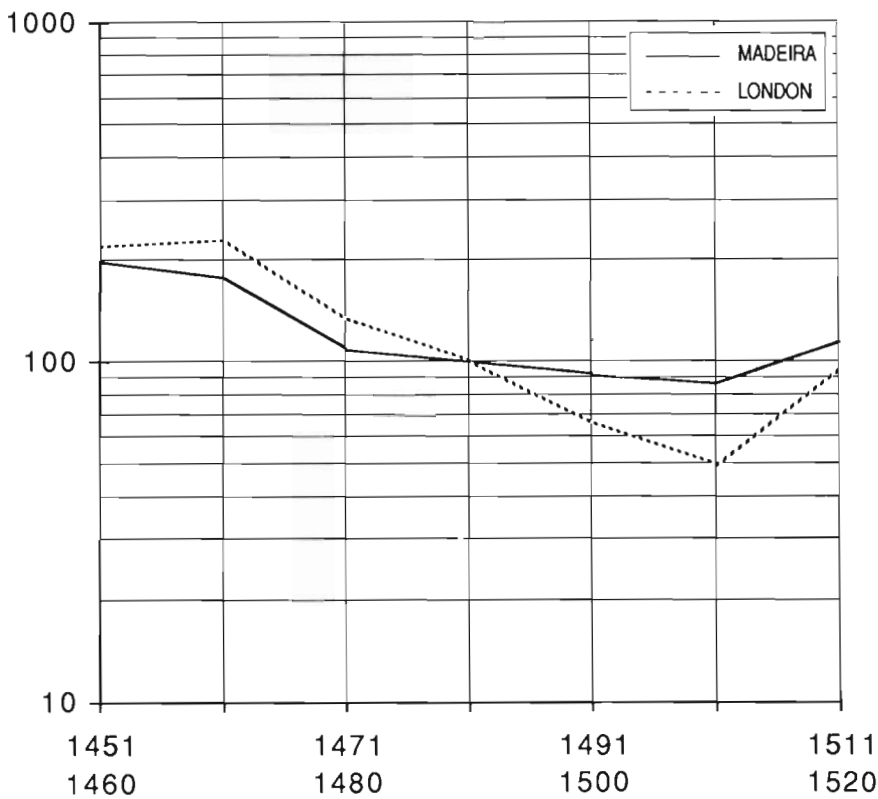

Fig. 3. Index numbers of the prices of sugar in Madeira from 1451 to 1520. The evolution of the sugar prices in London during the same period is shown for purposes of comparison. It is interesting to note that there is a rough parallel in the evolution of those markets.

Interestingly, the evolution of sugar prices differs from both that of commodities in common use and that of pepper. Remembering that, during the second phase, Madeira was virtually the only new source of sugar supply to Europe, local prices must accurately reflect the price evolution in the European markets, and so they were chosen to illustrate the European trends. The available data on sugar prices in Madeira during the period from 1451 to 1520 are graphically represented

in *figure 3,* and prove that, from the decade 1451-60 to the decade 1501-10, sugar prices continued to display the downward tendency, which had been already evident throughout the first half of the fifteenth century. That tendency was reversed in the decade 1511-20, when a sharp decrease in Madeira's production gave rise to serious concern on the availability of the product.

The order of regional increases in sugar price was in strict accordance with logical expectations. The increase was only of about 33 per cent in Madeira – the main center of production –, whilst it was of 41 and 43 per cent respectively in Valencia and Andalusia, which were in relatively close commercial contact with that center, and reached 68 per cent in Castile, due to its greater geographical separation from the island. *(9)* It is obvious that the increase in the ratio between supply and demand which certainly underlay the decline in prices from c.1450 to c.1510 may theoretically have been due to three different possible combinations of changes in those variables, and that one of them is the possibility of a simultaneous increase, greater in supply than in demand. However, remembering that, until the decade 1481-90, the increase in sugar supply, although significant, was still moderate, it seems reasonable to admit that any eventual increase in average intake or in number of consumers may only have been quite modest.

For the purposes of the present paper, the price data available for the third phase (1521-1650), unlike those for the preceding phases, leave little room for controversy on the probable evolution of the habit of using sugar. The splendid price series concerning Castile which were collected by Hamilton[7] are virtually continuous for olive oil, pepper and sugar, and the available data concerning other Peninsular regions indicate that, although some regional differences certainly existed, the Castilian series can be accepted as fairly representative of the general trends. The evolutions of those series, which are graphically represented in *figure 4,* reveal that, putting aside some minor downward deflections of little significance, the tendency of olive oil prices was toward progressive increase at a fairly steady pace. On the other hand, pepper and sugar prices, after having increased until 1601-10, stagnated during the next two decades, and then resumed an upward tendency. In the case of sugar, the late increase in price proved quite important. This is not surprising, as the late steep increase can be related to difficulties in obtaining sugar from Brazil, due to the attacks made by the Dutch and French against that colony and also against Portuguese and Spanish ships.

It seems reasonable to believe that the evolution of the olive oil price reflects the effects of the inflation which underlay the Price Revolution in the particular case of a locally produced condiment, whose supply and demand were, most pro-

9. Local production of sugar in Mediterranean Spain, particularly in the Valencian zone, although modest, may also have contributed to the fact that the increase in sugar prices during the decade 1511-20 was much greater in Castile than in Valencia and Andalusia.

bably, fairly constant throughout the phase under consideration. And, if one accepts this premise, one has to conclude that the order of the increases in price of the three products points to different evolutions of the corresponding average intakes. In fact, remembering that during the third phase pepper supply increased substantially and sugar supply increased enormously, the increase in olive oil prices should be proportionally greater than those of the other products, and that of pepper prices should be greater than the increase in sugar prices. However, the truth is that the ratios between the average prices in the decades 1621-30 and 1521-30 *(10)* are 3.1 to 1 in the case of olive oil, 1.9 to 1 in that of pepper, and 2.3 to 1 in the case of sugar. This means that the increase in average pepper intake, if it actually took place, was proportionally much smaller than that of sugar.

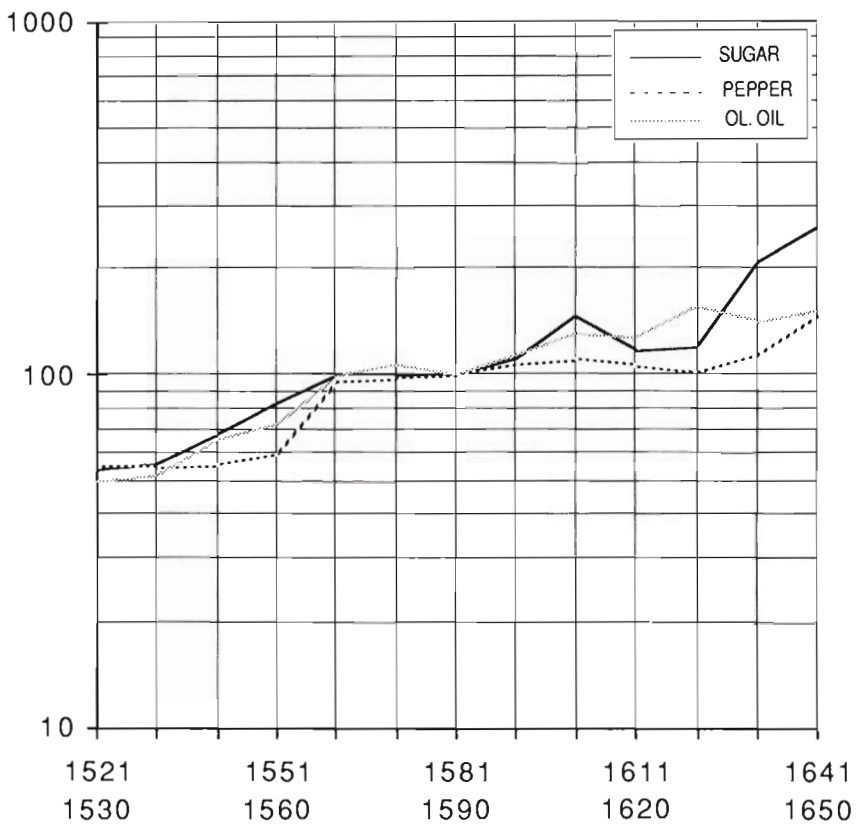

Fig. 4. Index numbers of the prices of sugar, pepper, and olive oil in Castile from 1521 to 1650 (base 1581-90).

10. Due to the fact that sugar prices in the decades 1631-40 and 1641-50 most probably reflect an anomalous situation, it seemed advisable to use the values corresponding to the decade 1621-30 for calculating the ratios.

Besides, considering that the sugar supply in the decade 1621-30 exceeded that of 1521-30 in a ratio which was certainly much greater than that of 2.3 to 1, which was estimated for sugar prices, there is at least a good reason to believe that the average sugar intake increased considerably during the third phase. And if one realizes that most probably, in the 1520s, well-to-do people had already reached the upper limit of their sugar demand, it is obvious that the increase in average sugar intake must have been a consequence of the spread of the habit of using the product among people belonging to other economic groups.

From the above, and to summarize, it seems reasonable to conclude that the available evidence strongly suggests that *(a)* in the Peninsula, the habit of using sugar, which, in the mid fourteenth century, was virtually confined to the members of the privileged classes, did not substantially spread until the 1520s, *(b)* from then on, it must have been progressively adopted, at a not slow pace, by many members of other classes, *(c)* the production of Madeira, although steeply increasing from the mid fifteenth century to the first decade of the sixteenth century, did not play a direct role in the spread of the habit of using sugar, but *(d)* by determining a most significant decline in sugar prices, paved the way for that spread.

SETTLEMENT PATTERNS AND HUMAN HYBRIDIZATION

During the first period of the European Expansion, the Portuguese overseas settlements did not conform to a uniform model. In order to achieve the best possible adaptation to specific purposes and different local conditions, they were conceived – or evolved – according to, at least, five basic patterns, distinct from each other in external contacts, dimension, economic structure and social organization. A brief consideration of the characteristics of each pattern will clearly reveal why one of them led to large-scale human hybridization, whilst another had virtually no significant or durable effects in what concerns the mixture of races, and the remaining played no more than modest roles in that mixture.

In Morocco, there were basically «military» settlements, founded in a few fortified cities conquered from the Moors. Governors, officers and soldiers were mostly «professionals», ready to serve for some years for the regular pay and their share of eventual booty, although there was little to be expected in the way of plunder, for any operations in which they engaged would probably be on a petty scale. Besides the members of the «armed forces», there were a few civil servants, merchants, artisans, and that usual gang of disreputable persons always parasitic in military areas. Because the countryside around the Portuguese strongholds continued under the domination of the Moors, grants of land were out of the question, and Portuguese peasants never came to Morocco with the hope of improving their economic condition through agricultural work. Although most Europeans serving in those strongholds, even when married, did not bring their families to Morocco,

cohabitation with native females was certainly not frequent, as antagonistic religious beliefs opposed the matrimony of bachelors, and concubinage would be a serious offence to the Muslims, and thus a potential source of conflict, which was best avoided. This did not mean, of course, that some more or less permanent liaisons did not exist, but their number was probably always small, and infanticide – by then a common practice in Islam – was an easy way to eliminate many undesired products of a racial mixture.

On both coasts of tropical Africa, where no urban centers existed, the typical Portuguese settlement was the fortified factory, ruled by a captain, who kept discipline in the small garrison, provided assistance to Portuguese ships calling at the fortress, and directed affairs through a factor, whose prime duty was to carry out the king's business. During the first period of the European Expansion, except in the small areas where there were factories and in some islands, there was virtually no territorial occupation in tropical Africa, and so no agricultural settlement took place. Although there was probably little constraint to interbreeding between natives and Europeans, the facts are, throughout the period under consideration, that the Portuguese were few in number, and their contact with African tribes tended to be limited to the minimum necessary for trade purposes, which allowed the occurrence of hybridization but always on a relatively small scale. The resulting infants were either diluted in their mothers' tribal world, or integrated in the social structure of the factories. In the latter case, hybrid females preferentially mated with Europeans, whilst hybrid males tried to mate with lighter-coloured hybrid women. The final result of such tendencies was the formation of small, but slowly growing groups of hybrid people, variable in features and colour, in and around the Portuguese settlements in tropical Africa.

A third type of settlement was that adopted in India and certain zones of the Far East, where urban centers existed, frequently overcrowded with people in comparatively advanced stages of civilization. Wherever the Portuguese were able to impose their will on local rulers or depose them, they built a fortress and managed to hold direct authority over the adjacent town and the dependent territory. Each fortress – commanded by a captain who reported to the governor-general or viceroy of India – was required to guard a port from which the Portuguese fleets could sail against their enemies, and so give the Portuguese the supremacy of the seas, which was essential to a successful trade. Most upper rank officers who embarked for the East regarded their posts as being no more than transitory assignments, which would give them economic advantages and prestige on a not too distant return to the motherland. Low ranking officers, soldiers, and civil servants were frequently young and unmarried, but, even when married, they had neither the means nor the will to travel to the East in company with their families. Because around some fortresses there was available cultivable land acquired by right of conquest and some more could be acquired by the way of marriage with Indian women, some governors, namely Afonso de Albuquerque, resumed the old

dream of Alexander of creating a hybrid local society, and so encouraged their men to marry native women and become settlers. The basic idea was that the elements of that hybrid society would be Portuguese by the male line, and so would contribute toward the consolidation of the Portuguese power in Asia. In order to encourage the project, grants of land were conferred upon the men who agreed to do so. However, the system did not work out very successfully. The number of mixed marriages was never high enough to give rise to a dominant hybrid society, some places never attracted settlers, and those Portuguese who entered the project tended to claim privileges, which went far beyond the limits of reasonability. Even if a policy favouring hybridization had been pursued by the Portuguese throughout the long period of their stay in India, the fact is that no durable effects resulted, as most hybrid products were progressively diluted, either in the Portuguese society or, in a much greater proportion, in the gigantic Indian world. There are, nevertheless, several Luso-Indian families whose members, through frequent inbreeding, have kept hybrid characteristics, as well as the traditions of a distinctive Luso-Indian culture. However, their number is small, and so they barely have a significance in terms of hybridization of human races.

The fourth settlement pattern had its full expression in Brazil, and resulted from the fact that the system of factories did not work in that part of the New World. In reality, in their contacts with tropical zones, the main purpose of the Portuguese was to gain the monopoly or, at least, a dominant parcel of the trade of those local products which had good markets in Europe, and there can be no doubt that, through that system, they were able to bring about the results intended in most places where they came across more or less elaborate structures of production. In Brazil, nothing of the sort existed, and the natives proved refractory in accepting new styles of life, which were a requisite for productive organization. Consequently, the import of a workforce became imperative, but it was soon realized that the Portuguese did not show much enthusiasm for the idea of engaging in agricultural work on those newly found lands, which, besides being far from home, were reputed both dangerous and unhealthy. Through a process, the description of which is far beyond the limits of the present paper, the solutions which were found to those problems led to a type of settlement where the essential characteristics were the formation of very large estates, capitalist farming, monocultivation, and an almost exclusive resort to servile labour. Because the natives proved unsuitable as estate workers, ever increasing imports of African slaves took place, and, by the last quarter of the sixteenth century, the pattern of «great house», slave quarters and sugar cane fields was perfectly established. Because many of the estate owners, Portuguese skilled workers and foremen working at the «great houses», as well as those who ran the military, administrative, and trade activities on the petty urban centres had failed to bring their own wives to Brazil, sexual intercourse with Negro female slaves and occasionally with Amerindian females became the rule. Hybridization reached proportions which had no parallel in any

other Portuguese possession. This phenomenon was further intensified by widespread Negro and mulatto concubinage and prostitution.

Finally, a fifth type of settlement was that adopted in the archipelagos of Madeira and Azores, both situated in the Temperate Zone and formed only of uninhabited islands. Thus, the Portuguese always regarded them as a sort of extension of the motherland, where they could settle with virtually no change in their traditional living patterns. Within a few decades, agricultural societies had become established there, which were identical in social and economic structures to those of the metropolis. Although considerably differing in individual size, farms and estates were usually small, and, in order to increase their modest income, some peasant proprietors had to work, on a more or less regular basis, as hired labourers to the relatively few great landlords. Besides, there were merchants – some of them foreigners – whose number increased substantially during the "sugar cycle", artisans, and even indentured workers with no other means of subsistence beyond those resulting from the contracts by which they were bound to service.

This was the general scene into which a few landowners decided to introduce the extensive cultivation of sugar cane, by using servile labour to ensure the profitability of the undertaking. The first slaves to be imported were Moors and Guanchos, the latter in greater numbers, but the West African Coast soon became the main source of supply of servile labour. During a few decades, whilst a steeply increasing sugar production was bringing wealth to Madeira, the presence of slaves was not generally considered as an evil. But, when the combined effects of falling sugar prices and decreasing production led to recession, there was a drastic change in the Portuguese settlers' attitude towards slaves. The «poor whites» began seeing them as unfair competitors in a shrinking work market, and their reaction was identical to that of the present-day proletariat when faced with situations of mass immigration. Slaves began to be detested, regarded as unsocial, and considered to be by their own nature inclined to criminal activities. Consequently, the authorities were insistently requested to put a halt to the import of slaves, and even to expel from Madeira many of those already working on the island. On the other hand, with the end of the «sugar cyble», the «wealthy shites», who were the slave owners, came to the conclusion that servile labour was no longer profitable. Slaves were expensive and had to be fed and housed even during the periods when they had no work to to. They were, therefore, profitable at sugar plantations, where they had permanently some work to perform, but no so when other crops formed the basis of farming. In the latter case, it was much more profitable to use free workers, most of them hired according to seasonal needs, and so having to care for themselves when not required. The final result of all this was a virtual stoppage of the entry of Negroes to Madeira from the early sixteenth century onwards. And, although exact figures are not available, the extant data strongly suggest that, in Madeira, at the time the import of Negro slaves came to a halt, the

ratio between white and coloured people was higher than 6 to 1. From then on, the immigration of Europeans never ceased, and, due to the fact that racial segregation was never strict, the Negro element was diluted progressively into the dominant white element to the point when its contribution is at present barely discernible.

The long-term effects of that burst of human hybridization which came about in the aftermath of the Great Maritime Discoveries were obviously conditioned by the strength of the prejudices against sexual intercourse with people of other races, the colour-related social and economic advantages which led to preferential trends in mating, specially of hybrid people *(11),* the racial composition of later immigration and emigration, and, last but not least, the proportions between the numbers of individuals of the different races who came into permanent contact with each other. The many possible combinations of all these variables led to different evolutions in different places, and gave birth to present-day societies, which, although being to a large extent hybrid, present externally the racial characteristics of either virtually pure, or clearly hybrid but with frank predominancy of one race, whereas, in other cases, they led to the formation of present-day societies which display every possible gradation of colour and associated racial traits. Paradigmatic cases of those different situaitons are, respectively, the present-day societies of Madeira, Cape Verde, and Brazil.

The hybridization between Caucasians and Negroes allows for no doubt that, throughout the first period of the European Overseas Expansion, its magnitude was determined by the settlement patterns and types of agriculture which were adopted in different places, and also that it was most specially favoured by the settlement based on the formation of those large estates, whose European owners had, for centuries, the main purpose of producing the greatest possible quantities of sugar at the lowest possible production costs, by using African slaves as a workforce. Had not the Europeans developed a true lust for sugar from the mid sixteenth century onwards, had not the Portuguese decided to profit from that lust, by adopting that settlement pattern and that type of agriculture, then Brazil would certainly not have become that most outstanding example of peaceful cohabitation and mixture of different races which it is today.

11. Until the end of World War II, colour-related social and economic advantages were entirely on the side of the whites, and so, in most colonies, a widespread aim of hybrid people was to mate with Europeans or, in case this proved impossible, with lighter-coloured hybrids. The result of such preferences was a progressive increase in white ancestry and, consequently, of fair skins amongst the privileged classes. But, with independence, hidden prejudices against the whites came to light, and in many new countries, a fair skin has become an impediment to political and social success. Thus, there has been a reversal in mating preferences, which will certainly lead to progressive darkening of the hybrid element in those societies.

REFERENCES

1. Cà da Mosto, A., *Relation des voyages à la côte occidentale d'Afrique,* Hakluyt Soc., London, 1937.

2. Godinho, V. Magalhães, *Os Descobrimentos e a Economia Mundial,* Arcádia, Lisbon, 1963.

3. Godinho, V. Magalhães, *Ensaios,* vols. I and II, Sá da Costa, Lisbon, 1968.

4. Godinho, V. Magalhães, *Mito e Mercadoria, Utopia e Prática de Navegar. Séculos XIII-XVIII,* Difel, Lisbon, 1990.

5. Gouveia, D. Ferreira de, «O açúcar e a economia Madeirense (1420-1450) (Produção e acumulação)». *Atlântico,* 1988, 4, pp. 262-283.

6. Hamilton, E. J., *Money, Prices and Wages in Valencia, Aragon and Navarre, 1351-1500,* 2nd ed., Porcupine Press, Philadelphia, 1975.

7. Hamilton, E.J., *American Treasure and the Price Revolution in Spain, 1501-1650,* 4th ed., Octagon Books, New York, 1977.

8. Jones, C.F., *Economic Geography,* New York, 1941.

9. Miguel, C.F.M. de Sousa, «Açúcar», in *Dicionário de História de Portugal,* Iniciativas Editoriais, Lisbon, 1971.

10. Parreira, H.G., de Amorim, «História do Açúcar em Portugal», Anais da Junta das Missões Geográficas e de Investigações do Ultramar, 1952, 7, pp. 1-319.

11. Pereira, F. Jasmins, «O Açúcar Madeirense de 1500 a 1537. Produção e preços», *Rev. Estudos Políticos e Sociais,* 1969, 7, (1) pp. 81-141, (2) pp. 441-528, (3) pp. 725-50.

12. Prado Junior, C., *Formação do Brasil Contemporâneo,* 9th ed., Ed. Brasiliense, São Paulo, 1969.

13. Rau, V. and Macedo, J., *O Açúcar da Madeira nos Fins do Século XV. Problemas de Produção e Comércio,* Junta Geral do Distrito Autónomo do Funchal, Funchal, 1962.

14. Rogers, J.E., Thorold, *A History of Agriculture and Prices in England,* Oxford, 1866-87.

15. Vianna, H., *História do Brasil,* 7th ed., Ed. Melhoramentos, São Paulo, 1970.