the end of the century. The struggle against England was often waged in the lonely deeps of the ocean. The English, who controlled the Channel, would leave it before the squadrons of the Adelantado of Castile were ready for them at Lisbon or Cadiz; they could easily sail to the Canaries or the Azores, even up to the Straits of Gibraltar with its guard of galleys, galleons, and Spanish troops. It was not until after the return of the English ships, at the very end of the summer, that the Spanish ships would sail up from Gibraltar to El Ferrol. Their mopping-up operations usually took place in an empty sea. There were, it is true, some encounters – sometimes harmless. In November, 1602, for example, six Spanish galleons left Lisbon, 'to patrol the waters of Corunna'; they did indeed meet some enemy ships, which, better armed and bolder in manoeuvres than the Spaniards, let them approach, fired a few cannon shots, then 'set sail and ran away, as if in game', *quasi scherzando*, as a Venetian account describes it.[281] It was a costly war, but not a mortal one. And it was not always pointless. The Straits of Gibraltar were passed by force by English and Dutch ships. But they did not find it easy. The English ships, according to representatives of the Levant Company, would go through in winter for more security, 'when the water in the straits is very rough and when they are unlikely to meet the Spanish patrol galleons, which are at their moorings'.[282] And every year the fleets from the New World would return with more and more riches, as if 'the hand of God was guiding them'. This was what really mattered to Spain and her Mediterranean associates.

A late decline. So this final voyage, in search of a Greater Mediterranean complements the others. The narrow sea set between the great land masses was until 1600 the scene of a thriving, flexible, and powerful economy. It was not abandoned by history, suddenly, bag and baggage, at the end of the century. The retreat was not sounded until later. The general outline of our subject has now been sketched. It is time to block in the main lines and look more carefully at the detail.

[281] Contarini to the Doge, Valladolid, 24th November, 1602.
[282] Domenico Sella, *op. cit.*, p. 10, note 5.

CHAPTER IV

The Mediterranean as a Physical Unit: Climate and History

. . . the wanderings of Ulysses, ever under the same climate.
J. de Barros, *Asia*, I. IV, p. 160.

It would be difficult to recognize any unity in this dense, composite, and ill-defined world we have described at such length other than that of being the meeting place of many peoples, and the melting-pot of many histories.[1] Nevertheless it is significant that at the heart of this human unit, occupying an area smaller than the whole, there should be a source of physical unity, a climate, which has imposed its uniformity on both landscape and ways of life. Its significance is demonstrated by contrast with the Atlantic. The ocean too is a human unit and one of the most vigorous of the present day world; it too has been a meeting place and a melting-pot of history. But the Atlantic complex lacks a homogeneous centre comparable to the source of that even light which shines at the heart of the Mediterranean. The Atlantic, stretching from pole to pole, reflects the colours of all the earth's climates.

The Mediterranean of the vines and olive trees consists, as we know, only of a few narrow coastal strips, ribbons of land bordering the sea. This falls very short of the historical Mediterranean, but it is of great importance that the Mediterranean complex should have taken its rhythm from the uniform band of climate and culture at its centre, so distinctive that it is to this that the adjective 'Mediterranean' is usually applied. Such a force operating at the centre could not fail to have far-reaching repercussions, since it affects all movements into and out of the Mediterranean. Nor is this climate merely confined to the coastal strips, for since they surround the whole sea, it is also the climate of the waters in between. That identical or near-identical worlds should be found on the borders of countries as far apart and in general terms as different as Greece, Spain, Italy, North Africa; that these worlds should live at the same rhythm; that men and goods should be able to move from one to another without any need for acclimatization: such living identity implies the living unity of the sea. It is a great deal more than a beautiful setting.

I. THE UNITY OF THE CLIMATE

Above the Mediterranean of land and water stretches the Mediterranean of the sky, having little or no connection with the landscapes below and,

[1] Paul Valéry, 'Réflexions sur l'acier', in: *Acier*, 1938, no. 1.

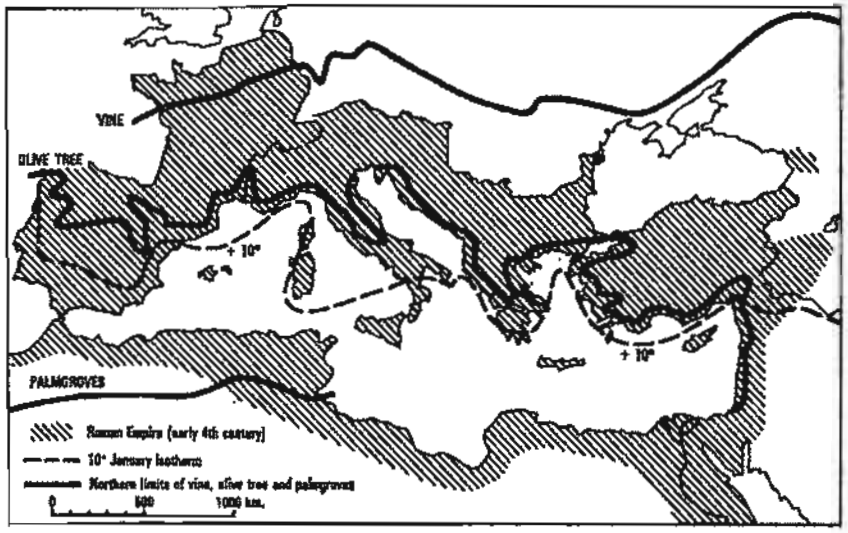


Fig. 19: *The 'true' Mediterranean, from the olive tree to the great palm groves*

The limit of the palm groves refers only to *large*, compact groves. The limit for the date-palm growing isolated or in small clumps is much further north (see Fig. 13, p. 172).

in fact, independent of local physical conditions. It is created by the breath of two external forces: the Atlantic Ocean, its neighbour to the west, and the Sahara, its neighbour to the south. The Mediterranean itself is not responsible for the sky that looks down on it.[2]

The Atlantic and the Sahara. Within this open-ended area, two forces are at work, turn by turn: the Sahara brings dry air, clear light, the vast blue sky; the Atlantic, when it is not spreading clouds and rain, sends in abundance that grey mist and moist air which is more widespread than one would think in the Mediterranean atmosphere during the 'winter semester'. The early Orientalist painters created an enduring false impression with their glowing palettes. In October, 1869, Fromentin, leaving Messina by boat, noted, 'grey skies, cold wind, a few drops of rain on the awning. It is sad, it could be the Baltic.'[3] Earlier, in February, 1848, he had fled towards the Sahara from the persistent grey mists of the Mediterranean winter: 'there was no interval that year', he wrote, 'between the November rains and the heavy winter rains, which had lasted for three and a half months with hardly a day's respite'.[4] All natives of Algiers must at one time or

[2] Emmanuel de Martonne, *Géographie Universelle*, vol. VI, I, 1942, p. 317, '. . . it is not the breath of the Mediterranean which gives Provence its skies'.
[3] *Voyage d'Égypte*, 1955, p. 43.
[4] *Un été dans le Sahara*, 1908, p. 3.

another have had occasion to see newcomers aghast at the torrential downpours over the city.

The rains have always been a fact of life throughout the region. In Florence, notes a diarist for the entry 24th January, 1651,[5] the inclement weather has lasted five months, 'per avere durato a piovere quasi cinque mesi'. The previous year,[6] Capua had been swamped by torrential rains. In fact there was hardly a winter when the rivers did not burst their banks and the towns were not subjected to the terrors and destruction of flooding. Venice suffered more than most, of course. In November, 1443,[7] her losses were enormous, 'quasi mezo million di ducati'; on 18th December, 1600, there was an identical disaster, the *lidi*, the canals, the houses, the private stores at street level, the public stores of salt, grain, and spices all suffering great damage, 'con dano di un million d'oro', which is also evidence that prices had risen in the meantime.[8]

In winter, or more precisely between the September equinox and the March equinox, the Atlantic influence is predominant. The anticyclone over the Azores lets in the Atlantic depressions that move one after another into the warm waters of the Mediterranean; they come in either from the Bay of Biscay, moving quickly over Aquitaine; or, like ships, they enter the Mediterranean by the Straits of Gibraltar and the Spanish coasts. Wherever they enter they cross the Mediterranean from west to east, travelling quickly. They make the winter weather most unsettled, bringing rain, causing sudden winds to spring up, and constantly agitating the sea, which when whipped by the *mistral*, the *noroît* or the *bora*, is often so white with foam, that it looks like a plain covered with snow, or 'strewn with ashes' as a sixteenth-century traveller described it.[9] Above Toledo, the Atlantic humidity contributes in winter to bring those turbulent and dramatic skies of storm and light painted by El Greco.

So every year, and often violently, the Atlantic banishes the desert far away to the south and east. In winter rain falls over the Algerian provinces and sometimes in the heart of the Sahara. Rain falls even on the mountains of western Arabia. The anti-desert is not the Mediterranean, as Paul Morand once wrote, but the Atlantic Ocean.

Around the spring equinox, everything changes again, rather suddenly, at about the time when, as the calendar of the Maghreb says, the season for grafting trees arrives, and the first notes of the nightingale are heard.[10] Of real springtime there is little or none; perhaps a short week that suddenly brings out leaves and flowers. As soon as the winter rains are over, the desert begins to move back and invade the sea, including the surrounding mountains, right up to their peaks. It moves westwards, and above all

[5] Baldinucci, *Giornale di ricordi*, 24th January, 1651, Marciana, Ital., VI, XCIV.
[6] *Recueil des Gazettes*, year 1650, p. 1557, Naples, 2nd November, 1650.
[7] A.d.S. Venice, Cronaca veneta, Brera 51, 10th November, 1443.
[8] Marciana, Cronaca savina, f° 372, 18th December, 1600; there was similar constant rain ('per tre mesi continui') at Christmas 1598, *ibid.*, f° 371 and 371 v°.
[9] Peter Martyr, *op. cit.*, p. 53 note.
[10] *Annuaire de monde musulman*, 1925, p. 8

northwards, passing beyond the furthest limits of the Mediterranean world. In France, the burning air from the south every summer warms the southern Alps, invades most of the Rhône valley, crosses the basin of Aquitaine as a warm current, and often carries the searing drought through the Garonne region to the distant coasts of southern Brittany.[11]

Torrid summer then reigns uncontested in the centre of the Mediterranean zone. The sea is astonishingly calm: in July and August it is like a millpond; little boats sail far out and low-lying galleys could venture without fear from port to port.[12] The summer semester was the best time for shipping, piracy, and war.

The physical causes of this dry, torrid summer are clear. As the sun moves further north, the anticyclone of the Azores increases in size again. When their passage is blocked, the long chain of Atlantic depressions is halted. The obstacle is removed only when autumn approaches; then the Atlantic invasion begins again.

A homogeneous climate. The *extreme* limits of such a climate could be said to lie far from the shores of the Mediterranean, if they are extended on one side, over Europe, to the regions touched by the Saharan drought in summer, and in the other direction to the regions in Asia and Africa, even in the middle of the vast steppes, which are affected by the rain of the Atlantic depressions. But to set such wide limits is clearly misleading. The Mediterranean climate is neither one nor the other of the forces we have described; it is precisely the zone where they overlap, a combination of the two. To overemphasize either of its components would deform the Mediterranean climate. To extend it too far to the east or south would turn it into a steppe or desert climate, to take it too far north would bring it into the zone where the west winds predominate. The true Mediterranean climate occupies only a fairly narrow zone.

Indeed, it is not easy to define its limits. To do so would require taking note of the smallest details, not necessarily physical, for climates are not measured only by the usual gauges of temperature, pressure, wind, and rainfall, but can be traced in thousands of signs at ground level, as has been suggested by André Siegfried of the Ardèche,[13] by Léo Larguier of the border between Languedoc and Lozère,[14] and J. L. Vaudoyer of the transitional zones between the different parts of Provence.[15] But these are points of detail. In general, the geographer's well-known observation must be accepted without question: the Mediterranean climate lies between the northern limit of the olive tree and the northern limit of the palm grove.

[11] E. de Martonne, *op. cit.*, p. 296.
[12] Ernest Lavisse, 'Sur les galères du Roi', in *Revue de Paris*, November, 1897.
[13] *Vue générale de la Méditerranée*, 1943, p. 64–65. English translation by D. Hemming, *The Mediterranean*, London, 1948, p. 87.
[14] Léo Larguier, 'Le Gard et les Basses Cévennes', in *Maisons et villages de France*, *op. cit.*, I, 1943.
[15] *Op. cit.*, p. 183. For the Volterra region, see Paul Bourget, *Sensations d'Italie*, 1902, p. 5.

Between these frontiers we may count the Italian (or rather Apennine) peninsula, Greece, Cyrenaica, Tunisia, and, elsewhere, a few narrow coastal strips rarely more than 200 kilometres wide. For the mountain barriers soon loom up. The Mediterranean climate is often the climate only of a coastal fringe, the riviera, bordering the sea, a ribbon as narrow as the coastal strip in the Crimea where figs, olives, oranges, and pomegranates all grow freely,[16] though only in the southern part of the peninsula.

But this narrow framework, by reason of its very narrowness, provides undeniable homogeneity, both from north to south and from east to west.

From north to south the entire coastal riviera forms only a thin lengthwise band on the globe. Its widest point from north to south is the distance of 1100 kilometres from the northern end of the Adriatic to the coast of Tripolitania, and that is an exception. In fact the greatest widths vary on an average between 600 and 800 kilometres for the eastern basin and 740 kilometres between Algiers and Marseilles. The entire area, both land and sea, forms a long belt straddling the 37th and 38th parallels. The differences in latitude are not great. They are sufficient to explain the contrasts between the northern shores and the southern, the latter being the warmer. The mean difference in temperature between Marseilles and Algiers is 4°C. The 10°C. January isotherm on the whole follows the general shape of the sea, cutting off southern Spain and southern Italy, regions that have more in common with Africa than with Europe. In general, all parts of the Mediterranean experience what is perceptibly the same 'geometrical' climate.

From east to west there is some variation owing to the fact that moisture from the Atlantic is less pronounced and also later in arrival the further east one travels.

These variations are all worthy of note. At a time when climatologists are attentive to detail, the Mediterranean is rightly regarded by them as a complex of different climates that are to be distinguished one from another. But that does not disprove their fundamental, close relationship and undeniable unity. It is a matter of some importance to the historian to find almost everywhere within his field of study the same climate, the same seasonal rhythm, the same vegetation, the same colours and, when the geological architecture recurs, the same landscapes, identical to the point of obsession; in short, the same ways of life. To Michelet, the 'stony' Languedoc interior recalled Palestine. For hundreds of writers, Provence has been more Greek than Greece, unless, that is, the true Greece is not to be found on some Sicilian shore. The Iles d'Hyères would not be out of place among the Cyclades, except that they are greener.[17] The lagoon of Tunis recalls the Lagoon of Chioggia. Morocco is another, more sun-baked Italy.[18]

[16] Comte de Rochechouart, *Souvenirs sur la Révolution, L'Empire et la Restauration*, 1889, p. 110; vines from Madeira and Spain had taken to the soil of the Crimea.
[17] Jules Sion, *La France Méditerranéenne*, 1929, p. 77.
[18] J. and J. Tharaud, *Marrakech ou les seigneurs de l'Atlas*, 1929, p. 135.

Everywhere can be found the same eternal trinity: wheat, olives, and vines, born of the climate and history; in other words an identical agricultural civilization, identical ways of dominating the environment. The different regions of the sea are not, therefore, complementary.[19] They have the same granaries, wine-cellars and oil presses, the same tools, flocks, and often the same agrarian traditions and daily preoccupations. What prospers in one region will do equally well in the next. In the sixteenth century all the coastal regions produced wax, wool, and skins, *montonini* or *vacchini*; they all grew (or could have grown) mulberry trees and raised silkworms. They are all without exception lands of wine and vineyards, even the Moslem countries. Who has praised wine more highly than the poet of Islam? At Tor on the Red Sea there were vines,[20] and they even grew in far-off Persia, where the wine of Shīrāz was highly prized.

With such identity of production, it follows that similar goods can be found in any country bordering the sea. In the sixteenth century there was grain from Sicily and grain from Thrace; there was wine from Naples, *greco* or *latino*, the latter more plentiful than the former,[21] but there were also the many casks of wine shipped from Frontignan; there was the Lombardy rice, but also rice from Valencia, Turkey and Egypt. And to compare goods of modest quality, there was wool from North Africa and wool from the Balkans.

The Mediterranean countries, then, were in competition with each other; at least they should have been. They had more goods for exchange outside their climatic environment than within it. But the sixteenth century was a time when the total volume of exchange was small, the prices modest and the distances travelled short. Arrangements had somehow to be reached between neighbours, between regions that were rich or poor in manpower, and the chief problem was the supply of food for the towns, constantly on the lookout for all kinds of foodstuffs and in particular those that could be transported without too much spoilage: sacks of almonds from the Provençal coast, barrels of salted tunny or meat, sacks of beans from Egypt, not to mention casks of oil and grain, for which, of course, demand was greatest. So identical production did not restrict exchanges within the Mediterranean as much as one might expect, at least during the sixteenth century.

In human terms the unity of the climate[22] has had many other consequences. At a very early stage it prepared the ground for the establishment of identical rural economies. From the first millennium before Christ the civilization of the vine and the olive tree spread westwards from the eastern

[19] A. Siegfried, *op. cit.*, p. 148, 326.

[20] Belon, *op. cit.*, p. 131.

[21] A.d.S. Naples, Sommaria Consultationum, 2 f° 223, 2nd October, 1567. In the preceding years, good or bad, the kingdom of Naples had produced: *vini latini 23,667 busti; vini grechi, dulci et Mangiaguera, 2319 busti.*

[22] 'Similarity of climate . . . encourages penetration into regions similar to those left behind, in order that life may continue in accustomed ways,' P. Vidal de la Blache, *op. cit.*, p. 179.

part of the sea. This basic uniformity was established far back in time, nature and man working to the same end.

As a result, in the sixteenth century, a native of the Mediterranean, wherever he might come from, would never feel out of place in any part of the sea. In former times, it is true, in the heroic age of the first Phoenician and Greek voyages of antiquity, colonization was a dramatic upheaval, but not in later years. To later colonial settlers their journey simply meant finding in a new place the same trees and plants, the same food on the table that they had known in their homeland; it meant living under the same sky, watching the same familiar seasons.

On the other hand when a native of the Mediterranean had to leave the shores of the sea, he was uneasy and homesick; like the soldiers of Alexander the Great when he left Syria and advanced towards the Euphrates;[23] or the sixteenth-century Spaniards in the Low Countries, miserable among the 'fogs of the North'. For Alonso Vázquez and the Spaniards of his time (and probably of all time) Flanders was 'the land where there grows neither thyme, nor lavender, figs, olives, melons, or almonds; where parsley, onions, and lettuces have neither juice nor taste; where dishes are prepared, strange to relate, with butter from cows instead of oil . . .'.[24] The Cardinal of Aragon, who reached the Netherlands in 1517 with his cook and his own supplies, shared this opinion. 'Because of the butter and dairy produce which is so widely used in Flanders and Germany', he concluded, 'these countries are overrun with lepers.'[25] A strange land indeed! An Italian cleric stranded at Bayeux in Normandy in the summer of 1529 thought himself 'for del mondo'.[26]

This explains the facility with which the Mediterranean dweller travelled from port to port; these were not true transplantations, merely removals, and the new occupant would feel quite at home in his new habitat. In striking contrast was the exhausting process of colonizing the New World carried out by the Iberians. Traditional history has preserved, with more or less accuracy, the names of those men and women who were the first to grow wheat, vines, and olives in Peru or in New Spain. Not without

[23] A. Radet, *Alexandre le Grand*, 1931, p. 139.

[24] Alonso Vázquez, *Los sucesos de Flandes* . . . extracts published in L. P. Gachard, *Les Bibliothèques de Madrid* . . ., Brussels, 1875, p. 459, ff., quoted by L. Pfandl, *Jeanne la Folle*, Fr. trans. by R. de Liedekerke, 1938, p. 48, Cf. the following from Maximilien Sorre, *Les Fondements biologiques de la géographie humaine*, 1943, p. 268: 'one of the peculiarities of the peoples who lived on the periphery of the Mediterranean world, which most astonished the Ancients, was the use of cows' butter: those accustomed to olive oil viewed this with shocked surprise. Even an Italian, like Pliny, had the same reaction, forgetting that after all the use of olive oil had not been established in Italy for so very long.'

[25] Antonio de Beatis, *Itinerario di Monsignor il cardinale de Aragona . . . incominciato nel anno 1517* . . . ed. L. Pastor, Freiburg-im-Breisgau, 1905, p. 121. Food at the very least 'corrompedora dos estômagos' says a Portuguese observer, L. Mendes de Vasconcellos, *Do sitio de Lisboa*, Lisbon, 1608, p. 113. This referred to the 'nações do Norte e em parte de França e Lombardia'.

[26] The dean of Bayeux to the Marquis of Mantua, A.d.S., Mantua, Gonzaga, Francia, series E, f° 637, 1st June, 1529.

courage, battling against the hostile nature of the climate and soil, these Mediterranean expatriates tried to build a new Mediterranean culture in the tropics. The attempt failed. Although there were occasional successes the rural and alimentary civilization of their native lands could not be transplanted to the soil of Spanish and Portuguese America, a zone of maize, manioc, pulque, and before long of rum. One of the great trans-Atlantic supply operations from Spain and Portugal was devoted to maintaining artificially in the New World the alimentary civilization of the Mediterranean: ships laden with flour, wine, and oil left Seville and Lisbon for the other side of the ocean.[27]

Yet it was Mediterranean man who almost alone of Europeans survived the transplantation to a new land. Perhaps it was because he was already accustomed to the harsh conditions of one climate, that of the Mediterranean, which is not always kind to the human organism, and was hardened by his struggle against endemic malaria and the regular scourge of plague. Perhaps too it was because he had always been schooled in sobriety and frugality in his native land. The deceptively welcoming climate of the Mediterranean can sometimes be cruel and murderous. It is the filter that has prevented men from distant lands from settling on the shores of the warm sea. They may arrive as conquerors, yesterday's barbarians, today's men of property: but how long can they resist the 'scorching heat of summer and . . . the malaria'?[28] 'The masters come and go,' wrote Walter Bauer of Sicily, 'the others remain, and it is a romance without words',[29] always the same.

Drought: the scourge of the Mediterranean. The disadvantage of this climate for human life lies in the annual distribution of rainfall. It rains a good deal: in some places there is exceedingly high precipitation.[30] But the rains fall in autumn, winter, and spring, chiefly in autumn and spring. It is broadly the opposite of a monsoon climate. The monsoon climate fruitfully combines warmth and water. The Mediterranean climate separates these two important factors of life, with predictable consequences. The 'glorious skies' of the summer semester have their costly drawbacks. Everywhere drought leads to the disappearance or reduction of running waters and natural irrigation: the Mediterranean countries are the zone of the *oueds* and the *fiumari*. It arrests the growth of herbaceous vegetation: so crops and plants must adapt to drought[31] and learn to use as quickly

[27] François Chevalier, 'Les cargaisons des flottes de la Nouvelle Espagne vers 1600', in *Revista de Indias*, 1943.

[28] P. Vidal de la Blache, *op. cit.*, p. 182; Bonjean, in *Cahiers du Sud*, May, 1943, p. 329–330.

[29] In O. Benndorf, *op. cit.*, p. 62, Colette, *La naissance du Jour*, 1941, p. 8–9.

[30] 4 metres a year in the Gulf of Cattaro.

[31] See the article by Schmidthüser, 'Vegetationskunde Süd-Frankreichs und Ost-Spaniens' in *Geogr. Zeitschr.*, 1934, p. 409–422. On deforestation, see H. von Trotha Treyden, 'Die Entwaldung der Mittelmeerländer' in *Pet. Mitt.*, 1916, and the bibliography.

and profitably as possible the precious sources of water. Wheat, 'a winter plant',[32] hastens to ripen and complete its active cycle by May or June – in Egypt and Andalusia by April.[33] The olives of Tunisia are ripened by the autumn rains. From earliest times dry-farming seems to have been practised everywhere, empirically[34] and not only on the initiative of the Phoenicians. From earliest times irrigation in all its diverse forms seems to have penetrated the Mediterranean regions from the East. Today (cf. K. Sapper's map),[35] the limit of the *Kunstbewässerung* is appreciably the same as that of the Mediterranean climate. Many plants, both herbaceous and shrub, which had adapted in the course of evolution to a dry climate, came to the Mediterranean along the same paths as the hydraulic techniques. As we have noted, during the first thousand years before Christ, the culture of the vine and olive spread from the eastern regions of the sea to the West.[36] The Mediterranean, by its climate was predestined for shrub culture. It is not only a garden, but, providentially, a land of fruit-bearing trees.

On the other hand the climate does not favour the growth of ordinary trees and forest coverings. At any rate it has not protected them. Very early the primeval forests of the Mediterranean were attacked by man and much, too much, reduced. They were either restored incompletely or not at all; hence the large area covered by scrub and underbrush, the debased forms of the forest. Compared to northern Europe, the Mediterranean soon became a deforested region. When Chateaubriand passed through Morea, it was 'almost entirely bereft of trees'.[37] The traveller crossing from the bare stones of Herzegovina to the wooded slopes of Bosnia enters a different world, as Jean Brunhes has noted.[38] Almost everywhere, wood was expensive,[39] often very expensive indeed. At Medina del Campo 'richer in fairs than in *montes* [i.e., wooded mountains]', the humanist Antonio de Guevara, reflecting on his budget, concluded, 'all told, the wood cost us as much as what was cooking in the pot'.[40]

Another consequence is the scarcity in the Mediterranean zone of true pastures. As a result there are few of the cattle so useful to the rich farming, necessarily based on the use of manure, practised in the northern countries where the soil is so washed by the rain that it loses its fertile elements – of which the Mediterranean drought is, it is true, a better guardian. Cattle are only found in really large numbers in Egypt and in the rainy Balkans, on the northern margins of the Mediterranean, or on high lands where

[32] According to Woiekof, quoted in Jean Brunhes, *Géographie humaine*, 4th ed., p. 133.

[33] G. Botero, *op. cit.*, I, p. 10.

[34] André Siegfried, *op. cit.*, p. 84–85; Jean Brunhes, *op. cit.*, p. 261.

[35] 'Die Verbreitung der künstlichen Feldbewässerung', in *Pet. Mitt.*, 1932.

[36] M. Sorre, *Les fondements biologiques . . . op. cit.*, p. 146.

[37] *Itinéraire de Paris a Jerusalem*, 1811, p. 120.

[38] *Géographie humaine*, 4th ed., p. 51, note 1.

[39] Even at Constantinople, Robert Mantran, *Istanbul dans la seconde moitié du XVIIe siècle, Essai d'histoire institutionelle économique et sociale*, 1962, p. 29.

[40] *Biblioteca de Autores Españoles* (B.A.E.), XIII, p. 93.

more rain falls than elsewhere. Sheep and goats (the former raised for their wool more than for their flesh) could not compensate for the deficiency in meat rations. Rabelais' monk of Amiens, 'quite angry, scandalized, and out of all patience', who with his travelling companions is contemplating the beauties of Florence has the following to say, 'Now at Amiens,' he explains, 'in four, nay five times less ground than we have trod in our contemplations, I could have shown you above fourteen streets of roasting cooks, most ancient, savoury and aromatic. I cannot imagine what kind of pleasure you have taken in gazing on the lions and Africans (so methinks you call their tigers) near the belfry, or in ogling the porcupines and estridges [ostriches] in the Lord Philip Strozzi's palace. Faith and truth, I had rather see a good fat goose at the spit.'[41] Apropos of the Mediterranean a geographer once wrote jokingly to me, 'Not enough meat and too many bones.'[42]

To the northerner, even in the sixteenth century, the livestock of the Mediterranean seemed deficient, the cattle often skinny and the sheep weighing little. 'In 1577, Montmorency and his army ate 8000 sheep brought from all over lower Languedoc. Their average weight "l'ung portant l'autre" was 30 *livres* per beast, or about 12 modern kilos. This was next to nothing and the animal was almost worthless: 4 *livres* each or a little over an *écu* for a sheep . . .'.[43] At Valladolid, for 11,312 sheep slaughtered between 23rd June and 5th December, 1586, an average yield of 11·960 kilogrammes of meat per beast has been calculated (26 Castilian pounds). Similarly for 2302 cattle slaughtered during the same period, the meat per beast was 148.12 kilogrammes (322 Castilian pounds).[44] So the weight of the stock was low; the same was true of horses. There were some very fine horses in the Mediterranean, Turks, jennets from Naples, Andalusian chargers, and Barbary horses from North Africa, but they were all saddle horses, fast and nimble, and went out of fashion during the following century which was to see the popularity of the heavy horses, asses, and mules of the North. Increasingly, for the mails, for the carriages then coming into fashion, for the artillery's gun-carriages and limbers, the strength of the horses was becoming a decisive factor. Dantiscus, who landed on 4th December, 1522 at Codalia on the Cantabrian coast, set off towards León with six pack horses 'non tamen tam bonis', he wrote, 'ut sunt apud nos qui plumbum ferunt ex Cracovia in Hungariam . . .'.[45] The comparison with the horses which transported lead from Cracow to Hungary is too spontaneous to be mistaken. Besides what fodder was there for horses in the south? Oats had only just made their appearance in cer-

[41] *Le Quart livre du noble Pantagruel*, Urquhart & Motteux trans., 1904, ed., p. 49.
[42] Letter from Pierre Gourou, 27th June, 1949.
[43] E. Le Roy Ladurie, *op. cit.*, p. 118–119.
[44] B. Bennassar, 'L'alimentation d'une ville espagnole au XVIe siècle. Quelques données sur les approvisionnements et la consommation de Valladolid', in *Annales E.S.C.*, 1961, p. 733.
[45] Dantiscus to the King of Poland, Valladolid, 4th January, 1523, Czartoryski Library, no. 36, f° 55.

tain regions, such as Languedoc[46] and human mouths competed with the horses for barley. Pity the French horses, who once over the Spanish border began to whinny with dismay, according to Barthélemy Joly, for now they would be on a diet of 'short and unappetizing straw'.[47]

Without suggesting that it explains everything, we might note that if the swing-plough, which did little more than scratch the surface of the earth, survived in the Mediterranean countryside, it was not only because of the fragility of the thin layer of loose topsoil, but also because the teams of oxen or mules were not strong enough. Shallow ploughing, the *raies*, were done as often as seven or eight times a year.[48] It would have been better, as time was to prove, to plough more deeply, as in the North, where the wheeled plough with swivelling fore-carriage was a great instrument of progress. In Languedoc, the *mousse* or pseudo-plough imitated from the North, could not fulfil this role and was little used.[49] The poor *aratores* of Languedoc 'untiringly scratched the surface of the fallow fields in vain: they bear no comparison' with the hefty *charrueurs* of the Ile-de-France or Picardy.[50]

The truth is that the Mediterranean has struggled against a fundamental poverty, aggravated but not entirely accounted for by circumstances. It affords a precarious living, in spite of its apparent or real advantages. It is easy to be deceived by its famous charm and beauty. Even as experienced a geographer as Philippson was dazzled, like all visitors from the North, by the sun, the colours, the warmth, the winter roses, the early fruits. Goethe at Vicenza was captivated by the popular street life with its open stalls and dreamed of taking back home with him a little of the magic air of the South. Even when one is aware of the reality it is difficult to associate these scenes of brilliance and gaiety with images of misery and physical hardship. In fact, Mediterranean man gains his daily bread by painful effort. Great tracts of land remain uncultivated and of little use. The land that does yield food is almost everywhere subject to biennial crop rotation that rules out any great productivity. Michelet again was the historian who best understood the basic harshness of all these lands, starting with his own Provence.

There is one visible sign of this poverty: the frugality that has never failed to impress the northerner. The Fleming Busbecq, when in Anatolia, wrote in 1555, 'I dare say that a man of our country spends more on food in one day than a Turk in twelve. . . . The Turks are so frugal and think so little of the pleasures of eating that if they have bread, salt, and some garlic or an onion and a kind of sour milk which they call *yoghoort*, they ask nothing more. They dilute this milk with very cold water and crumble bread into it and take it when they are hot and thirsty . . . it is not only palatable and digestible, but also possesses an extraordinary power of quenching the

[46] E. Le Roy Ladurie, *op. cit.*, p. 181.
[47] Barthélémy Joly, *Voyage en Espagne*, p. 9.
[48] E. Le Roy Ladurie, *op. cit.*, p. 78.
[49] *Ibid.*, p. 80. [50] *Ibid.*, p. 79.

thirst.'[51] This sobriety has often been noted as one of the great strengths of the Turkish soldier on campaign. He would be content with a little rice, ground meat dried in the sun, and bread coarsely cooked in the ashes of the camp fire.[52] The western soldier was more particular, perhaps because of the example of the many Germans and Swiss.[53]

The peasants and even the city-dwellers of Greece, Italy, and Spain were hardly more demanding than these Turks, whose frugal habits were noted only a century ago by Théophile Gautier, who was amazed that the sturdy *caïdjis*, with bulging muscles from their heavy work as oarsmen, could spend the whole day on board their *caïques*, eating almost nothing but raw cucumbers.[54] 'In Murcia,' wrote Alexandre de Laborde in his *Itinéraire descriptif de l'Espagne* (1828), 'one cannot find a servant girl during the summer, and many of those who have a position leave it when the fine weather comes. They can then easily find salad, some fruit, melons and especially red peppers, and these provisions are sufficient to keep them.'[55] 'I invited everyone to supper,' writes Montaigne, adding (the incident took place at the Baths of Lucca), 'because in Italy a banquet is the equivalent of a light meal in France.'[56]

Commines on the other hand went into raptures over the abundant fare of Venice. He had the excuse of being a foreigner. And Venice was Venice, a town privileged for food. Bandello himself was dazzled by the markets of the town, by the 'abbondanza grandissima d'ogni sorte di cose da mangiare',[57] and he is a reliable witness. But this luxurious market in a rich and well-situated town created, as we know, great problems of supply, and cost the Signoria much anxiety and vigilance.

Has the very small part played in Mediterranean literature by feasts and banquets ever been remarked? Descriptions of meals – except of course princely tables – never suggest plenty.[58] In Bandello's novels, a good meal means a few vegetables, a little Bologna sausage, some tripe, and a cup of wine. In the Spanish literature of the Golden Age an empty stomach is a familiar character. Witness the ultra-classical Lazarillo de Tormes or his brother in *picardía*, Guzmán de Alfarache, eating a crust of hard bread without leaving a crumb for the ants.[59] 'May God save you from the plague coming down from Castille,' the same Guzmán is told, 'and from

[51] *The Turkish Letters*, p. 52–53.
[52] G. Botero, *op. cit.*, II, p. 124.
[53] When he was required by Philip II to supply food for the Spanish and German soldiers crossing from Italy to Spain, the Grand Duke of Tuscany preferred to keep the salt meat, of which there was not enough to go round, for the Germans. The Spaniards had arrived first, but would not raise an uproar if they had to be content with rice and biscuit. Felipe Ruiz Martín, Introduction to *Lettres marchandes échangées entre Florence et Medina del Campo*, Paris, 1965.
[54] *Voyage a Constantinople*, 1853, p. 97.
[55] P. 112.
[56] *Journal de voyage en Italie*, Collection 'Hier' 1932, vol. III, p. 242.
[57] *Op. cit.*, III, p. 409.
[58] *Ibid.*, IV, p. 233, p. 340, VI, p. 400–401. Except in northern Italy.
[59] Mateo Aleman, *Vida del picaro Guzmán de Alfarache*, I, part I, 3, p. 45.

the famine coming up from Andalusia.'[60] And we may remember Don Quixote's bills of fare, or the proverb: 'If the lark flies over Castille, she must take her grain of corn with her.'[61]

Although the gardens, orchards, and seafoods may provide varied additions, they supply what is essentially a frugal diet even today, 'bordering on malnutrition in many cases'.[62] This frugality results not from virtue or indifference to food as Busbecq would have called it, but from necessity.

The Mediterranean soil too is responsible for the poverty it inflicts on its peoples, with its infertile limestone, the great stretches blighted with salt, the lands covered with *nitre*, as Pierre Belon called it,[63] its rare deposits of loose soil, and the precariousness of its arable land. The thin layers of topsoil, which only the modest wooden swing-plough can scratch, are at the mercy of the wind or the flood waters. They are enabled to survive only by man's constant effort. Given these conditions, if the peasants' vigilance should be distracted during long periods of unrest, not only the peasantry but also the productive soil will be destroyed. During the disturbances of the Thirty Years' War, the German peasantry was decimated, but the land remained and with it the possibility of renewal. Here lay the superiority of the North. In the Mediterranean the soil dies if it is not protected by crops: the desert lies in wait for arable land and never lets go. It is a miracle if it is preserved or reconstituted by the labour of the peasants. Even modern figures prove this. Apart from forests, pastures, and specifically nonproductive land, cultivated land in about 1900 represented 46 per cent of the whole in Italy, 39.1 per cent in Spain, 34.1 per cent in Portugal, and only 18.6 per cent in Greece. On Rhodes, out of a total of 144,000 hectares, 84,000 are still uncultivated today.[64] On the southern shores of the sea the figures are even more disastrous.

But how much do even the cultivated lands yield? Very little, unless there are exceptional conditions (of irrigation for instance) and for this the climate is responsible.

Harvests, in the Mediterranean, more than elsewhere, are at the mercy of unstable elements. If a south wind blows just before harvest time, the wheat dries before it has completely ripened and reached its normal size; or if already ripe, it drops from the ear. To avoid this disaster in Spain, the peasants would often reap in the cool of the night, for the dry grain would fall to the ground during the day.[65] If floods lay waste the lowlands in winter, the sowing is endangered. If there are clear skies too early in spring, the crop that has already ripened is attacked by frost, sometimes irremediably. One can never be certain of the harvest until the last moment. At the end of January, 1574, it looked as if there would be a good harvest

[60] *Ibid.*, part II, 2, p. 163.
[61] Bory de Saint-Vincent, *Guide du voyageur en Espagne*, p. 281, quoted by Ch. Weiss, *L'Espagne depuis Philippe II*, 1844, vol. II, p. 74.
[62] M. Sorre, *op. cit.*, p. 267.
[63] *Op. cit.*, p. 137 v°.
[64] Charles Parain, *La Méditerranée, les hommes et leurs travaux*, 1936, p. 130.
[65] Alonso de Herrera, *op. cit.*, 1645, ed., p. 10 v° (particularly true of barley).

on Crete; there had been plenty of rain and more seed than usual had been sown. But, adds our source, may not these fine hopes be dashed in countries like this, subject to 'pestilential fogs which blight the grain?'[66] The violent winds from the south that are dreaded in the Archipelago often ruined ripe harvests on Corfu[67] and are still feared today throughout the cereal growing area of North Africa; this is the *sirocco*, against which there is no remedy and which in three days can destroy a whole year's work. One other item can be added to the list of dangers to the fields of the Mediterranean: the plague of locusts, a greater threat in the past than it is today.[68]

In the sixteenth century it was rare for a harvest to escape in turn all the dangers that threatened it. Yields were small, and in view of the limited space devoted to cereal growing, the Mediterranean was always on the verge of famine. A few changes in temperature and a shortage of rainfall were enough to endanger human life. Everything was affected accordingly, even politics. If there was no likelihood of a good barley crop on the borders of Hungary (for, in the Mediterranean, barley was the equivalent of oats in the North), it could be assumed that the Grand Turk would not go to war there that year; for how would the horses of the *spahis* be fed? If wheat was also short – as sometimes happened – in the three or four main sources of supply for the sea, whatever the plans of war drawn up during winter or spring, there would be no major war at harvest time, which was also the season of calm seas and great naval campaigns. So immediately brigandage on land and piracy on sea would redouble in vigour. Is it any wonder then, that the only detail of daily life that regularly finds its way into diplomatic correspondence concerns the harvests? It has rained, it has not rained, the wheat has not sprouted; Sicily promises well, but the Turkish harvest was poor, the Grand Turk will certainly not let any wheat out. Will this year be a year of scarcity, of *carestia*, of dearth?

The letters written by the majordomo Francisco Osorio to Philip II in 1558 informed the king at great length, in his northern exile, of the weather over the Peninsula. This citizen of Valladolid pays great attention to the colour of the sky, the state of the harvest and the price of bread. On 13th March, 1558, '. . . for two days now,' he writes, 'the weather here has been clear with plenty of sun and wind. It has not rained since the middle of January. The price of bread has risen somewhat and a "pragmatic" has been instituted to fix the price in future. Since it was published the other day, the sky has become cloudy. This surely brings hope of rain

[66] A.d.S. Venice, 22nd January, 1574, Capi del C° dei X, Lettere B^a 286, f^os 8 and 9.
[67] G. Botero, *Dell'isole*, p. 72.
[68] G. Vivoli, *Annali di Livorno*, 1842–1846, III, p. 18, an invasion of Tuscany by locusts (1541); at Verona, August, 1542 and June, 1553, Ludovico Moscardo, *Historia di Verona*, Verona, 1668, p. 412 and 417; in Hungary, Tebaldo Tebaldi to the Duke of Modena, Venice, 21st August, 1543, A.d.S. Modena; in Egypt, 1544 and 1572, Museo Correr, D. delle Rose, 46, f° 181; on Cyprus, 13th September, 1550, A.d.S. Venice, Senato Mar; 31, f° 42 v° to 43 v°; in the Camargue, 1614, J. F. Noble de la Lauzière, *op. cit.*, p. 446.

in April. In Andalusia and Extremadura, as in the kingdom of Toledo it has rained and the weather is very favourable: the price of bread there has fallen greatly.'[69] On 30th October, 1558, he writes: 'The wheat harvest was abundant; there is a moderate amount of wine throughout the kingdom, sowing is well advanced everywhere. On the 26th it snowed all morning, with big flakes. Afterwards it rained heavily, which will be of great advantage to the sowing. From the weather here I am sure that it cannot be very warm in Brussels. The price of bread throughout the kingdom has fallen.'[70]

That Philip II should be kept minutely informed of the variations in the weather from seedtime onwards; that the price of bread should rise and fall depending on the rainfall; that these details should be found in a series of letters where one searches in vain for any other precise details of economic history: all this is very revealing of the state of the Mediterranean food supply in the sixteenth century. It was no mere 'economic' problem, but a matter of life and death.

For famine, real famine when people died in the streets, was a reality. In 1521, relates the Venetian Navagero, 'there was such famine in Andalusia that countless animals died and the countryside was deserted; many people died also. There was such drought that the wheat was lost and not a blade of grass could any longer be found in the fields; that year the breeds of Andalusian horses for the most part died out and they have not been restored to this day [1525].'[71] This was an extreme case. But we constantly find *carestia* recorded as the years go past; every government went in search of grain and had to organize public distributions to prevent people from dying of hunger, in which it was not always successful. During the second half of the century a particularly serious crisis affected the whole Mediterranean between 1586 and 1591, and this crisis opened up the Mediterranean to the northern ships. Even in a normal year life was never very comfortable or luxurious. Think of the Tuscans who at the end of the sixteenth century, with all their ploughed lands, vineyards, and mulberry trees, 'con tutto ciò non raccolgono vettevaglie per un terzo dell'anno'![72] Or think of the sentence in Guzmán's story, 'it was a lean year because of the drought. Seville suffered greatly from it, for the city is sorely strained even in prosperous years. . . .'

A double constraint has always been at the heart of Mediterranean history: poverty and uncertainty of the morrow. This is perhaps the cause of the carefulness, frugality, and industry of the people, the motives that have been behind certain, almost instinctive, forms of imperialism, which are sometimes nothing more than the search for daily bread. To compensate for its weaknesses, the Mediterranean has had to act, to look

[69] *CODOIN*, XXVII, p. 191–192.
[70] *Ibid.*, p. 194–195.
[71] Andrea Navagero, *Il viaggio fatto in Spagna . . .*, Venice, 1563, p. 27–28.
[72] G. Botero, *op. cit.*, I, 1, p. 40; Marco Foscari, *Relazioni di Firenze*, 1527; E. Albèri, *op. cit.*, II, I, p. 25.

further afield and take tribute from distant lands, associating itself with their economies: in so doing it has considerably enriched its own history.

2. THE SEASONS

The sea's climate, with its two clearly defined seasons, regulates Mediterranean life into two phases, year in, year out, sending the Mediterranean people by turns to their summer then to their winter quarters. The countless records we have of the quality and nature of the weather can be classified without reference to the year: only the months matter here, and almost invariably we find the same story. The 'gates of the year' open and shut at the appointed time. Gates of the year: this is the name by which solstices and equinoxes are known in Kabylia. 'Every time a new season arrives for men, bringing its chances with it: barley bread or famine.'[73]

The winter standstill. Winter begins early and finishes late: its arrival is dreaded and its departure viewed with disbelief. It is expected ahead of the calendar, as wisdom counsels: 9th September, 'essando hormai il fine dell' estate', says a Venetian Senate document; then on 20th September: 'venendo hora il tempo del inverno'; 23rd September: 'approximandose el tempo del inverno'.[74] What lies behind such concern? In this case a desire not to be surprised by winter, to lay up in good time the *galee grosse*, the *navi* and the light galleys, and to dismiss all unnecessary troops. Now was the time when everyone looked to his personal health, which might be affected during the slightest indisposition by the 'malignità de la stagione'. The roll begins of disasters, trials, restrictions, and abandoned activities, for this was the 'stagione horrida', hard on men and things alike: the season of continual rain, 'di e note', floods sparing neither countryside nor town, heavy falls of snow, storms, tempests at sea, and the cold, cruel to all and particularly to the poor, 'incommodo omnium et maxime pauperum'.[75] The hospitals would be filled with poor folk. And one never knew what might happen, even when the trees were in blossom again, or the plains around Montpellier were blue with wild hyacinths.[76] On 15th April, 1594, at Bologna, five days after Easter, 'there fell heavy snow, after the beginning of a fine spring, with all the trees in bloom. God protect us!'[77] On 23rd May, 1633, at Florence, after rain on the 21st, it suddenly grew so cold that fires had to be lit, 'come per li gran freddi di gennaio', and the mountains were covered in snow.[78]

Most affected by this enforced retirement was country life.[79] The peasant

[73] Jean Servier, *Les Portes de l'année*, 1962, p. 13.
[74] A.d.S. Venice, Senato Mar 18, f° 45 v°; 23, f° 97; 31, f° 126.
[75] *Ibid.*, 4, f° 26, 12th December 1460.
[76] *Félix et Thomas Platter à Montpellier*, p. 33, January, 1593.
[77] Galiani, *Cronaca di Bologna*, Marciana, 6114, CIII, 5.
[78] Giovanni Baldinucci, *Quaderno di ricordi*, Marciana, VI–XCIV.
[79] '. . . winter was always the most feared season when one had to survive as best one could', M. Le Lannou, *op. cit.*, p. 52.

perforce must rest, said Aristophanes, while Zeus waters the earth.[80] During clear spells he sows barley (unless he has already done so in October), wheat in December, and at the beginning of spring, maize. In the sixteenth century maize had only just been introduced from America. And these are light duties, which do not call for the mass labour of summer, or the help of one's neighbours, work *por favor*, as they say in Portugal. Even if one adds sowing vegetables and a little ploughing, winter is still a time of leisure and festivities. In Christian countries there is the killing of the pig in December, mentioned in Boccaccio's tales.[81] In January in the mountains of Kabylia, at the winter solstice the feast of the *Ennayer* is celebrated, marking the separation of the sun's cycles, when copious meals lasting long into the night use up precious reserves. This extravagant feasting is to propitiate the coming year.[82]

Cut off by snow, most of the mountain ranges are abandoned for the lowlands by flocks and shepherds. The mountain dwellers who stay at home will have sold at the autumn fairs the young animals they can no longer feed. This is still so today on the borders of the Pyrenees[83] and it was no doubt for the same reason that calves and lambs were being sold cheaply at the Baths of Lucca, when Montaigne passed through in 1581.[84] The mountains deserted by the shepherds were usually avoided by the traveller. In the snowy highlands one might risk losing life and possessions: 'Sire,' writes the French ambassador from Constantinople, 12th February, 1578,[85] 'the snows here have been so continuous and so heavy for fifty days that they have held me besieged and kept me from leaving last week as I had resolved.' Gédoyn 'the Turk', French consul at Aleppo in 1624 describes the hazards of his journey through the Balkan mountains in winter: he narrowly avoided freezing to death or falling prey to bears and wolves.[86] In the Moroccan Atlas, explains Leo Africanus, the merchants bringing dates from the South after October are often caught in extraordinary blizzards of mountain snow. No one escapes them. Even the trees are buried under a great snowy shroud.[87]

Winter journeys were difficult in the lowlands too; with the constant rain, the rivers might overflow their banks, carrying away the bridges 'to such a degree', related Bandello at the beginning of one of his tales, 'that our Mantuans who have estates on that side of the Po cannot make use of the supplies or goods of their lands'.[88] In October, 1595, the river rose so high that 'the Ferrarans up in arms were preparing to open a breach in the

[80] See the classic passage in Taine, *La philosophie de l'Art*, 20th ed., II, p. 121.
[81] 8th Day, *Novella VI.*
[82] Jean Servier, *op. cit.*, p. 287, ff.
[83] P. Arqué, *Géographie des Pyrénées françaises*, p. 43.
[84] *Voyage en Italie*, p. 227–237.
[85] E. Charrière, *Négociations de la France dans le Levant*, III, p. 713.
[86] *Le Journal et les lettres de Gédoyn 'le Turc'*, published by Boppe, Paris, 1909, p. 37–38 '. . . and left me alone in the wood full of bears, wolves and other wild beasts, as their footprints freshly made in the snow clearly showed'.
[87] *Description de l'Afrique, tierce partie du monde*, p. 33–34.
[88] *Op. cit.*, I, XVI, p. 360.

dykes on our side', writes a Venetian.[89] Another time it was the Tiber that overflowed. In 1598 it carried away half the 'Aemilius' bridge, which had already been repaired in 1575.[90] In 1594 it was the Arno. That year in Tuscany once again the waterways were all frozen over and the fruit trees damaged by frost.[91] During some particularly cold winters the canals froze in Venice.[92] At best, sixteenth-century travellers would have to face waterlogged roads full of potholes, impassable during the continuous snow and rain, such as the Spanish roads in February, 1581,[93] for example, or those of the Balkans in December, 1592,[94] or more recently, roads 'so muddy that it is difficult to discern the colour of the traveller's clothes'.[95]

Shipping at a halt. The sea also becomes hostile in the winter, so much so that in the past it brought shipping to a standstill. In Roman times ships were laid up by order between October and April, a step counselled by the prudence of the navigators.[96] From the sea voyages of the Apostle Paul, we learn that the *Boniportus* of Crete was not suitable *ad hiemandum*,[97] and that the Alexandrian ship that was to carry Paul had wintered at Malta.[98] Centuries later similar stipulations are found in the maritime codes of medieval towns, in the *Constitutum Usus* of Pisa of 1160,[99] when inactivity was compulsory between St. Andrew's Day and the Kalends of March ('tempore hyemali post festum Sancti Andreae . . . ante kalendas Martii'), in the maritime statute of 1284 at Venice,[100] in the maritime statue of Ancona of 1387.[101] Legislators maintained for centuries the precautions and prohibitions dictated by experience. Until the end of the eighteenth century sailors of the Levant put to sea only between the feasts of St. George (5th May) and St. Dmitri (26th October).[102]

But after 1450, shipping gradually began to triumph over the obstacles

[89] Museo Correr, Dona delle Rose, 23, f° 449 v°.
[90] Stendhal, *Promenades . . .*, ed. Le Divan, 1932, II, p. 258.
[91] G. Mecatti, *Storia cronologica . . .* II, p. 790.
[92] G. de Silva to Philip II, Venice, 2nd January, 1573, Simancas E° 1332; the Bosporus apparently froze over during the reign of Constantine V (Copronymus), 718–775, G. Botero, *op. cit.*, p. 105.
[93] Mario to the Cardinal of Como, Elvas, 19th Feb., 1581, A. Vaticanes, Spagnia 26, orig. f° 124.
[94] Ragusa Archives, *Lettere di Levante*, 38, f° 27 v°.
[95] A. Boué, *La Turquie d'Europe*, 1840, IV, p. 460.
[96] J. M. Pardessus, *Collection de lois maritimes*, I, p. 73, 179, for reference to Pliny's *Natural History*, II, 47; Robert de Smet, *Les assurances maritimes*, 1934, p. VI; A. Schaube, *Handelsgeschichte . . .*, 1906, p. 152–154; Walter Ashburner, *The Rhodian Sea Law*, Oxford, 1909, CXLVIII, E. de Saint-Denis, 'Mare clausum' in *R.E.L.*, 1947.
[97] *Acts of the Apostles*, XXVII, 12. [98] *Ibid.*, XXVII, 13.
[99] J. M. Pardessus, *Collection de lois maritimes*, IV, p. 1837, p. 578.
[100] *Ibid.*, VI, p. 46. [101] *Ibid.*, V, p. 179.
[102] Jean Chardin, *Journal du Voyage en Perse*, 1686, I, p. 110 ff. Victor Bérard, *Les Navigations d'Ulysse*, II, *Pénélope et les Barons des Iles*, 1930, notes p. 33, n. 1: 'It is curious that the Moslems should have adopted for the payment of leases, rents, etc. those dates which had been in use by the Christians under the Greek Empire, i.e., St. George's Day, 5th May, and St. Demetrius' Day, 26th October.' A. Boué, *op. cit.*, III, p. 120.

of winter weather. Even so these were only partial victories still involving great risk. Spectacular wrecks occurred every year to remind men of winter's powers. So much so that Venice in 1569 brought back the old prohibitions in a milder form it is true, since now they forbade sea voyages only between 15th November and 20th January, 'su'l cuor dell' invernata'.[103] It was clearly impossible to turn the clock back in such matters. The new laws were so little observed that the Signoria had to repeat them in 1598.[104] All the same, the measure is symptomatic, indicating the yearly toll that winter took of shipping even at this period. On 1st December, 1521, a 'Greek' wind sank many ships in the Adriatic, one laden with grain in the very port of Ragusa;[105] on 11th November, 1538, a single storm drove thirty-eight of Barbarossa's galleys on to the coast, where they were broken up by the raging seas, the survivors were killed and the cargoes looted by the Albanians;[106] on 9th November, 1544, seven Ragusan ships fell victim to a storm; in January, 1545,[107] the *greco tramontana* sank fifty vessels in the Adriatic, including three Venetian ships on their way to Syria with over 100,000 ducats on board;[108] on 29th December, 1570, during the 'greatest misfortune' of the Adriatic, two ships laden with grain sank right inside Ragusa harbour.[109] There are countless similar episodes, for example, the entire fleet of Spanish galleys lost in the bay of La Herradura in October, 1562; a hundred ships and twelve galleys driven on to the coast by the raging sea before Constantinople in October, 1575![110]

Anyone sailing in winter knew he was at the mercy of the elements, had to be on the alert, and could expect to see hoisted on bad nights the storm lamps, the 'fanales de borrasca' mentioned by Guzmán de Alfarache.[111] The voyages, being longer and more eventful than in summer, became less frequent during the stormy season. Even in the early nineteenth century, there were fewer departures from Venice and Odessa after October.[112] They were rarer still in the sixteenth century.

On clear days small boats might venture out over short distances, of course, on voyages lasting a few hours. Bigger ships, offering greater resistance to the winter, could accomplish even in bad weather voyages that were the more profitable because of the season. But there was clearly an overall reduction in shipping. As for the galleys, they remained completely inactive in port, under the *volte* of the arsenals, well-sheltered and drawn up out of the water, while the oarsmen languished with little work to do. Marcel Mauss, who studied the effect of winter on religious and social life (among Eskimos, it is true), would have been amused by a

[103] J. M. Pardessus, *op. cit.*, V, p. 71–72, law of 8th June, 1569.
[104] *Ibid.*, V, p. 81, law of 18th June, 1598.
[105] S. Razzi, *La storia di Raugia*, p. 121.
[106] *Ibid.*, p. 141. [107] *Ibid.*, p. 156. [108] *Ibid.* [109] *Ibid.*, p. 169–170.
[110] Dispatch from Constantinople, 17th, 18th, and 20th October, 1575, Simancas E° 1334.
[111] M. Aleman, *op. cit.*, II, Part 2, IX, p. 219.
[112] Comte de Rochechouart, *Mémoires*, *op. cit.*, p. 75, 103.

passage from Chateaubriand's *Itinéraire*. According to him, the French Capuchin friars 'have their principal residence at Napoli [the Rumanian town in Morea] because the galleys of the beys spend the winter there . . . ordinarily from the month of November until the feast of Saint George, which is the day when they put out to sea again: they are full of Christian prisoners who need to be instructed and encouraged, and this task is undertaken with as much zeal as profit by Father Barnabas of Paris, who

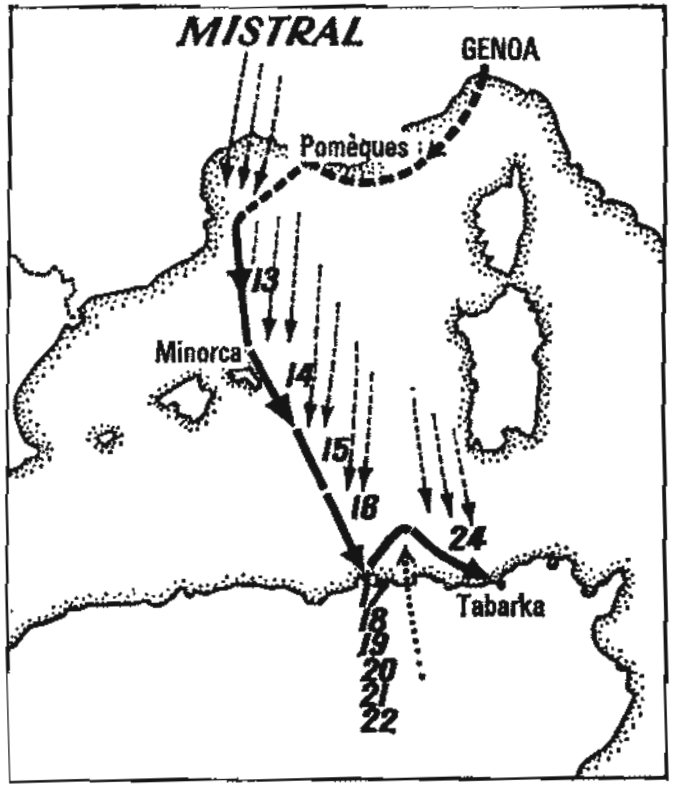


Fig. 20: *A voyage to Spain that ended up at Tabarka, January, 1597*

Cesare Giustiniano embarked at Genoa on a galley belonging to the Republic. He put in at Pomègues, a little island opposite Marseilles and had crossed the Gulf of Lions when the *mistral* surprised his ship near Cape Creus. Instead of reaching Spain, where he was to represent the Republic as ambassador to Philip II (that is just after the financial crisis of 1596, which had so severely affected Genoese businessmen), he was driven due south by the storm. The galley came to shore at a deserted bay on the African coast, between Djidjelli and Collo and stayed there for six days without harm. It was impossible to return to the northern route, and the ship was obliged to make for the Genoese island of Tabarka. The galley was damaged, and it was on board a merchantman that Cesare Giustiniano sailed first to Sardinia, and finally to Spain. From the correspondence of Cesare Giustiniano, A.d.S. Genoa, Lettere Principi.

is at present Superior of the House of Athens and Morea'.[113] This was in 1806, when galleys had practically disappeared in the West, but for those that survived at Malta and in the East, geographical determinism continued to exert just as much influence as it had in the time of Sulaimān the Magnificent.

In the sixteenth century the armadas, *fuste*, or galleys of the corsairs, were also obliged to put into port for the winter. In one month of December (possibly in the year 1580) 'all the corsairs', according to Haëdo, 'wintered off Algiers or had their boats laid up in the port'.[114] Similarly, in December, 1579, again from Haëdo's account, the Re'Is Mami Arnaut took up winter quarters 'en el rio de Bona',[115] on the river at Bône, in the Seybouse estuary.

As for the naval squadrons, the Spanish government was only too eager to use them in the off-season, when it could be sure that the Turkish armadas would be in port. The corsairs did the same, whenever they thought it worth the risk; the perils of the seas were after all no more formidable than an encounter with a large armada in summer. But the sailors in the service of Spain were continually protesting against these winter voyages. 'My zeal in the service of Your Majesty obliges me to say,' the Prince of Melfi wrote in August, 1561, 'that to have the galleys sail in winter is to risk losing them, in particular along the Spanish coastline, which has so few ports. Even if the ships escape, the gangs will be lost . . . and will be in no condition to serve at the proper time [next season].' He was then Philip II's naval commander, and was taking his precautions.[116]

Galley warfare was indeed impossible during winter, a fact that the professionals had to keep explaining to their political masters who remained deaf to their advice. Don Garcia of Toledo, who was also 'general de la mar' to Philip II explained his reasons for not sending his fleet against the Corsican uprising in 1564 as Genoa had requested. 'It is a fact, clearly established,' he wrote[117] to the Spanish ambassador at Genoa, Figueroa, 'that all sea expeditions during winter are a complete waste of money. . . . We shall squander money without the least return as has already happened on many occasions and will happen again until the end of time if anything is undertaken at this time of year.' In addition (the troops on board had come from the engagement of the Peñon de Velez and were tired), there was a risk of compromising the spring operations for the sake of chasing after a shadow, or as he put it 'of catching the pigeon by the tail when we might catch it by the head'. Even if this was to be a mere display of force it would be dangerous. Crossing the channel of Piombino 'is a terribly long, uncertain and perilous undertaking'.

[113] *Itinéraire . . .*, p. 157.
[114] P. Diego de Haëdo, *Topographia . . .*, Valladolid, 1612, p. 174.
[115] *Ibid.*, p. 124.
[116] Simancas E° 1051, f° 131.
[117] Simancas E° 1054, f° 20 a similar case, this time concerning a voyage to La Goletta, viceroy of Naples to H.M., Naples, 24th January, 1562, Simancas E° 1052, f° 12.

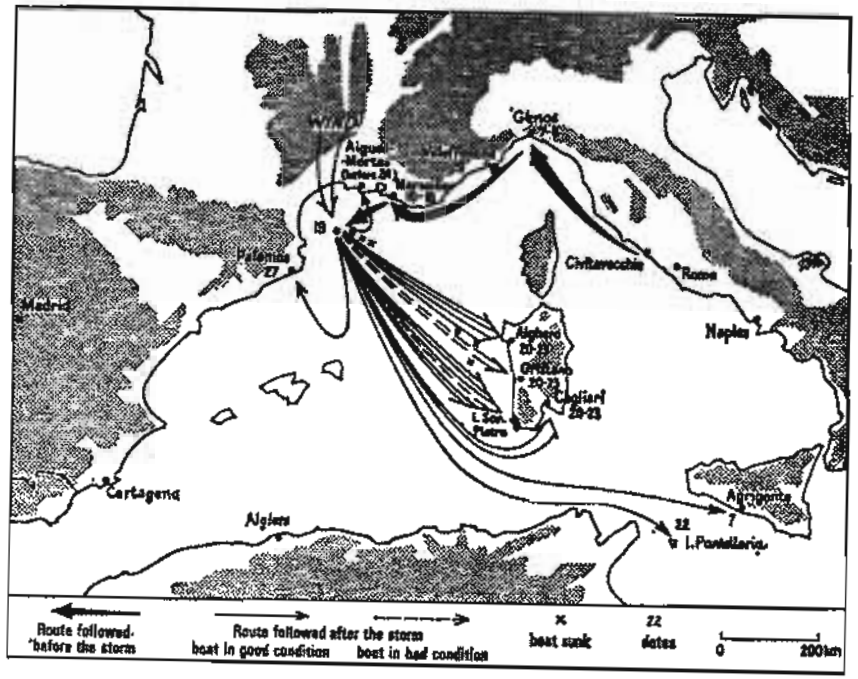


Fig. 21: *Effects of the mistral, 19th April, 1569, and days following*

The squadron of galleys of the Grand Commander of Castile, Don Luis de Requesens, was making for the coast of Spain. Its intention was to reach the shore of the kingdom of Granada, whose frontier lay southwest of Cartagena, and where the Moriscos had risen on Christmas night of the previous year. The galleys were to intercept the Barbary raids that provided the insurgents with men and arms. The *mistral* surprised the squadron in the Gulf of Lions and drove most of the galleys towards the coast of Sardinia. Note the voyage made against the wind by one galley which reached Aigues-mortes; the arrival on 27th of Don Luis de Requesens' galley at Palamos, where he was preceded by soldiers who had left the squadron at Marseilles and were on their way to Spain on foot; the two courses that led one galley to Pantelleria and the other to Agrigento, where she arrived on 7th May. This map is based on the many documents that I have examined and summarized at Simancas, from which J. Gentil da Silva and Jacques Bertin have drawn up the geographical projection reproduced here. It would also have been possible to provide a map of the discovery and communication of the event. In fact, Genoa seems to have been Spain's chief source of information about the accident.

Galleys that failed to observe the rule were courting disaster. They lay too low in the water to resist the heavy swell and winter storms.[118] It is easy to guess why Charles V tried to take Algiers by surprise in October, 1541. But he fell a victim to the season he had chosen, the time of year 'which the Moors call *Cassem*, which means section and marks the passage

[118] P. Dan, *Histoire de Barbarie*, 1637, 2nd edition, p. 307. Victor Bérard, *op. cit.*, p. 34, n. 1.

from the fair season to the foul'.[119] In January, 1554, the French galleys, under Piero Strozzi, left Marseilles for the Roman shore, accompanied by small boats carrying grain. A squall sank several of these boats and one of the galleys; the others were scattered and returned to Marseilles without oars or sails.[120] We shall have more to say about the Herradura disaster in the open bay near Málaga where the Spanish fleet was swallowed up in October, 1562. The Málaga corridor, exposed to the east winds, was terribly dangerous throughout the winter, more so possibly than the Gulf of Lions. Dangerous in winter, and even in spring, for in April 1570, two galleys were driven aground at Málaga, and three others driven out to sea.[121] Wrecks are recorded in 1566.[122] The following year, in February, 27 ships and barques, almost all from Flanders and carrying arms and salt meats, sank off Málaga.[123] And the Gulf of Lions lived up to its reputation: in April, 1569, the gale that scattered the twenty-five galleys of the Grand Commander of Castile, sailing towards the coast of Granada, and could well have brought total disaster, was so powerful that some of the galleys were driven on to the Sardinian coast while one, that of Ambrosio Negron, did not touch land before Pantelleria.[124] In bad weather, in short, it was best to stay in port, or like Carlo Doria in January, 1603, one might be forced to return to port. He tried in vain to leave the 'beach' of Barcelona, on to which he was several times driven back, with broken masts and yards, and having lost 300 oarsmen.[125]

Winter: season of peace and plans. Bad weather thus forced a truce in the great maritime wars. There was an equally regular truce on land, for campaigning was impossible 'with winter on one's back'.[126] Hostilities might not officially come to a halt, but they clearly lost much of their impetus. This was so of the dramatic Persian War from 1578 to 1590, and of any war in the Mediterranean or para-Mediterranean regions. 'The approach of the day of Kasim (St. Demetrius' day, 26th October) ordinarily marks the end of the Turkish campaigns on land and sea,' notes Hammer in his invaluable book on the Ottoman Empire.[127] For war had to live off the land. It had to bide its time – and this was the crucial factor – until the harvest was either over or about to start. Still in Turkish territory, the

[119] Paul Achard, *La vie extraordinaire des frères Barberousse*, 1939, p. 231.
[120] C^te M^te to the king, Rome, 8th January, 1554, *Corpo Diplomatico Portuguez*. VII, 298–299.
[121] Fourquevaux to Charles IX, Córdoba, April, 1570, C. Douais, *op. cit.*, II, p. 214
[122] C. Duro, *La Armada española desde la unión de Castilla y Aragón*, 1895–1903, II, p. 104. Is this perhaps an error for 1567?
[123] Pedro Verdugo to Philip II, Málaga 19th March, 1567, Simancas E° 149, f° 277–278.
[124] Franc° de Eraso to Philip II, 16th May, 1564, Simancas E° 1446, f° 131.
[125] Contarini to the Doge, Valladolid, 11th January, 1603, A.d.S. Venice.
[126] *Mémoires de Guillaume et Martin Du Bellay*, published by V. L. Bourrilly and F. Vindry for the 'Société de l'Histoire de France', vol I, 1908, p. 39.
[127] *Histoire de l'Empire Ottoman*, vol. V^II, p. 268–9, (the date 30th November is given in error).

historian Zinkeisen writes apropos of the siege of Belgrade by the Turks in 1456, 'During the month of June, just as the wheat was beginning to ripen, the Ottoman army set out to besiege Belgrade.'[128] The calendar was commander-in-chief.

In short, the 'winter semester' was a calm and peaceful period. National wars were halted, and so were minor wars, except for a few sudden alarms, for, both on land and sea, bad weather made surprise attacks particularly worthwhile. It was during the winter that Protestant bands came up close to the frontier of Roussillon in 1562; in September 1540, that corsairs from Algiers tried to take Gibraltar by surprise, with the result that their retreat was harassed by the *mistral*; it was often at the end of winter that the *ponentini* with galleons or reinforced galleys went privateering on the stormy seas of the Levant.

During the months when there was 'nothing to report', only tongues and pens were busy. On 20th March, 1589, the Spanish consul at Venice, Juan de Cornoça, wrote: 'We have no news of the Turk, winter has closed the roads . . . we have never been so short of information before'[129] – real information, that is, for there was nothing to stop rumours and false reports. Winter, by slowing down or preventing voyages, became the season *par excellence* of false reports and the time too when boasts could be made with impunity. 'Now that it is winter,' the nuncio wrote of the Imperials, 'they let the French brag as they are wont to do. . . .'[130]

For the governments themselves it was a time for making plans and holding great councils. Staff work increased out of all proportion. Winter was the time of bulging files. One might almost call them winter files, to be used with caution by historians. For there was all the time in the world to discuss, predict, and finally to draw up plans in black and white. 'This is what we should do if such and such happens; but if the Turk or the king of France . . .' and so on and so on, filling pages and pages. These grandiose schemes and brilliant plans which historians analyse with so much respect and conviction were often dreamed up by the side of a blazing log fire or brazier, in a cosy room, while outside, in Madrid (or wherever it was) the *cierzo*, the snowy wind from the mountains, was howling. Nothing seemed too difficult or dangerous. Plans to blockade the Netherlands, to deprive them of salt, to buy up all the Hanseatic grain they lived on, to close the Spanish ports to them, were all winter plans. In 1565–1566, after the great failure of the Turks at Malta, the feeling of insecurity that persisted into the early autumn led to a suggestion that 12,000 men, both Italians and Spaniards, should be sent to La Goletta.[131] How would they be lodged in the tiny *presidio*, even with the enlargements made in the 1560s? Well, they would be lodged under the walls, on the Cape Bon side, which on the map looked a reasonable suggestion. It was all arranged, and as so often, never put into execution. Summer, from this point of view, was not necessarily a more reasonable but it was a more realistic time of year; to be more accurate, in summer events took their own course without always responding to the control of governments.

[128] *Op. cit.*, II, p. 81–82. [129] A. N., K. 1674, orig.
[130] Innsbruck, 8th January, 1552, *Nuntiaturberichte aus Deutschland*, I, XII, p. 140.
[131] See Vol. II, Part III, ch. 2, section 3.

But there was one positive activity in winter, the only one: negotiations diplomatic talks, and pacific resolutions. From this point of view winter provided a salutary breathing-space. In any case, it is a fact that all the peace treaties studied in this book date from the winter months, that they were signed before the upheavals and irreparable events of summer. The Treaty of Cateau-Cambrésis was the result of discussions during the winter of 1558–1559, and was signed on 2nd and 3rd April, 1559. The Turko-Spanish truces were all in midwinter, that of 1581 was signed on 7th February, the peace of Vervins on 2nd May, 1598. The Twelve Years' Truce was signed at the Hague[132] on 9th April, 1609. Only the Anglo-Spanish peace treaty signed on 28th August, 1604,[133] is an exception to the rule. But this one was virtually a certainty from the time of Elizabeth's death in March, 1603, before the voyage to England by Don Juan de Tassis, Count of Villamediana (June, 1603). It is far from our intention to reduce the complex workings of diplomacy to the mere sequence of the seasons. But the date of these agreements has some importance. When do they occur? At the beginning of winter, there had hardly been time for discussion; at the very end of winter, there had been fierce debate; was it not fear and apprehension of the coming summer, with its enormous military expenses which made governments reasonable?

The hardships of winter. The Mediterranean winter, then, was a time of peace and rest. Pleasant enough indeed, one might suppose, remembering the traditional images: the January sunshine claimed in advertisements for the Côte d'Azur; or the flocks of migrating birds, alighting exhausted on the lands of the South to which they appeared as manna from heaven, especially in Egypt, whose fields Pierre Belon[134] saw 'quite white' with birds, in the days no doubt when one could pick up quails in the fields like fruit.

In fact, winter in the Mediterranean, as in Europe, is not so gentle. In the towns particularly it was a time of great hardship for the poor. On 6th November, 1572, Gian Andrea Doria wrote to Don John of Austria,[135] 'Your Highness must know that as there is no grain harvested on the territory of Genoa, and very little of any other kind of food, there is in consequence great poverty, not only in the mountains but in the city itself. It is so great that the poor find it difficult to survive, especially in winter when the need for clothing is added to the lack of bread, and there is no possibility of work.' 'So,' concludes the letter, 'it will be possible to collect at Genoa for next spring, voluntary prisoners for the manning of

[132] A. Ballasteros, *op. cit.*, IV, I, p. 200.
[133] *Ibid.*, p. 201.
[134] Belon, *op. cit.*, p. 101 v°, 'whose fields and meadows become white, principally with storks.'
[135] Simancas E° 1061, f° 133.

ten galleys.' A damaging document both for the Genoa of the bankers and for the Mediterranean winter.[136]

I would not go so far as to claim that the Mediterranean winter is bitterly cold. But it is less warm than is commonly supposed and often wet. Above all it is a stranger, arriving suddenly after six months of sunshine, and the inhabitants are always ill-prepared for its coming. Every year it is as if the cold airstreams take the sea by surprise. It is a fact that Mediterranean houses, built to an open design, with tiled instead of wooden floors, which may be more or less well heated, or indeed heatable, are not built for keeping out the cold; they only offer protection against the heat. Ferdinand of Aragon used to say that contrary to the generally held opinion, one should spend summer in Seville and winter at Burgos:[137] it might be colder there, but at least there was some protection. And many travellers shivering in the icy rooms of a house in Algiers or Barcelona must have thought they had never felt so cold as in the Mediterranean!

The accelerated rhythm of summer life. With the coming of the luxuriant spring, often wet, with 'impetuous' winds . . . 'which bring the trees out in bud',[138] the short-lived spring (almond and olive trees are in flower within a few days), life takes on a new rhythm. On the sea, in spite of the dangers, April is one of the most active months of the year. In the fields, the last ploughing is being done.[139] Then follows the rapid succession of harvests, reaping in June, figs in August, grapes in September, and olives in autumn. Ploughing begins again with the first autumn rains.[140] The peasants of Old Castile had to have their wheat sown towards mid-October, so that the young plants would have time to grow the three or four leaves that would help them withstand the winter frosts.[141] In the space of a few months some of the busiest pages of the farmer's calendar are turned. Every year he has to make haste, take advantage of the last rains of spring or the first of autumn, of the first fine days or the last. All agricultural life, the best part of Mediterranean life, is commanded by the need for haste. Over all looms fear of the winter: it is vital to fill cellars and granaries. Even in town houses, provisions are put by in a safe place,[142] wine, grain, and the essential firewood for heating and cooking. Before the approach of winter, towards September, in order to pay for the indispensable pastures and the year's expenses, the Spanish shepherds in Medinaceli and

[136] Winter created misery in Aragon, C. Douais, *op. cit.*, III, p. 36, 13th February, 1567.

[137] G. Botero, *op. cit.*, I, p. 10 '. . . che il Re Ferdinando diveca che d'estate bisognava dimorare in Siviglia come d'inverno a Burgos, che è fredessimi città ma con mirabili ripari contra il freddo . . .'.

[138] Leo Africanus, *op. cit.*, p. 37.

[139] Joan Nistor, *Handel und Wandel in der Moldau bis zum Ende des XVI. Jahrunderts*, 1912, p. 9.

[140] J. Sauvaget, *Alep. Essai sur les origines d'une grande ville syrienne, des origines au milieu du XIXe siècle*, 1941, p. 14.

[141] Jesus García Fernández, *Aspectos del paisaje agrario de Castilla la Vieja*, Valladolid, 1963, p. 25.

[142] M. Bandello, *op. cit.*, I, p. 279, and passim.

elsewhere would sell their fleeces in advance to the merchants. In May they would have to hasten to deliver them to their pressing creditors. But the half-million ducats advanced meant security for the winter.[143] The buried silos of the Arabs of the Oran region, and the 'trenches' of the Apulian and Sicilian peasants were another way of providing for the future.[144]

With summer's coming, war sprang to life in all its forms: land warfare, galley warfare, pirate attacks at sea, and brigand raids in the countryside.

The roads grew busy with traffic. On land the traveller's chief enemy was now the heat. But he could travel by night or in the early morning.[145] At sea the warm air from the Sahara brought fine weather, and, equally important, stable atmospheric conditions. In the Aegean Sea the Etesian winds blow regularly from north to south between May and October[146] until the early autumn storms.[147] Baron de Tott says that in June between Crete and Egypt, 'the winds which at that season are trade winds, from West and North, without ever raising the sea, enable the mariner to calculate the moment of his arrival in Egypt'.[148] These were the same winds that had already given Pierre Belon in 1550 a successful voyage from Rhodes to Alexandria. The length of the trip was predictable, and crossings throughout the summer months were relatively calm and reliable. The old Prince Doria used to say, 'In the Mediterranean, there are three ports: Cartagena, June, and July.'[149]

Shipping was more active in these calm summers since harvest time increased trading. The peak periods were at reaping, threshing, fruit picking, and the grape harvest. The appearance of the new wines was a great trading occasion. At Seville at least, *la vendeja* was a kind of wine fair set at a fixed date, 'from the 7th to the 19th October . . . the season known as *la vendeja*', wrote the Duke of Medina Sidonia in 1597.[150] It was for the wines of Andalusia as much as for salt, oil, and overseas goods that the northern boats came to Spain. Cervantes, in the *Coloquio de los Perros*,[151]

[143] R. Carande, *Carlos V y sus banqueros*, Madrid, 1943, p. 57 ff.

[144] Diego Suárez, MS. in B.N. Madrid, Ch. 34.

[145] A. Boué, *op. cit.*, IV, p. 460, Granvelle to Cardinal Riario, Madrid, 15th June, 1580, A. Vaticanes, Spagna, 17, f° 135.

[146] P. Vidal de la Blache, *op. cit.*, p. 428.

[147] G. Hartlaub, *op. cit.*, p. 20.

[148] *Memoirs* (English trans.), II, p. 224.

[149] P. Achard, (*op. cit.*, p. 204) wrongly quotes Mahon for Cartagena, G. Botero, *op. cit.*, p. 7. On the security of Cartagena harbour, *Inst. naut.*, no. 345, p. 95.

[150] The Duke of Medina Sidonia to Philip II, S. Lucar, 20th November, 1597, Simancas E° 178. On the importance of the wine trade at Seville, G. Botero, *op. cit.*, I, p. 10, '. . . che si dice che quando non entrano in Siviglia 4000 arrobe di vino a' di, bisogna che il Datio fallisca'.

[151] *Novelas ejemplares*, Madrid, 1914, II, p. 261. It is really incorrect to translate 'vendeja' by 'vendange' (grape-harvest): the word really means sale or market, as explained by Marcel Bataillon, 'Vendeja' in *Hispanic Review*, XXVII, no. 2, April, 1959. The confusion is understandable since the 'market' was essentially one of wines. A document from the beginning of the seventeenth century (B.N., Paris, Fr. 4826, f° 5) says explicitly '. . . the fleet of the wine-harvest (vendange) being about to leave France to go to the ports of Spain for the whole month of July.'

describes the tricks of a woman of easy virtue whose accomplice was an *alguazil* (of course). She specialized in exploiting 'Bretons' (i.e., Bretons, Englishmen, and northerners in general). With one of her friends she would go 'in search of foreigners, and when *la vendeja* came to Seville and Cadiz, their prey arrived too; no Breton escaped their clutches'.

Throughout the Mediterranean the grape harvest was an occasion for merrymaking and licence, a time of madness. At Naples the grape harvesters challenged anyone they met, man or woman, monk or priest. This led to various abuses. Pedro de Toledo, viceroy of Naples, champion of *onestità* and enemy of these pagan customs, even issued an edict against such troublesome habits.[152] We are not told whether the measure was successful. Is there any way of fighting the combination of summer and new wine, of preventing collective revelry, at the fig harvest in one place,[153] or the gathering of the mulberry leaves at another, the plain of Murcia, for instance?[154] At Ragusa, a prudent city and obliged to be so more than others, the wine harvest was a time of alarms and alerts for the authorities; there was greater supervision than usual of the guard and the walls; foreigners were searched for arms, particularly the Apulians in August, 1569; 'li pugliesi', say the Rectors, 'quali intendiamo essere molti nella città et scandalosi . . .'.[155]

Summer was also the season for good catches for the fishermen. Tunny in particular depends on seasonal variations. It was in summer that the *madragues*, the tunny nets, were set to work, and that the Duke of Medina Sidonia, who had the monopoly of the Andalusian *madragues* in the time of Philip II, had recruiters drum up the labour he needed. He levied them like a private army. It was at the turn of the season (just before and just after winter) that the fabled fisheries of the Bosporus took place.[156] It was at the end of winter, too, in April, 1543, that there arrived at Marseilles just before the fishing season boatloads of empty barrels sent from Fréjus ready for salt fish: 1800 on the 17th, in three boats; 200 on the 21st; 600 on the 26th; 1000 on 30th April.[157]

The summer epidemics. But the hot weather also caused fresh outbreaks of the endemic diseases that only temporarily subsided in winter. Baron de Tott notes that the plague 'begins its ravages in the spring and usually lasts until the beginning of winter'.[158] The same could be said of all the

[152] 'Vita di Pietro di Toledo' in *Archivio storico italiano*, IX, p. 22.
[153] In Kabylia, J. Leclercq, *De Mogador a Biskra*, 1881, p. 194.
[154] A. Morel Fatio, *Ambrosio de Salazar*, Toulouse, 1901, p. 16.
[155] Ragusa Archives, L. P. 2, f° 26 & v° 27, 30th August, 1569.
[156] G. Botero, *op. cit.*, p. 105, at the beginning of winter and the beginning of spring. *Description du Bosphore. . . .* Collection des Chroniques nationales, Buchon, vol. III, 1828.
[157] Archives of Bouches-du-Rhône, Admiralty of Marseilles, Register of landing certificates for merchandise. Unloading of vessels: B IX 14 (1543), f° LXV v° and LXVI, LXVII v°, LXIX, LXX.
[158] I, p. 23. On summer fevers, Fourquevaux to the queen, 20th July, 1566, Douais, *Dépêches . . .*, II, 7–8, (Fourquevaux was confined to bed, but no details are given);

Mediterranean epidemics, except exanthematous typhus, which was endemic in North Africa, but which regularly abated at the approach of summer. As usual the towns were the most threatened. Every summer Rome was a graveyard of fever. So the cardinals took refuge in their country houses, their *vigne*, which were not merely an ostentatious luxury, despite Scarron's opinion of them.[159] When the cardinal de Rambouillet, ambassador of the king of France, arrived in Rome in July, 1568, 'my lord cardinals of Ferrara and Vitelli' had left the city 'to escape the heat',[160] and so had many others. Sixtus V himself was later to concede to his health to the extent of passing every summer in his villa, which was not in fact very well situated, near Santa Maria Maggiore, in a hollow of the Esquiline,[161] or in the new pontifical palace that had been built on the Quirinal.[162] At the height of summer, even in recent times, Rome was 'the empty, the hot, the fever-discredited' city.[163]

Everywhere, in Rome, Avignon, Milan, and Seville, the rich, whether nobles or bourgeois, laity or clerics, abandoned the hot cities. Philip II, in the Escorial, sought not only solitude, but coolness and relief from the pitiless Castilian summer.[164] Who is better qualified to describe this summer migration of all men of means than Bandello, their table companion, entertainer, and chronicler? How sweet it is in the heat of summer to be in a garden at Milan, near the Porta Beatrice; to eat mellow fruits and drink 'un generoso e preziosissimo vino bianco'.[165] 'Last summer,' he relates, 'to escape the heat which is excessive in Milan, I went . . . with Lord Alessandro Bentivoglio and his wife, Lady Ippolyta Sforza, to their residence, on the other side of the Adda, to the Palace, as they call it, and I stayed there for three months.'[166] Another time, he was on the other side of Brescia, at San Gottardo, and had occasion after the meal to talk of the 'beffe che da le donne, o a le donne si fanno'.[167] Another time, the little society in which one of the novels is set picnics near Pinaruolo, in a meadow of sweet-smelling grasses, while cool and clear water runs nearby in the canal. Elsewhere the little court is held beneath some olive trees, but still near springs of running water. In just such a setting three hundred years earlier the tales of the Decameron had been told.

The Mediterranean climate and the East. The seasonal rhythm of the desert is the reverse of that of the Mediterranean. For there the slowing down or ceasing of activity occurs in summer rather than in winter. The overwhelming heat of summer brings everything to a standstill. After October–

G. Mecatti, *op. cit.*, II, p. 801 (in Hungary in 1595); N. Iorga, *Ospeti romeni, op. cit.*, p. 87, J. B. Tavernier, *op. cit.*, Persian Travels, p. 34, at Smyrna the plague 'usually reigns in the months of May, June, and July'.
[159] *Roman comique*, Part I, 1651, Part II, 1657; ed. Garnier, 1939, p. 64.
[160] B.N. Paris, Fr. 17, 989.
[161] L. von Pastor, *op. cit.*, X, p. 37. [162] *Ibid.*, p. 47.
[163] Rainer Maria Rilke, *Letters to a young poet*, trans. Snell, London, 1945, p. 25.
[164] Louis Bertrand, *Philippe II à l'Escorial*, 1929, p. 170.
[165] *Op. cit.*, VIII, p. 208. [166] *Op. cit.*, VIII, p. 175. [167] *Ibid.*, VIII, p. 165.

November, after the date harvest life and commerce start afresh.

Tavernier, it is true, tells us that caravans arrived at Smyrna in February, June, and October,[168] but Smyrna and Asia Minor are outside the true desert zone. As for the camels that arrived in Egypt in September–October,[169] had they come very far? It was in April, May, and June that the great caravans reached Cairo.[170] De Sercey (a witness from the nineteenth century) claims that it is impossible to cross the desert between Baghdad and Aleppo during the summer. Towards 1640 the caravan traffic from Hormuz operated from the 1st December until March.[171] South of Oran the November caravans are still in the twentieth century the most important,[172] and this renewed activity is reminiscent of the Mediterranean in the month of April.

So the desert begins to wake up just as everything is going into hibernation further north and west. The flocks that left the steppe in summer return to the renewed pastures and, like the caravans, take to the desert roads again. The time of uncertainty is over, life becomes easier, more prosperous, and more industrious at the same time. The archaeologist Sachau was astonished to see people at work at Kut al 'Amara, in winter, repairing the canals and growing vegetables.[173] In fact this was perfectly normal, the accustomed rhythm of life on the steppes.

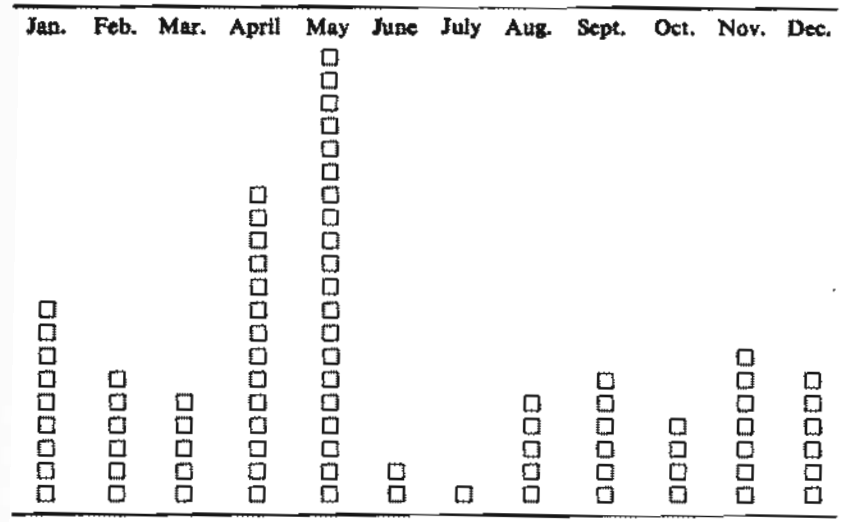
Seasonal rhythms and statistics. We should look a little more closely at these great problems which have for the most part escaped the attention of historians. Can we use statistics? They are very incomplete and inadequate for the sixteenth century, but it is worth looking at them.

I have already shown from the Marseilles registers of 1543 that the consignments of empty kegs 'for salt fish' from Fréjus marked the importance of the month of April, just before the fishing season.

There follows a record of marine insurance policies taken out at Ragusa for the year 1560.[174] This record reveals the importance of the months of April and May. Boats were insured – as of course one would expect – just before the long voyages began.

[168] *Op. cit.*, I, p. 73: Paul Masson, *Le commerce français du Levant au XVIIe siècle*, p. 419.
[169] Belon, *op. cit.*, p. 136.
[170] João de Barros, *Da Asia*, I, libr. III, Ch. III and VIII.
[171] According to La Boullaye Le Gouz, quoted by P. Masson, *op. cit.*, p. 373.
[172] Isabelle Eberhardt, *Notes de route*, 1921, p. 7.
[173] Sachau, *op. cit.*, p. 74–77.
[174] Ragusa Archives, Diversa di Cancellaria 145, f^os 165, 165 v°, 172–173, 174 v°, 175, 176, 176 v°, 177, 177 v°, 180, 180 v°, 188 to 192 v°, 196 to 197, 201 v° to 203; 146, f° 6 v°, 7, 12, 12 v°, 13, 13 v°, 14 v°, 17 v°, 24, 33 v°, 40, 40 v°, 43, 43 v°, 46 v°, 47, 47 v°, 48 to 49 v°, 50 v°, 104 v° to 107, 133 v°, 134, 145 v° to 148, 150 to 153, 155 to 161 v°, 164 to 165, 167 to 168, 170 v° to 171 v°, 174, 182 to 183, 193 to 194, 198 v° to 203, 208 to 209, 211 v° to 213, 215 v° to 218, 226 to 229. Insurances are not written up separately as the reference numbers show, but mixed up with other documents. They are not found as a separate item until the first register of the series *Noli e securtà*, beginning in January, 1563.

Number of Marine insurance policies at Ragusa in 1560



Recorded by month □ = one policy (from Ragusa Archives).

The records of the *portate* of Leghorn[175] give details of the cargoes landed at the port with the name of the boat and her port of origin. These files enable us to locate the arrivals of silk between July and October; the arrivals of pepper from Alexandria between January and July or August; and cheeses from Sardinia after October. These are small seasonal movements that would all repay study. The Leghorn calendar is not absolutely identical with that of other ports, not even with that of Genoa, its nearest neighbour.[176]

But I do not think it is possible to use these documents to establish definite economic variations according to the season. The Leghorn statistics do not offer such a simple answer because they are sixteenth-century statistics, incomplete and with no standardization of measures. It is impossible, for example, to calculate the gross tonnage of goods unloaded there in any single month, which would be the most valuable information they could give. The *portate* of Leghorn record the arrival of boats of very different capacities: barques, gondolas, *galionetti*, *scafi*,

[175] The *portate* of Leghorn, to which I shall make frequent references essentially compose the registers Mediceo 2079 and 2080 in the A.d.S. Florence. F. Braudel and R. Romano, *Navires et marchandises à l'entrée du port de Livourne*, Paris, 1951, *passim*.
[176] The research in progress on the traffic entering the port of Genoa, by Giovanni Rebora and Danilo Presotto, will no doubt when complete give information on the seasonal variation in shipping movements.

leuti, feluccas, saëtes, *navicelloni*, *caramusali*, tartans, galleons, and *navi*,* the last two categories (galleons and *navi*) being the largest cargo ships in the series. Simply to count every ship named as a single unit would lead to very unrealistic figures: one might as well add up kilos and tons. To classify them by category would not mean very much either, except for *navi* and galleons, and that is what we shall try to do here. If this method is adopted, the following figures will be obtained:

Arrivals at Leghorn in 1578, 1581, 1582, 1583, 1584, and 1585

Year	Ships of every description † arriving between 1st April and 30th September (summer semester)	Ships of every description † arriving between 1st October and 31st March (winter semester)	Total
1578	171	126	297
1581	84	107	191 *
1582	199	177	376
1583	171	171	342
1584	286	182	468
1585	147	160	307
TOTAL	1058	923	1981

* Not 181 which appears in error in F. Braudel and R. Romano, *op. cit.*, appendix table 1.
† Excluding galleys.

Monthly record of the shipping traffic at Leghorn for the same dates*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1578	27	40	40	49	24	27	30	26	15	6	7	6
1581	13	4	5	9	7	15	20	23	10	29	27	29
1582	27	27	33	38	29	44	52	19	17	17	37	36
1583	22	18	21	37	22	28	27	33	24	39	38	33
1584	57	36	31	36	46	55	46	72	31	21	30	7
1585	34	27	17	20	33	17	25	28	23	18	37	28
TOTAL	180	152	147	189	161	186	200	201	120	130	176	139

* Excluding galleys.

These figures are clearly incomplete and imperfect. It is not easy to work from the information they provide. According to the monthly statistics three months appear to have been more active than the others: April, at the end of winter, the time for necessary stock clearance; July and August, after the grain harvest. The two least active months were September

* The word *nave* (Italian, plural *navi*) was used in ship lists of the sixteenth century for any roundship over about 100 tons (F. C. Lane, *Venetian Ships and Shipbuilders*, p. 254). (Translator's note.)

Navi *and galleons entering Leghorn for the same dates*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1578	9	7	3	3	4	2	1	3	—	4	3	4	43
1581	11	4	3	4	6	3	—	4	2	8	4	3	52
1582	5	1	4	6	—	3	1	1	4	2	4	6	37
1583	—	2	5	1	1	3	—	3	—	2	1	3	21
1584	8	2	6	3	6	2	2	1	2	5	2	2	41
1585	1	7	9	2	—	2	3	—	—	2	2	3	31
Total by month	34	23	30	19	17	15	7	12	8	23	16	21	
Total of other ships	146	129	117	170	144	171	193	189	112	107	160	118	

and October. On our table, April totals 189 arrivals; July, 200; August 201, but September 120; October 130; there is a perceptible drop.

The records of *navi* and galleons refer to large cargo ships and long distance voyages. The activity of these ships is to be distinguished from that of boats of smaller tonnage. The latter worked in April, July, and August, the *navi* and galleons reached their lowest figures in July and their highest in January: 34; March: 30; February and October: 23. The massive arrival of northern ships was to accentuate this discrepancy in the Leghorn shipping.[177] Over short distances grain could be carried in small boats in July and August, as the *portate* indicate, while the long-distance voyages were undertaken by the big ships, in which all merchandise from far countries was carried.

In the western part of the sea, to which the Leghorn statistics refer, and probably throughout the whole Mediterranean, the obstacle of winter had been partly overcome, both over long and short distances. The time was past when a law of Rhodes forbade all marine insurance during winter, on the assumption that there were not, nor should there be, any winter voyages. The arrival of the northern 'cog' in the fifteenth century seems to have marked the beginning of the Mediterranean victory over bad weather. The Venetian galleys already risked putting out in the winter season, and the development was pursued throughout the sixteenth century, so that Tavernier could write in the seventeenth century, 'there is no Sailing at all times upon the *Indian* as upon the *European* seas'.[178] In the sixteenth century only the galley and its derivatives were unable to put out to sea in very bad weather. For other ships, especially the great roundships used by merchants, the risk was still substantial but was no longer enough to prevent them from leaving. And technical progress was reducing the risk every day. The time was drawing near when the galley

[177] J. B. Tavernier, *op. cit.*, Persian Travels, p. 2, 'The *English* or *Holland* fleets, that usually arrive at *Lighorn* either in the Spring or in Autumn.'
[178] J. B. Tavernier, *The Six Voyages*, Travels to India, p. 15.

itself would disappear, giving way to the ship of the line that could both sail and fight in bad weather. The Tripolitanian corsairs from the sixteenth century on, used roundships for winter privateering and only fitted out their galleys in summer.[179]

About these difficult problems the Leghorn *portate* can tell us little. Moreover they relate only to arrivals in the port. A good half of the shipping traffic, the departures, remains unrecorded.

We shall hardly fare better with records of the voyages made by German pilgrims from Venice to the Holy Land between 1507 and 1608, a total of about thirty trips, described in the valuable and erudite collection of records by Röhricht.[180] But these are voyages which are at least comparable with each other, and they provide examples from the whole of the century.

The pilgrims would set off in June or July, in the middle of the fine season. Of twenty-four known cases there was one departure in May (20th May); ten in June; eleven in July; one in August, and one in September. They would arrive at Jaffa or Tripoli in Syria in July, August, or September. Of the twenty-three known arrivals, one was in June; seven in July; eleven in August; ten in September; one in October; none in November; and one in December. From the coast to Jerusalem and back, including two or three days in Jerusalem, the pilgrimage was extremely rapid, taking from three weeks to a month. The pilgrims would then re-embark, generally on the same ship that had brought them. Departures from Jaffa, Beirut, or Tripoli in Syria were usually in August (out of twelve cases, there was one in June; six in August; two in September; three in October). It was usually in December that the pilgrims set foot in Venice once more (of thirteen arrivals, four were in November; seven in December; one in January; and one in February).

From these few figures useful information can be sought about the comparative length of the journey in summer and winter, on the outward and return voyage.

The return journey took almost double the time of the outward trip. Was this simply due to the season? Or was there some difficulty connected with the prevailing wind in following the route in the opposite direction? The latter explanation is not convincing. An examination of the figure of seventy-three days recorded for a voyage in the year 1587 shows that this relates to an outward, not a return journey, but one that was *not* made in summer. The ship left Venice on 29th September, 1587 and only arrived at Tripoli on 11th December.[181]

It would be a mistake to rely too heavily on the meagre statistics we have given. At least they establish that winter voyages took longer than those made in summer. The figures confirm the hypotheses and observations of contemporaries. For greater certainty we have drawn up a final

[179] P. Masson, *op. cit.*, p. 41, Tripoli in 1612.
[180] *Deutsche Pilgerreisen*, Gotha, 1889.
[181] *Ibid.*, p. 286–287.

table in which only the outward and return voyages made by the same ships, or what appear to have been the same ships, have been included.

Length of Voyages: Venice–Holy Land

Outward journey		Return journey	
1507	50 days	1507	86 days
1507	46	1507	152
1517	29	1519	79
1520	72	1521	92
1521	43	1523	101
1523	49	(18 days stay at Cyprus)	
1523	57	1523	90
1546	39	(Including journey from Jerusalem)	
1549	33		
1551	35	1527	80
1556	40	1553	79
1561	47	1561	112
1561	62	1581	118
1563	26	[1587	73]
1565	40	1608	65
1565	38	Average length – 93 days.	
1583	26		
1587	40		
1604	49		
1608	44		
Average length to nearest whole number – 43 days)			

Length of voyages made by same ships on outward and return journeys

Outward journey		Return journey	Relation R/O
1507	50 days	86 days	1·72
1517	29	79	2·7
1521	43	92	2·1
1523	49	101	2·06
1523	57	90	1·57
1608	44	65	1·47
Averages	45 days	85·5 days	1·9

The difference in length between outward and return voyages is almost the same as that of the average lengths in the table above (43 to 93 days).

Determinism and economic life. It is only too clear that these calculations, which appeared in the first edition of this book, are not adequate to solve the problems we are dealing with. Since then I have analysed the statistics of the Leghorn *portate*, but they do not add anything to this debate.[182] There are in existence other harbour records: at Barcelona, where access to the archives is difficult; at Ragusa-Dubrovnik where the figures are in

[182] F. Braudel and R. Romano, *Navires et marchandises a l'entrée du port de Livourne*, 1951.

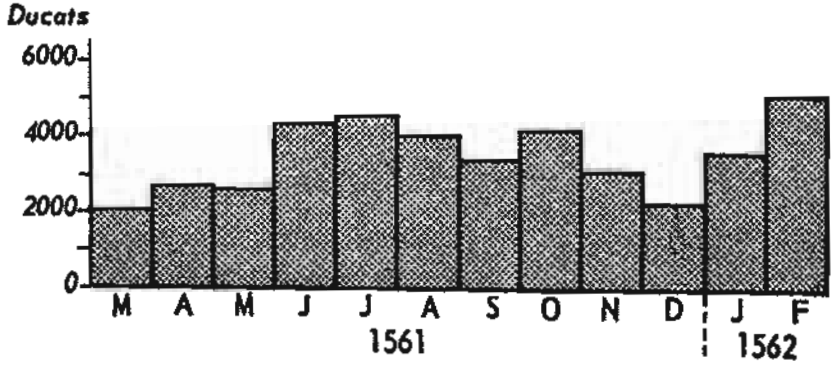


Fig. 22: *Seasonal variation of the volume of business at the* Fondaco dei Tedeschi *at Venice*

The figures above are according to the dues paid to the Signoria. This document, like many others one could quote, does not reveal any marked seasonal fluctuations that might point to a possible falling-off of trade during winter. N.B., a point of detail: the Venetian year began on 1st March.

order and easily accessible only after 1563,[183] and at Genoa, where the overwhelming mass of documents has discouraged researchers;[184] but in any case I doubt whether a systematic study of these records would take us very far. The impression one has, whether rightly or wrongly, but I suspect rightly, is that the seasonal determinism that so clearly affects rural life has continually been thwarted by the will of man, particularly in the towns. Winter on the sea was an obstacle, but small boats could conquer it over short distances, and large merchantmen on long voyages, even if they had to throw overboard bales of wool or barrels of grain during a storm; and sometimes they sped over the waves, for a while at least 'a sembianza di veloci delfini'.[185] Winter in the mountains was certainly an obstacle, particularly in the Alps, but we have seen that there were regular crossings nevertheless.

Winter was clearly a quiet season, as plenty of unmistakable evidence shows. Perhaps the most unexpected is that of the banks of Naples, which regularly in winter invested their clients' money in government bonds whereas in summer they used it to buy up the many agricultural products of the kingdom, a profitable avenue for speculation.[186] But winter was also

[183] See above note 174.

[184] But two young historians, Danilo Presotto and Giovanni Rebora have begun a systematic analysis of the customs documents at Genoa, Manuscript thesis at *Facoltà di economia e commercio* of Genoa.

[185] Museo Correr, D. delle Rose, 45, 1st January, 1604, the account by Lamberto Siragusano who left Alexandria in Egypt, in winter accompanied by a Marseillais, Theodolo, who had joined his ship. At first all went well: the sails were filled and they sped 'like dolphins', but there was a sudden storm off the coast of Asia Minor near Satalia.

[186] A.d.S. Naples, Sommaria Consultationum (mislaid reference).

the season of domestic crafts, when looms were busy. On 8th December, 1583, Baltasar Suárez, the Spanish merchant of Florence who was to become a relation by marriage of the Grand Duke, complained to his correspondent at Medina del Campo, Simón Ruiz, that he had not enough wool (he had just received some and sold it at a good price): 'I am much disturbed,' he wrote, 'to see such opportunities pass by, for this is the most industrious season of the year, and without wool, we are all held up.'[187] To achieve a good winter production was also the concern of the urban authorities, if they were wise. As the *provveditore* of the *Arte de Lana* said in Florence in October, 1604, the artisans must be helped at all costs 'now that the cold weather and long nights are here and they need light and clothing, besides food . . .'.[188]

So there were many exceptions: human life responds to the commands of the environment, but also seeks to evade and overcome them, only to be caught in other toils, which as historians, we can reconstruct more or less accurately.

3. HAS THE CLIMATE CHANGED SINCE THE SIXTEENTH CENTURY?

Should we dare to put a final question which means opening a thick file of often unreliable documents and admitting to the argument a large body of journalistic literature of doubtful inspiration? And yet, everything changes, even the climate. Nobody now believes in the invariability of the elements of physical geography. The variations, infinitesimal though they are, of the lines of longitude, are now accepted. Gerhard Solle[189] claims that the mass of the eastern Alps is moving towards Bavaria, at a negligible rate, it is true (one centimetre a year), but it is enough, at certain weak points to cause avalanches, landslides, sometimes major disasters noted in Alpine history. For many years the attention of geographers has been drawn to historical changes in the Mediterranean coastline. Some of them, of course, using precise examples such as the island of Delos, have concluded that the coastline is quite unchanging.[190] On the other hand, there is the work of Theobald Fischer, R. T. Günther, and A. Philippson. The basic problem is to decide whether observed changes are strictly local in character or not. According to the studies by Agostini Arrigo[191] and Dina Albani[192] there have been

[187] B. Suárez to Simón Ruiz, Florence, 8th December, 1583, A. Provincial, Valladolid.

[188] A.d.S. Florence, Mediceo, 920, f° 355. This reference is taken from an unpublished work by Maurice Carmona (C.N.R.S. report).

[189] 'Gebirgsbildung der Gegenwart in den Ost-Alpen' in *Natur und Volk*, 69, p. 169–176.

[190] M. L. Cayeux, in *Annales de Géographie*, XVI, 1907.

[191] *Ricerche sul regime dei litorali nel Mediterraneo*, Rome, 1936.

[192] *Indagine sulle recenti variazioni della linea di spaggia delle coste italiane*, Rome, 1935. Cf. the references of A. Philippson, *op. cit.*, p. 22–23, and the studies by C. Cold, *Küstenveränderung im Archipel*, Munich, 1886, and Theobald Fischer, *Beiträge zür physischen Geogr aphie der Mittelmeerländer besonders Siziliens*, Leipzig, 1877.

alternating periods during which the Mediterranean beaches have in turn been hollowed out and filled up. In the same way there have been successive unaccountable phases of erosion and sedimentation along the shores of Taormina on the east coast of Sicily, each phase lasting roughly fifteen years. Since the middle of the nineteenth century, the sea has gradually encroached upon the land, whether along the African coastline or the shores below Monte Gargano or around the delta of the Nile. There have been a few instances of movement in the opposite direction and a general aggravation of the situation after 1900. There is nothing to prove that this trend of the sea encroaching upon the land will not be reversed one day. It is tempting to look here for some form of cyclical change, such as Le Danois attempted to trace in the Atlantic Ocean.[193]

Perhaps it is also true of climate: 'everything changes and climates with the rest'.[194] But if they do change, it may be because of man's intervention. In one place climatic change might be the result of large-scale deforestation, in another the result of neglected irrigation, or abandoned crops which can be disastrous in arid regions.[195] Theobald Fischer is convinced that the Sicilian climate became more dry after the Moslem conquest. If so, who was responsible: man or the elements? Goetz, in his valuable *Historical Geography*,[196] mentions a drying-up of surface springs that may have preceded the Moslem conquest, in which case the southern conquerors would have brought with them a solution to the water crisis by their expert methods of irrigation.

In any case, there is a growing body of contemporary literature which accepts that there have been and still are climatic changes in operation. The Arctic ice cap has apparently retreated since 1892–1900[197] while the desert has made advances in both northern and southern Africa.[198]

In the past, on the contrary, all the books and studies were agreed on the immutability of the climate. We cannot regard their arguments as absolutely convincing. We are told, following Partsch,[199] that the Djerid in southern Tunisia has hardly changed its course, since Nefta and Tozeur, on its banks, correspond to the ancient Roman towns of Nepta and Thusurus. We are also told[200] that the flooding of the Nile in ancient times was comparable to its present-day flooding. It has been said that the flora of Minoan Crete (from the evidence of Cretan art), lilies, hyacinths, crocuses, and campions, corresponds exactly to the present-day spring flora of the Mediterranean,[201] or that the reforestation of pinewoods

[193] Ed. Le Danois, *L'Atlantique*, 1938, p. 162.
[194] Th. Monod, *L'hippopotame et le philosophe*, *op. cit.*, p. 100.
[195] A. Philippson, *op. cit.*, p. 134–135.
[196] *Historische Geographie*, 1904, p. 188.
[197] As a very general reference, Walther Pahl, *Wetterzonen der Weltpolitik*, 1941, p. 226–227.
[198] Ferdinand Fried, *Le tournant de l'économie mondiale*, 1942, p. 131.
[199] Quoted by A. Philippson, *op. cit.*, p. 133–134.
[200] Fritz Jäger, *Afrika*, 1910, I, p. 53.
[201] Herbert Lehmann, in *Geog. Zeitschr.*, 1932, p. 335–336.

around Valladolid in the sixteenth century can almost entirely be explained by human initiative.[202]

These statements and others of the same nature cannot be taken as definite proof. They reveal in the first place an inadequate grasp of the problem. The location at any time in the past of a climate apparently identical with that of the present day proves nothing either way about periodical variations of the climate. The real problem is to establish whether or not there has been periodicity, and recent writings incline towards the hypothesis that there has. 'A periodicity of about thirty years is not unlikely,' concludes an expert in these matters;[203] and of course there may well be other underlying cycles of long or short duration.

So the climate changes and does not change: it varies in relation to norms which may after all vary themselves, but only to a very slight degree. This seems to me to be of capital importance. To François Simiand's A and B phases,[204] shall we historians one day add phases of greater drought or humidity, heat or cold? Take what Le Danois says of the year 1450, or Gaston Roupnel's protest against 'the historian [who] refuses to grant historical existence to the serious climatic disturbances which transformed the conditions of life in Europe between the thirteenth and fifteenth centuries'.[205]

This is the area of debate. As far as the Mediterranean is concerned we shall confine ourselves to a few general conclusions and one or two hypotheses.

Climatic variations are likely. Their character and duration remain to be noted. In the Alps, in any case, traces of them are visible. According to U. Monterini[206] the mountain regions became drier and warmer after about 1300; after about 1600, on the other hand, they grew increasingly colder and wetter and the glaciers moved back down as a result. In about 1900 a new phase began. The Alps began to dry up again and the glaciers retreated, as we know, over the whole area. In the Hohe Tauern the present shrinking of the glaciers has uncovered high gold mines that were worked in the time of the Romans and again in the Middle Ages.[207]

This takes us a long way from the thirty-year periods accepted by Emmanuel de Martonne. But is this climatic history of the Alps scientifically based? We are not in a position to say. Glaciologists do not usually see the problem as straightforwardly as this (including the early writer, Walcher, *Nachrichten von den Eisbergen in Tyrol*, Vienna, 1773). Further, is it permissible to claim that the Alps have registered not only variations in their own climate, but also those in the climate of the entire Mediterranean, or indeed that one series is in any way linked to the other? The

[202] Bartolomé Bennassar, *Valladolid au siècle d'or*, Paris, La Haye, 1967.
[203] Emmanuel de Martonne, *Géographie Universelle*, VI, I, 1942, p. 140.
[204] Ignacio de Asso, *op. cit.*, 1798, p. 78 mentions a drought lasting about twenty years at Huesca.
[205] *Histoire et destin*, 1942, p. 62.
[206] *Il clima sulle Alpi ha mutato in età storica?*, Bologna, 1937.
[207] Hans Hanke, in *Frankfurter Zeitschrift*, 23rd January, 1943.

present day climate seems to suggest that it is, since the glaciers are in retreat in the Caucasus as well as in the Alps,[208] while to the south of North Africa the Sahara is enlarging its territory.

The historical consequences of this theory may be imagined. It is curious to say the least that in about 1300, that is about the same time as the assumed rise in Alpine temperature, German colonists should have settled on the very high slopes of the south face of the Monte Rosa.[209] It is equally curious that in about 1900, under similar conditions and particularly during the [inter-war] years, there has been a flow of emigrants from the Italian mountain villages to the highest points of the Alps and the northern Apennines, for example in the Apuan Alps and the Val Venosta, where new, permanent villages have grown up between the 1500 and 2000-metre level, in the zone of the so-called *Stavoli* (*abitazzione di mezza stagione*).[210]

If it is agreed that there are some grounds for this argument, and that in about 1600 the weather did indeed become colder and wetter, it would also explain the frosts which were so disastrous for the olive trees[211] and the frequent flooding, for example the floods that ruined the fields of Tuscany in 1585 and 1590, not to mention the spread of marshland and consequently of malaria, creating overall conditions of increased difficulty for human life. The roots of the social crisis caused by the food shortage that dominated the end of the century may have lain in an alteration, even a very slight one, in the atmospheric conditions. This takes us to the utmost limits of prudence, but it cannot be discounted. There is no shortage of explanations, both economic and demographic, for the end-of-century crisis. But who is to say that the climate did not play its part on this occasion, and that it is not, in general, a variable factor in history? It is difficult to prove it of course, but a few examples support the argument.[212]

There was a great deal of flooding during the sixteenth century in the Rhône valley: in July, 1501, the Rhône flooded at Lyons; in 1522 the Ardèche; in February, 1524, the Drac and the Isère; in August, 1525, the Isère; in October, 1544, the Gier at Vienne; in November, 1544, the Rhône and the Durance; in November, 1548, the Rhône and the Durance; on

[208] B. Plaetschke, 'Der Rückgang der Gletscher im Kaukasus' in *Pet. Mitt.*, 1937.
[209] N. Krebs, in *Geogr. Zeitsch*, 1937, p. 343.
[210] R. Pfalz, in *Geogr. Zeitsch.*, 1931. The same observation is made by Denijer, in *Ann. de Géogr.*, 1916, p. 359, the clearings of the high villages in the Dinaric Alps.
[211] In Provence the olive trees were killed by the mistral in 1507, 1564, 1599, 1600, 1603, 1621–1622. P. George, *op. cit.*, p. 394. René Baehrel, *Une croissance: la Basse-Provence rurale (fin du XVIe siècle – 1789)*, 1961, p. 123, gives a different chronology: 'The disastrous winters' for the olive trees were: 1570, 1594, 1603, 1621, 1638, 1658, 1680, 1695, 1709, 1745, 1748, 1766, 1768, 1775, 1789. At Verona, in 1549 '*per il gran freddo si secorrono quasi tutti gl'olivi, le vite e altri alberi*', Lodovico Moscardo, *op. cit.*, p. 416. At Pépieux, (Aude, near Carcassonne) in 1587, there was snow and the olive trees were hit by frost, J. Cunnac, *Histoire de Pépieux*, Toulouse, 1944, p. 73. In Tuscany, the olive trees were frozen in 1594, G. Mecatti, *Storia cronologica* . . . II, p. 790.
[212] The following is taken from Maurice Champion, *Les inondations en France*, 1861, III, p. 212 ff.

9th September, 1557, the Rhône flooded at Avignon; on 25th August, 1566, the Durance and the Rhône flooded the region round Avignon; on 2nd December, 1570, there was one of the worst floods of the Rhône of the period, particularly at Lyons; in 1571, the Rhône flooded again; the same thing happened in October, 1573 (Beaucaire was flooded); in September, 1579, the Isère flooded at Grenoble; on 26th August, 1580, the Rhône at Avignon; in 1578 the Rhône flooded at Arles and the waters covered part of lower Languedoc from October to February; in 1579 there was flooding at Arles; in 1580 flooding at Arles again (it was said that the Rhône had never been seen so high in living memory) on 5th January, 1581, there was flooding at Avignon from both the Rhône and the Durance, recurring on 6th February; in 1583 the Rhône covered the Camargue; on 18th September, 1586, the Rhône flooded at Avignon; on 6th November, 1588, the Gier flooded; in 1590 there was another disastrous flood at Avignon.

These records might give the impression that there was increased flooding towards the end of the century. But the Rhône floods are not, from our point of view, a very good indicator of the vicissitudes of the Mediterranean climate. Yet it does seem, if contemporary accounts are to be believed, that the rainfall increased in the later decades of the century. In his *République Séquanoise* of 1592 Louis Gollut blamed the deforestation caused by the iron founders and land owners who wanted to have more 'subjects . . . and taxes'. He adds, '. . . for twenty-six years now the rains have been more frequent, longer and more abundant'.[213] This was in the Dôle region. At Aix in 1599–1600, Du Haitze wrote in his manuscript history,[214] 'the cold weather and snow lasted until the end of June, and it did not rain between that month and December. The rains came then in such abundance that the land seemed drowned.' In Calabria, according to the so-called *narrazione* of Campanella: '*ed entrado l'anno* 1599, *venne nova, che in Rome prodigiosamente aveva inondato il Tevere, e non si potettero celebrar le feste di Natale, e in Lombardia il Po; e in Stilo* [a place in Calabria] *non si poteron celebrar, la Simana Santa, gli ufficii divini per le molte gran pioggie che allagavano tutte le chiese . . .*'.[215] When a man from Ferrara, an eyewitness of the flooding of the Tiber,[216] arrived, it was not long before they were talking in the mountains of miraculous omens, foreshadowing the end of the world, the more so since a century was ending, and even the most well-balanced heads were a little swayed by the *mutazione di secolo*. The following year, in June, 1601, torrential rain fell on the Balkans, ruining the crops and causing catastrophic floods 'like those of the Po and of the large rivers of Lombardy', according to one

[213] *Mémoires historiques de la République séquanoise*, Dole, 1592, in-folio, book II, ch. XVIII.
[214] Quoted by Ch. de Ribbe, *La Provence au point de vue des bois, des torrents et des inondations avant et après 1789*, 1857, p. 20.
[215] *Archivio storico italiano*, IX, p. 622.
[216] *Ibid.*, p. 624.

witness,[217] the rain falling so heavily said another, that it was feared 'the air was corrupted'.

These are the facts. What conclusion should be drawn? That the climate of the Mediterranean altered towards the end of the century? The events we have listed are one thing, such a conclusion quite another, as must be immediately acknowledged. A thorough re-examination of the whole question is needed to provide more of the concrete data which only research will bring to light. The problem still remains and it is one that we cannot ignore, even if in the present state of knowledge we cannot provide an answer. Historians are by no means the only people who will be able to do so. If our efforts can at least establish that they have a contribution to make to this discussion they will not have been in vain.

Supplementary note. I have not changed anything in the argument of the preceding section which when it was first published in 1947 provoked a certain amount of controversy. The reader may be surprised: at the time I was considered imprudent by some critics. Gustav Utterström[218] in a recent article in 1958 was kind enough to find me timid in retrospect. This is the way of the research world and I should be the last to complain.

What matters is that over the last fifteen years research has been going into these vital problems. Few others are as important. Through variations in the climate a force external to man is asserting itself and claiming its part in the most everyday explanations. Today such variations are accepted.

Following the simple method of my original research – which was a collection of descriptive details – I have completed the evidence. It relates above all to the increased rigours of the end of the century: the continual rain, the disastrous floods, the bitter and *unusual* cold. The chronicle of Luis Cabrera de Córdoba, for example, notes of the winter of 1602–1603 that 'the cold and frosts have been so general this year throughout Spain, that there is not a single locality where there have not been complaints about the rigours of the weather. Even from Seville and other seaside towns, especially Seville, they have written that the Guadalquivir has frozen over, a thing which had never before been seen. What a difference from last year, when we hardly noticed the winter. . . .'[219] At Valencia[220] there were successive frosts in 1589, 1592, 1594, 1600, and 1604. As for the constant rain, floods, and snowfalls, and visions of the end of the world, there are many reports for the whole of the Mediterranean in the last years of the century as well as for many years of the next. The recent study by Emmanuel Le Roy Ladurie mentions similar occurrences: 'the Rhône froze right over so hard that it bore mules, cannons and carts in 1590, 1595, 1603, possibly in 1608, in 1616 and in 1624.' At Marseilles, the sea froze in 1595, and in 1638, 'when the water froze round the galleys'. The series of frosts that killed the olive trees of Languedoc occurred in 1565, 1569, 1571, 1573, 1587, 1595, 1615, and 1624.[221] 'These massacres of the olive trees eventually discouraged planters'[222] in Languedoc and no doubt elsewhere as well. It seems certain that it became colder between the last years of the sixteenth century and the early years of the seventeenth than it had been before.

It rained more. From 1590 to 1601, a historian observes, concerning Languedoc: 'late and persistent snow in the spring, extreme cold spells in the summer, torrential rainfall over the Mediterranean accompanied by famine and the famous "invasion" of the inland sea by northern grain'.[223] On the other hand from 1602 to 1612 and even later, there was 'seemingly a breath of warm air and light',[224] and the dry weather returned, or at any rate the rainfall was more unevenly distributed. Many prayers were offered for rain at Valladolid in 1607, 1617, and 1627;[225] at Valencia in November, 1615, '*havia molts mesos que no ploguia*'; in October and November, 1617,[226] '*no caiga un solo chaparron*'. We may not agree with Ignacio Olagüe that Spain then entered into a period of drought that prepared the way for her decadence.[227] But it is quite possible that the countryside of La Mancha was greener in the time of Cervantes than in later years.[228]

The rainfall mechanism in Europe (including the Mediterranean) depends on the paths taken by the Atlantic depressions, which may go either north by way of the Channel, the North Sea and the Baltic (all the year round); or south, by way of the Mediterranean between the autumn equinox and the spring equinox. Utterström suggests that in the sixteenth century this double stream was blocked in the north by periods of intense cold and the resulting buildup of anticyclones of high pressure. Since the northern passage was obstructed, the Mediterranean route was more open than usual in compensation. But is there any reason why one path should open when the other is half-closed? And what was the length of the oscillations if indeed they occurred?

These are really points of detail, short-term explanations. Recent research has taken the matter much further, pursuing two promising lines of investigation: first, the establishment of serial indices; and second, the extension of the field of observation to cover not only the Mediterranean but the Mediterranean plus Europe or even better, the entire globe. I am

[217] Francisco de Vera to the king, Venice, 30th June, 1601, A.N., K. 1677. Constantinople, 3rd and 4th June, 1601, *ibid.*

[218] 'Climatic Fluctuations and Population problems in Early Modern History' in *Scandinavian Economic History Review*, 1955.

[219] Luis Cabrera de Córdoba, *Relaciones de las cosas succedidas en la Corte de España desde 1599 lasta 1614*, p. 166, Valladolid, 25th January, 1603.

[220] J. Castañeda Alcover, *Coses envengudes en la ciutat y regne de Valencia. Dietario de Mosen Juan Porcar, capellan de San Martin (1589–1629)*, Madrid, 1934, I, p. 3, 4, 10, 41, 71.

[221] E. Le Roy Ladurie, *op. cit.*, p. 48.

[222] *Ibid.*, p. 46.

[223] *Ibid.*, p. 39.

[224] *Ibid.*, p. 37.

[225] B. Bennassar, *Valladolid au XVIe siècle.*

[226] J. Castañeda Alcover, *op. cit.*, p. 222 and 324.

[227] Ignacio Olagüe, *La decadencia de España*, 1950, vol. IV, ch. XXV.

[228] Ignacio Olagüe, 'El paisaje manchego en tiempos de Cervantes' in *Annales Cervantinos*, III, 1953.

thinking in particular of the pioneering works of Dr. D. J. Schove[229] in England; of the geographer Pierre Pédelaborde,[230] and the historian Emmanuel Le Roy Ladurie.[231]

To extend and classify our information, to apply a prepared grid to all the evidence, so that each descriptive detail should fit into a particular category – humidity, drought, cold, and heat, according to the season and the year – will mark progress from the picturesque to a more genuine quantitative history. Then to record series of comparable events: the dates of grape harvests, the dates of arrival on the market of the first new oil, of the first wheat and the first corn; the information provided by the felling of trees, flow of rivers, flowering of blossom, the first ice on a lake, the first or last icefloe in the Baltic, the advances and retreats of the glaciers, the variations in sea level – will establish chronological records of all climatic variations, whether short or long term.

The second step is to incorporate these problems and this information into comprehensive theories and reports. The 'Jet Stream' theory will perhaps suffer the fate of so many other general explanations. It will hold the stage for a time, perhaps a long time. According to this hypothesis there is a continuous air current over the northern hemisphere, a ring of air moving at variable speeds, about 20 or 30 kilometres above the earth's surface. If it increases speed it swells and moves down the globe, like a hat that is too big for its wearer; if it slows down, it forms meanders and retracts back toward the North Pole. So if our observations were correct, the Jet Stream would have increased speed at the end of the sixteenth century, and moving nearer to the Equator and therefore to the Mediterranean, would have brought rain and cold weather south with it. Our hypotheses would be demonstrated, of course, if there was an unbroken chain of evidence, which no one will be able to claim. In the terms admitted in the present discussion of the subject, there may have begun in the middle of the sixteenth century, perhaps a little earlier or later, what has been called, in the words of Dr. Schove, 'the Little Ice Age' that continued throughout the century of Louis XIV.

Important questions still remain to be answered. Was the change we have suggested part of a long-term phase? If so, the sixteenth century would have marked the beginning of a long period of inflowing cold and rain. I mention here, without for a moment regarding it as proof of anything, a curious remark on the level of the *commune* at Venice, that is, of the average water level which makes a black mark on the side of the houses bordering the canals. One document claims that this level has regularly

[229] For an introduction to his many works, see his contribution to 'Discussion: post-glacial climatic change' in *The Quarterly Journal of the Royal Meteorological Society*, April, 1949.

[230] *Le climat du Bassin Parisien; essai d'une méthode rationnelle de climatologie physique*, 1957.

[231] In particular his three brilliant articles: 'Histoire et climat' in *Annales*, 1959; 'Climat et récoltes aux XVIIe et XVIIIe siècles', *ibid.*; 'Aspect historique de la nouvelle climatologie' in *Revue Historique*, 1961.

risen since 1560, over three consecutive centuries.[232] If this observation is true – and some clear evidence is called for – we should still have to know whether the water level in the Venetian lagoon is determined entirely by atmospheric precipitation rather than by local circumstances. But the detail is worth remembering.

A further question remains. What would be the hypothetical effect of this Little Ice Age on life in Europe and the Mediterranean? Will the historian disclaim responsibility for a series of problems relating to rural life, public health, and communications, consigning them to a different area of research? In these areas prudence would suggest the need for some kind of large-scale collective research, which has not so far been attempted. It is tempting to make an instant diagnosis and say that at the end of the sixteenth century there was more stock farming and less wheat growing, but this we are not entitled to do. Rain and cold, by persistently visiting the Mediterranean, dislocated certain patterns, but to a degree that still escapes us. Man too must take his share of responsibility, the extent of which is still to be determined. As Le Roy Ladurie has shown, the progressively later dates of the grape harvest can be attributed to man's preference for the higher alcohol content of riper fruit.[233]

It is clear—and this is one of the greatest advances in this area—that the history of climate is the same throughout the northern hemisphere. The case of the Mediterranean is linked to a series of problems on the same scale. The present-day retreat of the Alaskan icefields, which are restoring to our eyes ancient forests crushed beneath their original advance; the series of exact dates when the cherry trees blossom in Tokyo (each marked by a ritual feast); the concentric rings of trees in California: all these and other 'events' are linked together in climatic history. Whether or not there is a Jet Stream, there is certainly a common source for all climatic change. The 'early' sixteenth century was everywhere favoured by the climate; the latter part everywhere suffered atmospheric disturbance.

[232] Correr, D. delle Rose, 20. I make only brief mention of this immense question and the immense bibliography that has arisen around it, since the publication of Luigi Cornaro's *Trattato di acque del Magnifico Luigi Cornaro, nobile Vinitiano*, Padua, 1560. The best guide is to be found in Roberto Cessi, 'Evoluzione storica del problema lagunare' in *Atti del convegno per la conservazione e difesa della laguna e della città di Venezia*, 14–15th June, 1960, (Istituto Veneto), p. 23–64.

[233] *Op. cit.*